RHODE ISLAND STATEWIDE TRUCK PARKING STUDY

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1 INTRODUCTION

A truck parking study was conducted as part of the Rhode Island Freight and Goods Movement Plan Update prepared by the Rhode Island Department of Administration's (RIDOA) Division of Statewide Planning. This study seeks to assist the state in its prioritization of future investments in truck services and facilities in order to improve the operations of the sector and reduce negative impacts on communities.

The parking of trucks is a critical step in the operation of fleets. Trucks need parking spaces for loading and unloading, but they also allow drivers to get regular rest to ensure their safety on the road. The Federal Motor Carrier Safety Administration has established Hours of Service (HOS) regulations that require frequent rests for all property-carrying drivers, to help ensure that drivers stay awake and alert. The recent requirement that trucks be equipped with Electronic Logging Devices has enhanced enforcement of HOS. The main components of the HOS rules are:

- **11-Hour Driving Limit.** May drive a maximum of 11 hours after 10 consecutive hours off duty.
- **14-Hour Limit**. May not drive beyond the 14th consecutive hour after coming on duty, following 10 consecutive hours off duty. Off-duty time does not extend the 14-hour period.
- **30-Minute Driving Break**. Drivers must take a 30-minute break when they have driven for a period of eight cumulative hours without at least a 30-minute interruption.
- **60/70-Hour Limit**. May not drive after 60/70 hours on duty in 7/8 consecutive days. A driver may restart a 7/8 consecutive day period after taking 34 or more consecutive hours off duty.
- **Sleeper Berth Provision.** Drivers may split their required 10-hour off-duty period, as long as one off-duty period (whether in or out of the sleeper berth) is at least two hours long and the other involves at least seven consecutive hours spent in the sleeper berth.
- **Adverse Driving Conditions**. Drivers are allowed to extend the 11-hour maximum driving limit and 14-hour driving window by up to two hours when adverse driving conditions are encountered.

There are additional regulations and exceptions around when and where truck drivers need to park for rest, but all truck drivers on the roads in Rhode Island have to abide by most (if not all) of these provisions. As described in Section 1.2, there are other reasons why truck drivers need to find safe, convenient parking spaces, and meeting this need helps ensure the safe and efficient operation of the freight sector while enhancing the on-the-road quality of life for drivers. However, as described in the next section, there are numerous realities and trends that are making it difficult to meet this need.

1.1 TRUCK PARKING CHALLENGE

The inability to find safe parking has become one of the top issues for truck drivers around the country, especially in urbanized areas such as the Northeast. Rhode Island faces many of these challenges, as it lies on one of the nation's main long-haul trucking corridors and is one of the most urbanized states.

Urbanized areas typically have the highest demand for truck parking, as these areas have the highest concentration of origination and termination of truck trips, and drivers prefer to park overnight close to their deliveries or pickups. And while parking demand is high in urban areas, the supply of parking spaces is often the most limited because of high land values, land use regulations, and other barriers. This leads urban-area parking facilities to have high usage. Finally, the costs to build new parking facilities and expand parking capacity are highest in the areas where it is needed most. This mismatch between supply and demand is the main factor leading to deficiencies in the truck parking system.

Delivery windows, which have become ubiquitous in modern supply chains, put pressure on truck drivers that exacerbate truck parking needs in urbanized areas. Industrial or commercial facilities receiving freight use delivery windows because they typically have a fixed number of docks and dock workers and a limited area for trucks. Delivery windows are typically one to three hours, but can often be as short as 15 minutes for operations that require it. The receiver's operations and production depend on deliveries arriving at specific times, especially in just-in-time supply chains that carry minimal inventories. The emphasis on meeting the delivery window gives truck drivers a strong incentive to plan to arrive early in case of traffic congestion or unforeseen circumstances. And because truck drivers can rarely park at the receiver's establishment, parking increases in urban areas as they look for a nearby staging location. If there are no truck stops, rest areas, or on-street parking spaces nearby, drivers need to park in undesignated locations while waiting for their delivery window.

Undesignated parking outside of establishments or along major truck routes can pose a safety risk to drivers and other vehicles, create litter or other nuisances, and is typically illegal. For example, Boggs et al. (2019) found that undesignated parking at the entry/exit ramps of parking facilities leads to increased crashes. Additionally, difficulty in finding places to rest, combined with increased pressure to maximize revenue, can lead truck drivers to undertake risky behavior by driving while fatigued (Thompson et al. 2015), creating a safety risk even when the trucks are on the road (NASEM, 2016).

1.2 REASONS FOR PARKING

The main reasons truck drivers need to park are shown in Figure 1 and include the following:

- **Overnight/Long-Term –** Long-haul drivers need to park for long periods of rest. HOS requires drivers to have 10 consecutive hours off duty after driving for 11 hours. There are other limits on the number of hours that can be driven per week and carrying cargo. In order to meet these rest requirements, truck drivers need to park along their trip route, typically overnight. Consequently, the demand for long-term parking is highest in the evening, and especially high along national freight corridors such as I-95.
- **Staging –** Truck drivers need to park near the termination of their trip for staging purposes. As mentioned previously, truck drivers want to arrive early and park outside or near the facility to meet delivery appointment windows. And because it is unlikely for parking facilities to be available nearby, they often park in undesignated locations. This staging occurs in different locations than long-term parking and has different motivations. The schedules of receivers and their on-time performance requirements dictate how much buffer truck drivers build into their schedule, and how

early they arrive at the destination. Staging parking is also common after making a delivery and searching for a new load to pick up, or when making a delivery to a commercial establishment, such as a retail store or restaurant. In suburban or exurban areas, staging is typically accommodated at loading docks. However, in denser urban areas trucks often park curbside or in undesignated locations when no other option is available.

- **30-minute Break –** Truck drivers need to take short breaks to access amenities, such as food services and restrooms, and to meet HOS requirements. The 30-minute rule requires that drivers do not drive more than eight hours before taking an off-duty or sleeper-berth rest for at least 30 minutes. While this rule was relaxed during the COVID-19 pandemic, truck drivers still need to park for short rests and meals and this type of parking typically occurs roadside, during daytime hours.
- **Emergency –** Unexpected events can cause truck drivers to park roadside. This can involve a mechanical issue, a health emergency, or anything that requires the driver to stop. Adverse weather, such as a snowstorm or fog, can force truck drivers to pull over for safety reasons. Because these types of parking needs are difficult to anticipate, parking availability throughout key freight corridors is critical to ensure that drivers can stop in safe locations when managing an emergency. This can be critical to reduce risks and ensure the freight system operates as smooth as possible during adverse events.
- **Time Off –** Drivers need parking spaces when off duty. Trucks that are part of fleets can park at terminals or private parking facilities for extended periods of time, but independent owner-operators do not have access to these facilities. Parking a truck at home is common in rural areas, but in urbanized areas such as much of Rhode Island it is often impossible and generally undesirable.

Figure 1: Main Reasons for Parking

Overnight/Long Term	Staging	30-minute break	Emergency	Time off
Long-haul drivers stop overnight for rest as they travel across the country. Need amenities, food services, and a safe and secure place to rest. Typically, the least availability overnight.	Truck drivers picking up and delivering freight at industrial and commercial establishments need a place to park as they wait for their delivery appointment or for next load to be assigned.	Truck drivers often must make short stops to meet federal rest requirements, or access amenities and food services. Typically, during the day.	Truck drivers might need to stop for mechanical issues with the truck or unexpected events, such as severe weather.	Independent drivers don't have a company facility to provide parking during time off. They are done with their work week and need a place to park their truck while off-duty.

Source: Adapted from FHWA

Understanding the main reasons truck drivers need to park is critical to ensuring the right type of parking spaces are available at appropriate locations. Long-term parking concentrates adjacent to freight corridors and demand peaks overnight, while staging parking concentrates in commercial/industrial areas and often in the morning when most deliveries are scheduled. Short-break or emergency parking can occur at any time of the day, but typically concentrates along freight corridors

and where amenities are available. Demand for time-off parking depends on the concentration of independent owner-operators.

The locations where trucks typically park depend on the reason for parking. Table 1 show the typical parking locations for different parking needs. Parking can take place at shipper/receiver facilities, or at multimodal facilities such as airport cargo or rail intermodal terminals. Parking at these locations is often strictly dependent on delivery windows and loading/unloading times. The owners of these establishments or terminals typically do not want trucks parked there any longer than is necessary to load or unload cargo. Trucks also park in rest areas or at commercial truck stops, where parking is free if drivers pay for fuel or other goods and services. And while parking at rest areas is always free, they typically offer fewer amenities. Fee-based reservation systems might be available at commercial truck stops, but these often represent a small share of the parking spaces available and are unaffordable for most drivers. Trucks can also be parked at truck terminals, typically for overnight storage, by agreement or if they are part of a fleet. Finally, many truck drivers decide to park in undesignated locations for convenience or because they are simply unable to find designated parking. This can be on roadway shoulders, vacant lots, public use parking lots, and at other locations. Preventing undesignated parking is imperative as it avoids numerous costs and negative impacts as described in the next section.

Table 1: Truck Parking Reasons and Locations

REASONS FOR PARKING/PARKING LOCATION	REST AREA OR TRUCK STOP	SHIPPER OR RECEIVER ESTABLISHMENTS	MULTIMODAL FACILITIES	UNDESIGNATED LOCATIONS	TRUCK TERMINALS
Loading or unloading		X	X		
30-minute required rest break	X	X	X	X	
Overnight required rest break	X			X	
Staging	X			X	
Overnight Storage				X	X
Waiting for next load	X			X	X
Emergency	X	X	X	X	X

Source: Guerrero, S.E. et al. 2022. *Modeling Truck Parking Demand at Commercial and Industrial Establishments, Transportation Research Record*, in-press.

1.3 BENEFITS OF ENSURING TRUCK PARKING AVAILABILITY

Ensuring that trucks can find a safe parking space when needed has numerous benefits, as shown in Figure 2. The framework provided in this section expands on the recently published FHWA Truck Parking

Development Handbook.[1] Limited availability of parking spaces on or near their route forces truck drivers to spend more time searching for parking and taking longer detours to find open space. This increases the Vehicle Miles Traveled (VMT) and Vehicle Hours Traveled (VHT) required to move freight. And drivers might have specific parking requirements related to truck size, cargo content, or services needed, which makes it even harder to find a space. Projects that make it easier for truck drivers to find a spot and avoid lengthy detours would significantly benefit nearby communities by reducing pollution and emissions, decreasing the marginal crash risk on roads, decreasing pavement deterioration, and reducing trucking costs.

When detours needed to find a spot are too long, drivers might park in undesignated locations along their route such as on highway shoulders, interchanges, ramps, or vacant lots—or if they simply run out of HOS while searching for parking. Research has connected difficulties in finding parking spaces with the frequency of undesignated parking:[2] A recent survey found that 90% of truck drivers park in undesignated locations at least once per week, and that the most important factors driving this decision were the lack of parking and proximity to the route and destination.[3]

Parking in undesignated locations is undesirable and potentially dangerous. It can be a nuisance for residents and businesses and create safety risks for truck drivers, drivers of other vehicles, and pedestrians. Undesignated parking on roadway shoulders presents a crash risk with through traffic because of large speed differentials. Because highway shoulders are considered part of the roadside safety clear zone, a truck parked in this area becomes a roadside hazard. Some shoulders are not wide enough to fully accommodate trucks and separate them from other moving vehicles. Trucks also have to decelerate or accelerate in the traffic stream to park on the shoulder, which poses an additional safety risk—especially when the truck is loaded. Some shoulders have a higher cross slope than the mainline, or are not paved to the same standards, which can exacerbate safety risks. Undesignated parking on the shoulders can also prevent other vehicles from using the shoulders, which poses additional safety risks—particularly during emergency situations. Undesignated parking in urban areas can obstruct line-of-sight, making it harder for other drivers to make safe decisions, and can also obstruct through lanes or bike lanes.

Difficulty finding parking reduces the efficiency of truck operations by increasing transportation costs for businesses in the region. Over time, this will make those businesses less competitive and hurt economic growth. Trucking costs are increased primarily by drivers stopping to secure parking earlier in the day than they would prefer to. Surveys in statewide truck parking studies show that drivers often stop 30 minutes to one hour before the end of their HOS due to low parking availability. This translates into lost productivity for the sector and higher costs for consumers. Additionally, detours to find parking spaces are costly to vehicle operations (fuel, wear and tear, other expenses).

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1 https://ops.fhwa.dot.gov/freight/infrastructure/truck_parking/docs/Truck_Parking_Development_Handbook.pdf

2 Cherry, C.R., Boggs, A., Franceschetti, N., Ling, Z., and Nambisan, S. 2016. *Truck Parking Facilities and Ramp Parking: Role of Supply Demand, and Ramp Characteristics*. Research Report RES2016-07.

3 Boris, C. and Brewster, R. 2018. "A Comparative Analysis of Truck Parking Travel Diary Data," *Transportation Research Record*, 2672(9).

Projects, policies, and strategies that improve the availability of truck parking will reduce these negative impacts and costs and make trucking sector operations more efficient and reliable. And equally important, as inadequate and potentially dangerous accommodations are distracting and make an already challenging job even harder, adequate parking considerably improves the quality of life of truck drivers. Timely access to amenities and a safe, secure place to rest for the night are critical to ensuring drivers get ample rest and are fully alert and focused on the task at hand once they are back on the road. Access to amenities and a secure place to park is critical to addressing the driver shortage and enhancing retention, and especially important to encouraging more women drivers.

Figure 2: Benefits of Truck Parking Availability

Reduced Undesignated Parking

- Improved highway safety
  - Shoulder crash risk
  - Blocked shoulders
- Improved urban safety
  - Line of sight obstruction
  - Blocking travel lane
- Reduced pavement/ shoulder damage
- Reduced cleanup
- Less theft

Avoided Detours Searching for a Spot

- Fewer miles and hours driving to find parking
- Decreased trucking costs
- Reduced emissions
- Less fuel consumption
- Reduced crash risk
- Reduced congestion

Improved Trucking Productivity and Reliability

- Increased productive drive time per day
- Increased non-driving productivity
- Driver quality of life/retention
- Better rested drivers
- Improved resiliency

1.4 STUDY OBJECTIVE AND REPORT ORGANIZATION

The objective of this study is to evaluate the adequacy of truck parking facilities in Rhode Island through a combination of stakeholder outreach and data analysis to identify needs and recommend solutions that are practical and effective. This report is organized as follows:

- *Chapter 2 – Truck Parking Inventory* describes the location, capacity, and amenities of truck parking facilities in and around Rhode Island. Details about each facility are provided in Appendices A and B.
- *Chapter 3 – Needs and Issues* identifies existing deficiencies and gaps in the Rhode Island parking system through surveys, interviews, stakeholder workshops, and an analysis of truck telematics data.
- *Chapter 3 – Solutions and Recommendations* presents the solutions that are most likely to effectively address the challenges described in the previous chapter, drawing from a review of previous studies and the state-of-practice.
- *Chapter 4 – Next Steps* describes how the recommendations can be implemented and next steps.

2 TRUCK PARKING INVENTORY

An inventory was determined the number of parking spaces, the services, and amenities at truck parking facilities in Rhode Island and within 25 miles in Massachusetts and Connecticut. The inventory identifies and describes the parking spaces and services.

This truck parking inventory began with an initial scan in March 2022 of web-based truck parking directories and resulted in an initial list of 24 public and private facilities in Rhode Island and within 25 miles of the border in Massachusetts and Connecticut. A second scan was conducted in early April 2022. Facilities in Rhode Island and Massachusetts were also visited to verify on-site conditions. Additional information was obtained from state rest area and travel plaza websites and by contacting parking facility managers. This increased the number of parking facilities to 28. A third and final scan was in late April 2022 resolved any discrepancies in the number of parking spaces and the location and viability of the truck parking facilities. Additional aerial map verifications were performed and calls to parking facility managers continued.

2.1 OVERVIEW

There are 37 truck parking locations in the study area: 9 in Rhode Island, 21 in Massachusetts, and 7 in Connecticut. Figure 3 shows the location of these facilities. Combined, they provide a total of 1,012 truck parking spaces. Most of the spaces are in the Connecticut portion of the study area (449 spaces), within 25 miles of its border with Rhode Island. Massachusetts has 322 spaces in the study area, while Rhode Island has 241.

In terms of amenities and services, 37% (14) have bathrooms, fuel, a convenience store, and lot lighting. In addition to these services, 30% (11) offer ATMs and pet rest areas. Nearly one-half (49%/18) of the truck parking locations are bare turnouts on highway shoulders with no amenities or restrooms. Most (43%) of the truck parking facilities are located on Interstates 84 and 95. Interstate 90 (11%/4), State Route 146 (11%/4), and State Route 24 (8%/3) combine for 30%.

Two appendices are included at the end of this document that detail the facility-level findings developed through inventory research:

- *Appendix A – Truck Parking Locations and Capacity* provides the name, address, phone number, highway location, and number of truck parking spaces for each facility. It also indicates whether the spaces are striped or unstriped. Two sources were used to verify the information: first sources included the *All Stays*[4] and *Truck Stop Report*[5] online truck parking directories, and second sources included *Google Maps* aerials, state websites, site visits, and on-site manager and government inquiries. The number of striped and unstriped spaces visible in the aerial images was counted and,

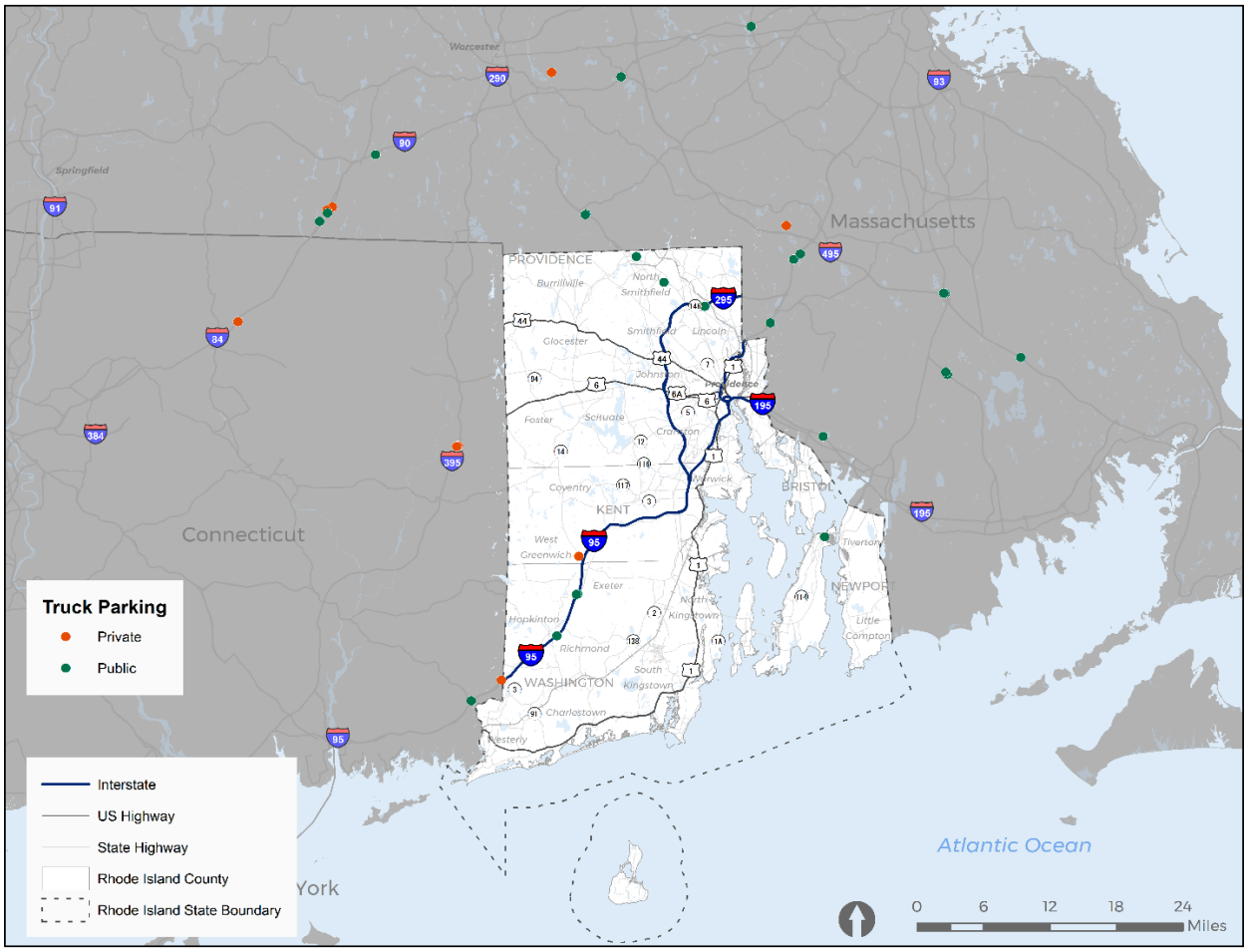
[4] https://www.allstays.com/c/truck-stop-locations.htm
[5] http://www.truckstopreport.com/USA/

when it was necessary to estimate the number of unstriped spaces, the size and length of a tractor-trailer within the parking area was used as a guide.

- *Appendix B – Truck Parking Facility Services* describes the services and amenities at truck parking facilities. The information was obtained from the aforementioned online directories, maps, site visits, and communications with facility operators.

The following sections provide a high-level overview of the inventory findings.

Figure 3: Map of Transportation Corridors and Locations of Truck Parking Facilities in the Study Area



2.2 RHODE ISLAND PARKING FACILITIES

2.2.1 Public

There are 8 public truck parking facilities in Rhode Island, the state welcome center and 7 highway turnout rest areas, with 61 parking spaces.

- **Welcome Center –** The center is located in southern Rhode Island directly off Interstate 95 in Richmond. There are 16 striped truck parking spaces. Parking is free and services include bathrooms, vending machines, travel information, and picnic tables. This information was obtained from the Rhode Island Department of Transportation (RIDOT), which reports that $1.5 million in capital improvements are programmed for the center in FY 2023-2025 for bathroom and HVAC renovations and electric vehicle charging stations.
- **Turnout Rest Areas** – There are 7 rest areas that operate as highway turnouts for truck parking. They provide 45 truck parking spaces: 34 unstriped and 11 striped. RIDOT assisted with identifying these locations and confirmed they are all—with the exception of the former Blackstone River State Park Visitors Center in Lincoln—unmaintained former weigh stations, except for snow removal. Parking is free and there are no amenities or services. The rest areas are located in the following:
  - Richmond on Interstate 95 with 8 unstriped spaces: 3 on the northbound side of the corridor and 5 on the southbound.
  - Lincoln on Interstate 295 with 19 spaces: 11 are striped at the former Blackstone River State Park Visitors Center and 8 are unstriped at the turnout just west of the center.
  - North Smithfield on State Route 146 with 10 unstriped spaces: 5 spaces on the northbound side of the corridor and 5 on the southbound.
  - Portsmouth on State Route 24 south bound with 8 unstriped spaces.

Because all but one have unstriped spaces, the size and number of spaces was estimated using the approximate length of a tractor-trailer (65 feet).

2.2.2 Private

There is one private truck parking facility in Rhode Island, the Travel Center of America – TA Center #253. As verified in the *All Stays* and *Truck Stop Report* online directories, the center is located in West Greenwich directly off of Interstate 95. It provides over three-quarters of the state's total truck parking spaces (180 striped), and a full complement of services and amenities including bathrooms, fuel, hot food, vehicle repair, a truck scale and wash, a driver's lounge, laundry, Wi-Fi, UPS/FedEx, an ATM, and a pet area. The facility offers the ability to reserve parking spaces for $22 per day, but only a small number of truck drivers utilize this service.

Several commercial establishments with large parking lots, such as Walmart and Shaw's, allow truckers to park on their property for emergency, overnight, or extended stays.

2.3 NEIGHBORING AREAS – MASSACHUSETTS

2.3.1 Public

Within 25 miles of the Rhode Island border, there are 17 public truck parking locations—1 welcome center, 6 service plazas, and 10 highway turnout rest areas—with 180 parking spaces:

- **Welcome Center** – The welcome center, with 10 striped truck parking spaces, is located in Mansfield off Interstate 95. At the time of this study the building that provides bathrooms and travel information is closed, but outside there are portable toilets and walking and rest areas.
- **Interstate Plazas** – Information obtained from the state website,[6] the *All Stays* and *Truck Stop Report* online directories, *Google Maps* aerials, and facility manager verifications identified 6 service plazas with 89 truck parking spaces:
  - Bridgewater Plazas on State Route 24 (north and south), with 33 spaces; 15 (46%) unstriped.
  - Charlton Plazas on Interstate 90 (east and west), with 14 unstriped spaces.
  - Natick Plaza on Interstate 90 east with 7 unstriped spaces.
  - Westborough Plaza on Interstate 90 west with 35 spaces; 8 (23%) unstriped.
- **Turnout Rest Areas** – Information for state rest areas was obtained from the state website,[7] on-site reconnaissance, and *Google Maps* aerials. The highway turnout rest areas in Massachusetts have no services or amenities with the exception of Uxbridge on State Route 146 southbound and the Mansfield Welcome Center on Interstate 95. Uxbridge has portable toilets, picnic tables, and lighting. Parking is free. There are 11 rest areas with 81 truck parking spaces:
  - Attleboro on Interstate 95 south with 12 unstriped spaces.
  - Foxborough on Interstate 95 north with 8 unstriped spaces.
  - Middleborough on Interstate 495 with 8 unstriped spaces; 4 north and 4 south.
  - Sturbridge on Interstate 84 with 8 unstriped spaces.
  - Swansea on Interstate 195 north with 10 unstriped spaces.
  - Taunton on State Route 140 with 7 unstriped spaces; 4 south and 3 north.
  - Uxbridge on State Route 146 with 28 spaces; 13 unstriped (south) and 15 striped (north). The south facility has outside portable toilets, lighting, and picnic tables.

2.3.2 Private

Private facility information was obtained from the *All Stays* and *Truck Stop Report* online directories, *Google Maps* aerials, and on-site manager verifications. There are 4 private truck stops in Massachusetts with 142 truck parking spaces:

[6] https://www.mass.gov/info-details/service-plaza-locations
[7] *https://gis.massdot.state.ma.us/restarealocator/*

- Flynn's Truck Stop in Shrewsbury on U.S. Route 20 with 15 unstriped spaces.
- Interstate Travel Plaza in Wrentham on Interstate 495 with 25 unstriped spaces.
- Mobil Station in Sturbridge off Interstate 84 with 8 unstriped spaces.
- Pilot Center #222 in Sturbridge on Interstate 84 with 94 striped spaces.

The Interstate Travel Plaza charges a parking reservation fee of $14 per day (free with fuel purchase). The Pilot Center #222 charges $18 per day to reserve a parking space in advance. Parking is free at the remaining locations. The Interstate Travel and Pilot centers offer a range of services and amenities including bathrooms, fuel, a convenient mart and restaurant, showers, Wi-Fi, a driver's lounge, UPS/FedEx, and pet areas.

2.4 NEIGHBORING AREAS – CONNECTICUT

2.4.1 Public

Information obtained from *Google Maps* aerials, discussions with facility managers, and the state web site[8] showed 3 truck parking locations in Connecticut within 25 miles of the Rhode Island border including a welcome center and 2 travel plazas, with a total of 62 parking spaces:

- **Travel Plazas** – Both public travel plazas are in West Willington off Interstate 84 with parking, food, fuel, and bathrooms. The eastbound plaza has 8 striped truck parking spaces, and the westbound plaza has 19. Parking is free.
- **Welcome Center** – The state welcome center is located in North Stonington off Interstate 95. The seasonally-staffed center has 35 striped truck parking spaces. There is an enclosed building with indoor bathrooms and travel information, and walk areas outside. Parking is free.

2.4.2 Private

Information obtained from the aforementioned online directories, state website, aerial maps, and on-site managers showed 4 private truck parking locations in Connecticut with 387 spaces:

- **Travel Plazas** – The private plazas are in Plainfield on opposite sides of Interstate 395. The southbound plaza has 12 parking spaces with 10 striped. The northbound plaza has 15 spaces with 12 striped. Both locations have bathrooms, fuel, food, travel information services, and walking areas outside. Parking is free.
- **TA Travel Center** – The center is located in Willington on Interstate 84. It has 240 striped truck parking spaces. Parking is free but there is a $20 per day charge to reserve in advance. There is a full complement of services including bathrooms, fuel, a convenient mart and restaurant, truck repair and a truck scale, showers, laundry, a driver's lounge, Wi-Fi, travel information, UPS/FedEx, an ATM, and a pet area.

[8] https://portal.ct.gov/DOT/PP_Intermodal/Documents/Connecticut-Rest-Areas

- **American Auto Stop - Pilot Center #882** – The center is located in North Stonington on Interstate 95 and has 120 striped truck parking spaces. The center offers bathrooms, fuel, hot food, Wi-Fi, a driver's lounge, an ATM, and laundry services. Parking is free.

3 NEEDS AND ISSUES

3.1 SURVEY ON PARKING AVAILABILITY

An industry-focused survey was conducted using the MetroQuest platform to collect feedback on truck parking issues and recommendations to address current and future truck parking needs. The detailed results of the survey are presented in Appendix C, which covers survey responses, mapping of areas of concern, scoring of potential strategies, and survey-respondent demographics.

The survey was distributed to the project's stakeholder list, which included local and national freight and logistics companies and other industry groups; it was also featured in industry publications such as *Transport Topics and Overdrive*, which respectively cater to fleet drivers and owner-operators. The survey was developed in consultation with the Rhode Island Freight Advisory Committee (FAC).

The survey was available online from March 24, 2022, to May 13, 2022. During this time, there was a total of 199 visits to the website and 37 participants completed the survey. A total of 827 data points and 7 comments were received.

The main findings of the survey were the following:

- There is a serious shortage of truck parking in the region according to survey respondents: 61% rated availability Poor or Very Poor; 61% reported difficulty finding parking in the area three or more times per month; 33% park outside of Rhode Island more than six times a month due to the lack of parking in the state. According to participants, the top three truck parking issues in the Rhode Island area are the lack of parking, parking limitations, and knowing whether parking is available.
- With the primary range of operations being regional or local, the drivers indicated a variety of needs for truck parking. Among respondents, there was a relatively even split of those needing to meet HOS requirements for meal/restroom breaks, staging for pickups or deliveries, and 10-hour or 30-minute breaks. Within a wide range of reasons for stopping, restrooms are the most sought-after amenity. Security and safety are next in priority.
- The vast majority (66%) of participants in the survey work for a company that hauls freight, dispatch, or are an owner-operator of a truck. Many are currently drivers, with 44% having driven for over 7 years. It is worth noting that 14% of participants are owner-operators, so their responses represent their entire company.
- The majority of survey respondents are familiar with the area, with 83% having regional or local operations. The majority (54%) indicate that they park more than once a week.

3.2 STAKEHOLDER INTERVIEWS AND WORKSHOPS

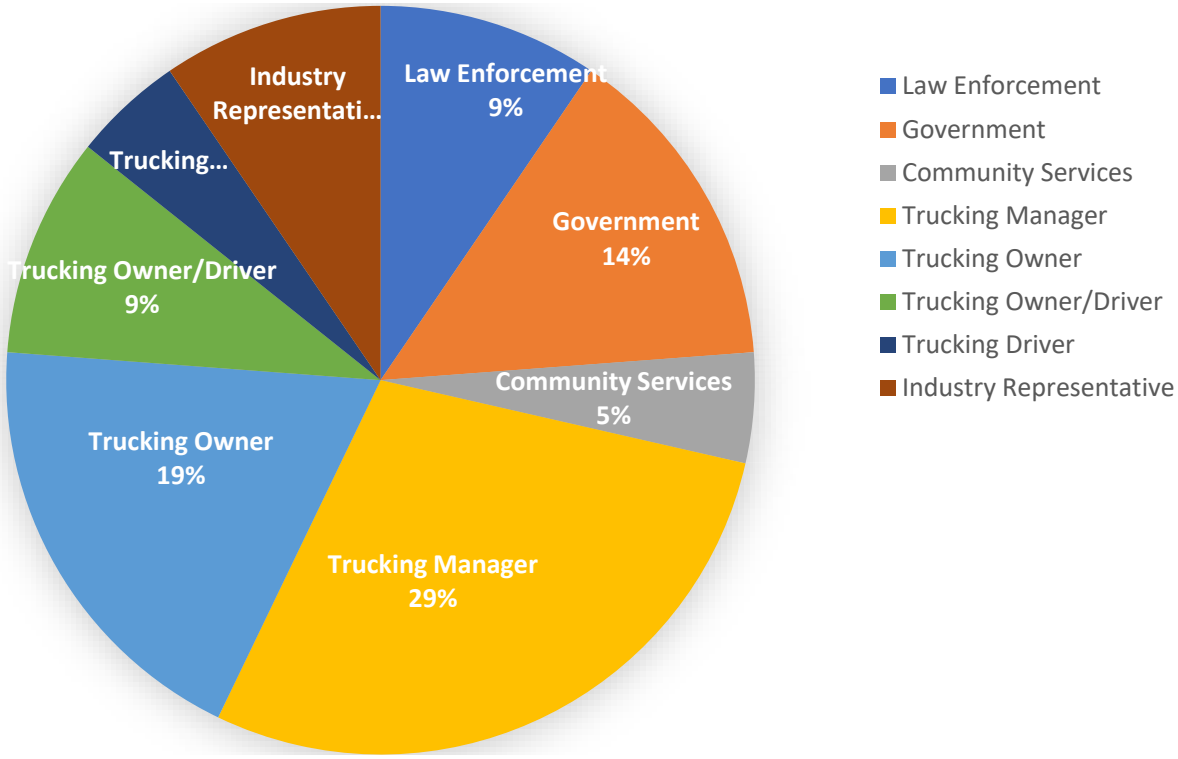
The purpose of stakeholder engagement is to solicit the opinions and perspectives of members of the Rhode Island trucking community and ascertain what they believe are the critical issues to be addressed in the update of the Rhode Island Freight and Goods Movement Plan.

Stakeholder interviews were concurrent with a comprehensive online trucking industry survey for the Freight and Goods Movement Plan update. Members of the Rhode Island Trucking Association (RITA), trucking operators, managers, drivers, and government officials with trucking policy knowledge were engaged. Initially five focus groups and four individual interviews were planned, but due to logistic issues three focus groups and six one-on-one interviews were conducted.

Virtual stakeholder sessions were conducted from March 23, 2022, to May 4, 2022. In advance of their session, each participant received a Zoom invitation that included a 16-question survey (see the Appendix C for the list of questions). The questions were drawn from the larger list of questions from the aforementioned online survey. To ensure accuracy, within four days after each session, participants received a draft summary of their interviews and were asked to approve or adjust their responses as necessary. The individual interviews, the focus group summaries, and the surveys are provided in Appendix D.

By design, the stakeholder composition was diverse and there were 21 participants as shown in Figure 4.

Figure 4: Composition of Stakeholders - Rhode Island Truck Parking Study.



3.2.1 Findings of One-on-One Interviews

The six one-on-one interviewees conveyed specialized experiences and knowledge. Some, for example, were not trucking company managers or drivers but skilled in commercial trucking law enforcement. Collectively the stakeholders support real-time parking information, utilization of large commercial lots for truck parking when permitted by owners, and a general increase in the number and location of truck parking spaces in the state.

3.2.2 Findings of Focus Groups

The three project focus groups represented trucking industry representatives, managers, owners, and drivers, as well as municipal planners, law enforcement, and government officials. Designed to foster and encourage discussion, each group generated variable responses based on different perspectives. Participants in the women's trucking group emphasized the need for safe, well-lit, and monitored parking sites with essential amenities such as clean bathrooms. The Providence group focused on parking associated with deliveries, roadway improvements to improve truck flow and staging, and the diminishing number of loading zones in the city. The Warwick group—anticipating the planned expansion of the state airport within the city—focused on strategies to improve future truck routings, staging, deliveries, and parking.

For detailed results of the interviews and focus groups see Appendix D.

3.3 PARKING DEMAND ANALYSIS

3.3.1 Demand Patterns

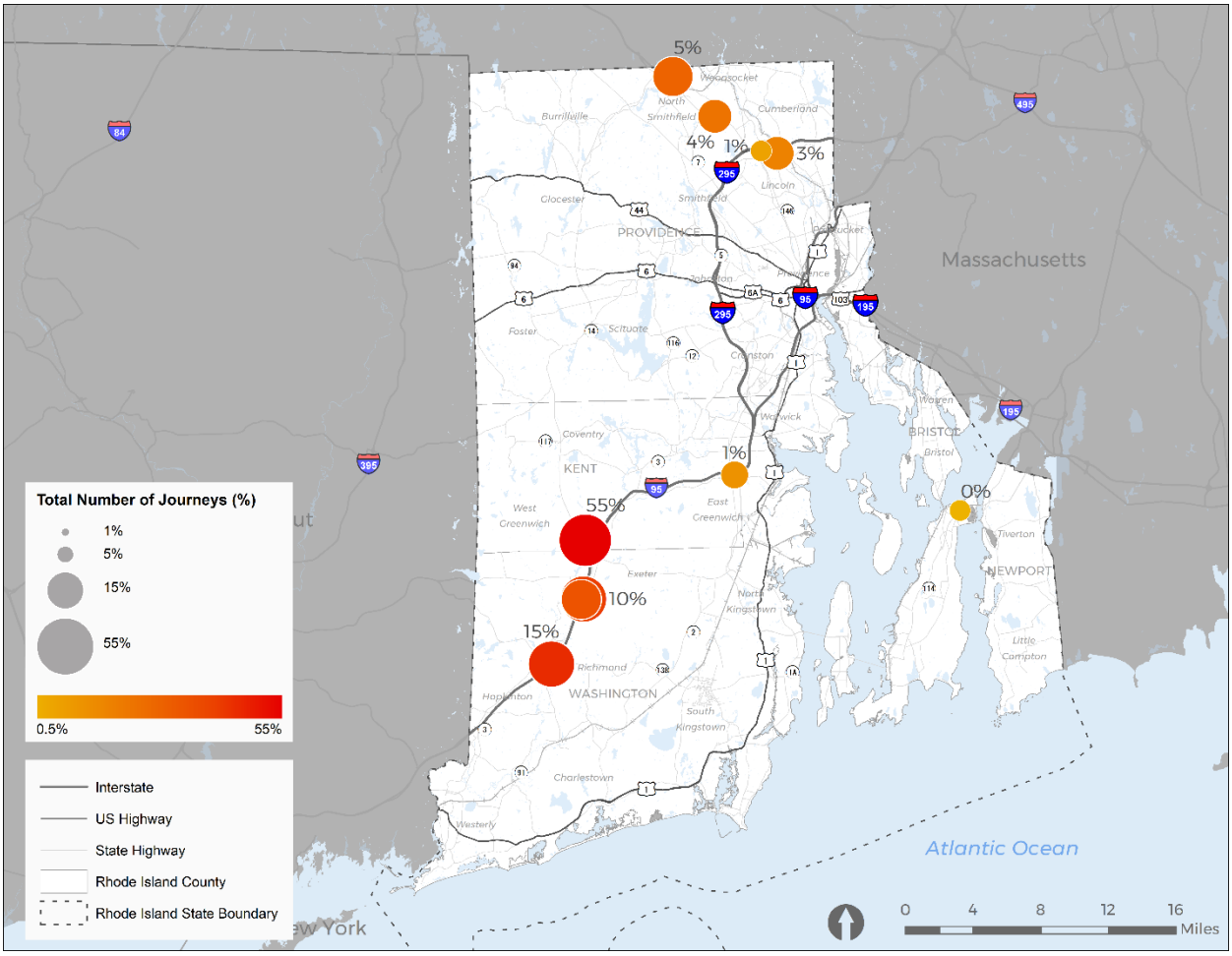
Geotab data about truck operations in Rhode Island from May 2021 to April 2022 was acquired to better understand truck parking demand in the state. The nine parking facilities identified in the inventory were georeferenced to isolate the trucking activity in the Geotab dataset to these facilities. This provides information about who is parking at these facilities and the function the facilities play in trucking operations in the state. The facilities identified in the inventory in neighboring areas were also georeferenced and analyzed using Geotab data.

The largest parking facility in the state is the TA West Greenwich facility on I-95, which accounts for 72% of the designated truck parking spaces in the state. There are other significant parking facilities in Rhode Island and neighboring areas, but the TA West Greenwich is the largest by a wide margin. Figure 5 shows the demand for parking at all facilities in Rhode Island, based on expanded Geotab data. And while Geotab represents a sample, expansion factors were calculated (by Geotab) using roadway volumes in Rhode Island. Expansion factors ranged from 5 to 7.5, indicating that the Geotab data accounts for 13% to 20% of trucking activity in the state. Two main findings can be drawn from this map:

- According to Geotab, 54% of truck parking at designated facilities takes place at the TA West Greenwich facility. The second-most used facility is the Welcome Center in Richmond, which accounts for 14.6% of usage. The nearby turnout in Richmond accounts for 10.2% of trucking at designated facilities. It is clear that this particular corridor of I-95 that is home to these facilities is the main hotspot for parking activity in the state.

- The second truck parking corridor in the state is the connection between I-295 and RI-146, which connects Providence to Worcester, Springfield, and further inland.

Figure 5: Distribution of Demand at Truck Parking Facilities in and around Rhode Island



Source: Geotab Data

Figure 6 shows the type of truck parking at these facilities, to better understand the demand being served. The size of the dots represents the number of trucks that are parking at facilities, and the color represents the percentage of heavy-duty vehicles parking at these facilities. Note that the demand estimate for facilities outside Rhode Island is partial, as the Geotab dataset purchased only includes trucks that traveled on Rhode Island roads for at least a portion of the trip, and therefore misses trucks that park at facilities outside Rhode Island that did not travel in Rhode Island. Overall, 83% of trucks parking at these facilities are heavy-duty (gross vehicle weight rating of 26,000 pounds or higher), with 17% being medium-duty (gross vehicle weight rating between 10,000 and 26,000 pounds).

The following findings can be drawn from Figure 6:

- The overall share of non-heavy-duty trucks parking at facilities in Rhode Island is relatively high, which is expected given the degree of urbanization of the state. Medium-duty trucks operate more

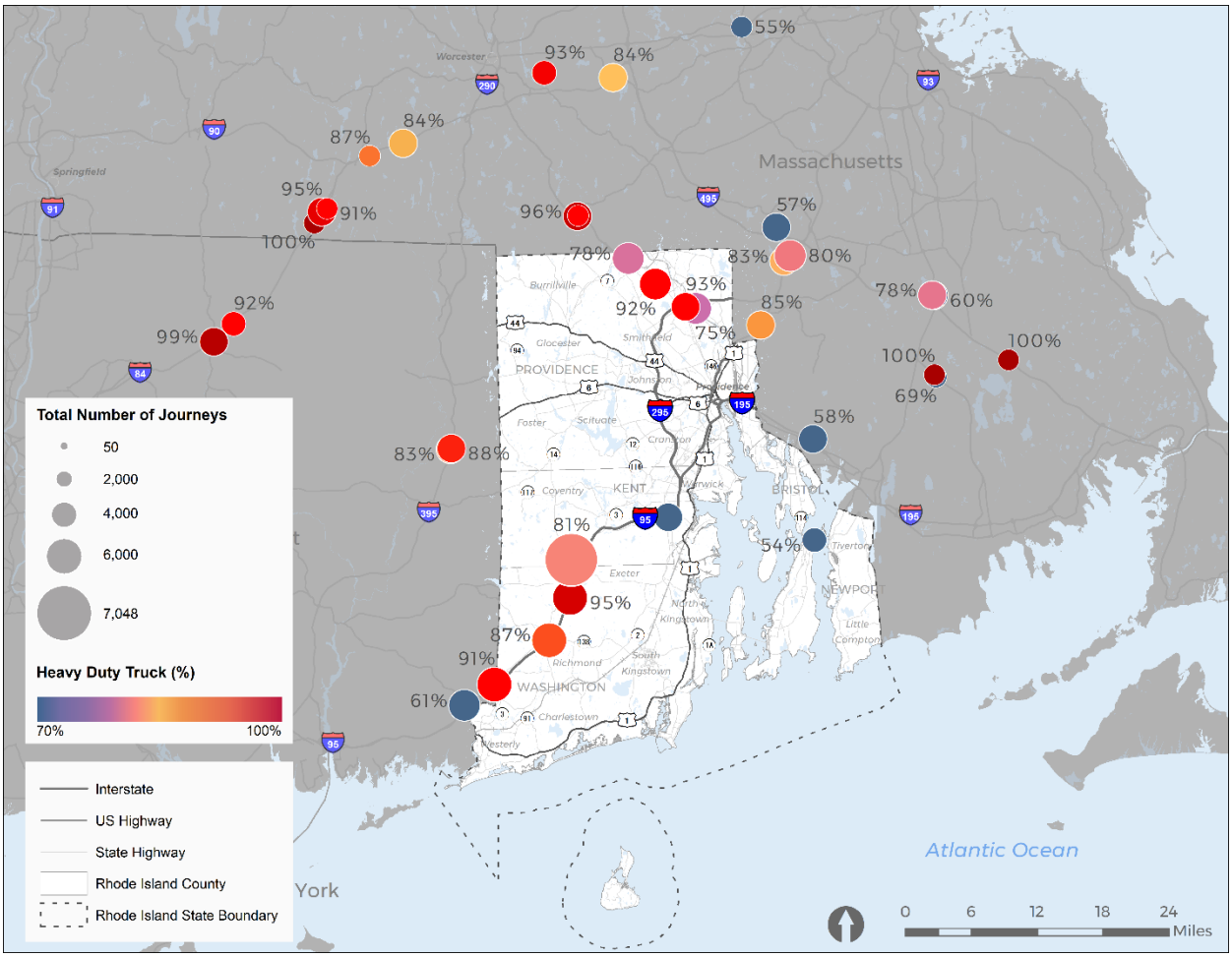
frequently in urbanized areas, primarily for making deliveries at commercial establishments or delivering packages to homes; although medium-duty trucks delivering to homes are unlikely to park at truck stops or public facilities because they operate out of terminals and operate planned routes. Distinguishing between heavy- and medium-duty parking demand is useful because they require different geometrics and accommodations.

- The percentage of non-heavy trucks is highest near Providence, where these types of trucks are more common, such as at the Lincoln Turnout Eastbound. Within the state, the medium-duty share is highest at the Portsmouth Turnout.
- The percentage of medium-duty trucks is relatively high at the TA West Greenwich facility, which could present an opportunity to free up capacity for long-haul truck parking if medium-duty truck parking activity can be relocated closer to urban markets served. Medium-duty trucks are most likely to use facilities for short periods during daytime, primarily to refuel and take short breaks. The demand for heavy-duty trucks peaks at different times of the day and has different characteristics, as described in the following sections.

As described in Section 1.2, one of the key distinctions in truck parking demand is whether trucks are parking for overnight rest on long-haul shipments, or for a short time to rest or stage to serve local demand. Figure 7 shows the average time that trucks are parking at facilities. As expected, truck drivers park the longest in the TA West Greenwich facility, confirming the previous finding that this facility serves primarily long-haul truck drivers parking primarily for overnight rest. This explains why this facility is operating at capacity even though it accounts for a smaller share of total designated parking demand (54%) relative to the percentage of parking spaces available in the state (72%). Trucks parking here stop for much longer periods than at other facilities, thus increasing occupancy. In Rhode Island, truck drivers also park for long rest periods at the turnout in Lincoln on I-295.

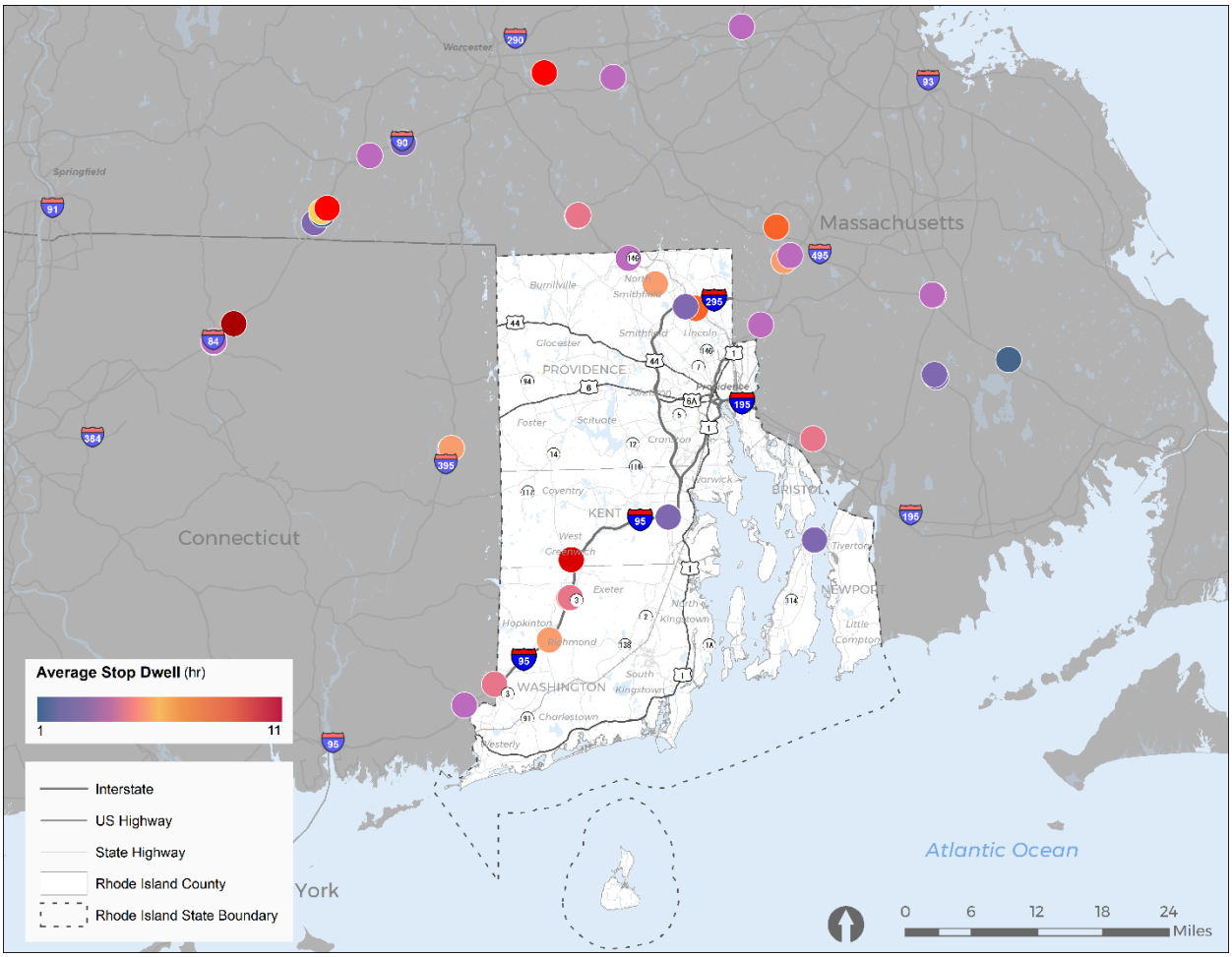
Trucks park for the longest along the I-95 corridor, which is used extensively by long-haul trucking. The other long-haul trucking corridor in the region is I-84/I-90, which is also characterized by relatively long parking durations. The facility in Rhode Island with the shortest average stop duration is the Westbound Turnout at Lincoln. Interestingly, the Eastbound Turnout has relatively high parking durations, likely reflecting the different composition of trucking markets served.

Figure 6: Percentage of Heavy-Duty Truck Parking



Source: Geotab Data

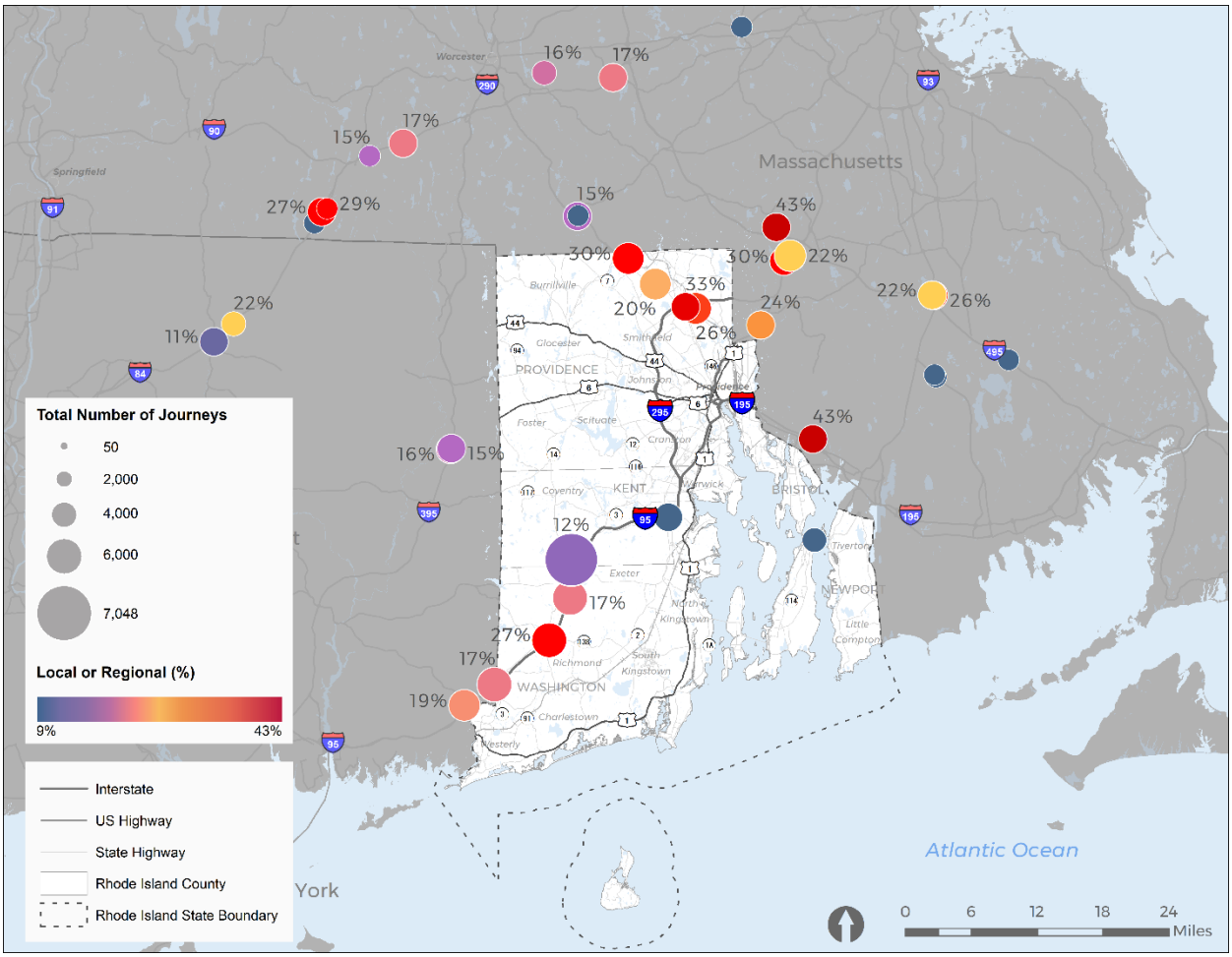
Figure 7: Average Stop Time



Source: Geotab data

The Geotab data uses a proprietary process to classify trucks by the type of service they provide, based on the characteristics of the vehicle and how it is operated. Figure 8 shows the percentage of truck parking activity by trucks that perform a local or regional delivery service. The parking needs of local and regional trucking are unique, as these trucks typically return to homebase overnight and the driver rests at home, as described above. This type of trucking uses parking facilities during daytime, in between deliveries or if they are likely to arrive early at a destination and are waiting for their delivery appointment. Most of this parking occurs during daytime when parking facilities are least busy. As expected, Figure 8 shows how local and regional delivery trucking is most common in and around Providence, the largest city in the state.

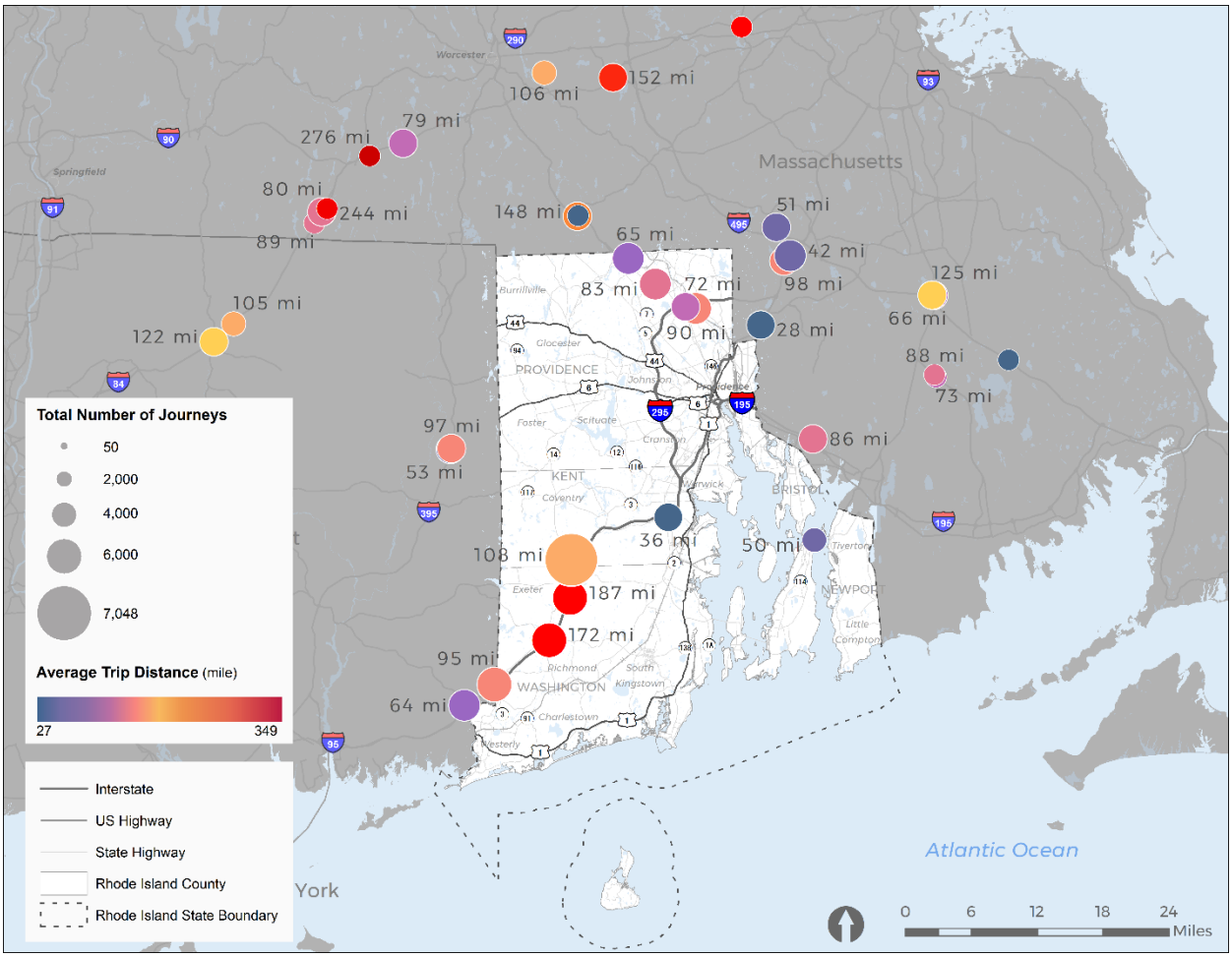
Figure 8: Percentage of Demand Local or Regional Delivery (Not Long Haul)



Source: Geotab Data

Figure 9 shows the average distance traveled by trucks before parking at facilities. Generally, trip distances are longer for trucks on I-84, which is consistent with the previous finding that this is one of the main long-haul corridors in the region. West Willington, CT Service Plaza, Sturbridge MA Mobile Truck Stop, and Charlton MA Service Plaza each have average trip distances over 250 miles. On I-95 through Rhode Island, trip distances are considerably shorter, likely reflecting a higher share of trips starting in Providence. In particular, TA West Greenwich has a relatively short average trip distance for a facility that serves primarily overnight long-haul demand.

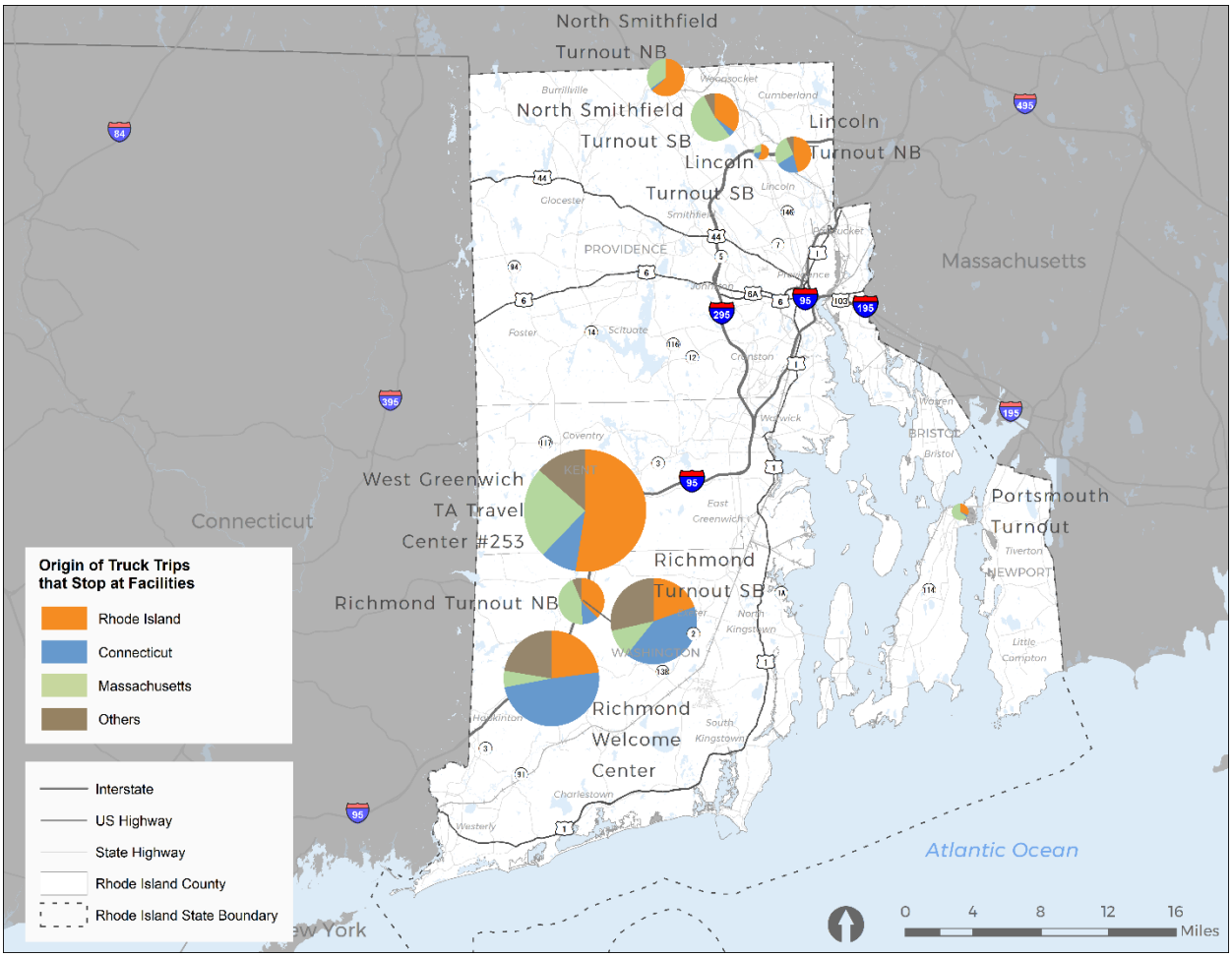
Figure 9: Average Trip Distance



Source: Geotab Data

Figure 10, which shows the state origin of trips by facility, illuminates the type-of-truck parking demand. Approximately half of the trucks parking at TA West Greenwich come from Rhode Island, likely the Providence area. These represent trucks that load cargo in the afternoon near Providence and are resting before departing early along their route, and trucks that dropped off cargo in Providence and are waiting overnight before being assigned the next load. Truck drivers from Connecticut heading to Providence and further north prefer to use the Richmond Welcome Center.

Figure 10: Origin of Trips



Source: Geotab Data

3.3.2 Availability of Spaces

By monitoring a truck parking app, Park My Truck, it was possible to determine that several of the largest truck parking facilities in the region routinely run out of spaces during the week. Park My Truck was monitored for two weeks, from June 6 to June 17, 2022, noting the reported availability at four-hour intervals throughout the daytime. While a small proportion of all commercial parking facilities report availability on Park My Truck, it happens to include the TA West Greenwich facility, which accounts for the vast majority of all truck parking spaces in Rhode Island. It also includes the TA facility in Willington and CT and Pilot Center #222 in Massachusetts, although the latter provided fewer regular updates.

As long-haul truck drivers stop to rest for the evening at these three facilities, the availability of parking spaces decreases steadily—from 4 p.m. all the way until midnight, when it reaches the lowest point—and the number of available spaces is lowest from midnight to 2 a.m. The TA West Greenwich facility in Rhode Island and the TA facility in Willington, Connecticut both appear to run out of parking spaces at midnight. Some weekdays are reported to have a few available spaces overnight, but more commonly the facility reaches capacity at this time. And while the Pilot Center #222 facility in Massachusetts has

less frequent reporting, on some days they report availability running just as low as the other two facilities.

This evidence suggests that truck drivers are currently facing difficulties finding parking spaces in Rhode Island. Long-haul truckers have the hardest time finding spaces, as they often need to park during peak hours of the day (afternoon and overnight). Rhode Island is located on a major national freight corridor, leading to a substantial volume of through-trucks, increasing parking demand during peak hours. However, as Rhode Island is a relatively small state on a prominent interstate corridor, it cannot address this challenge alone and coordination with Massachusetts and Connecticut is required. Studies in both states have determined that the region has a significant deficit of truck parking capacity. Trucker Path, another widely used truck parking app, recently ranked Massachusetts nationally as having the least availability at noon, and in the top five for the least availability at midnight.[9] A recent study by the Boston Region Metropolitan Planning Organization (MPO) confirmed these findings,[10] and Connecticut is conducting a truck parking survey as part of its Statewide Freight Plan.

3.3.3 Highway Undesignated Parking

An analysis was conducted with Geotab data to identify the segments of the highway network that see frequent undesignated parking. While undesignated truck parking can happen in many locations, such as highway shoulders, ramps, vacant lots, etc., not all these locations are equally unsafe. Undesignated parking no or along the highway right-of-way, particularly on shoulders, is generally more dangerous, because the speed differentials with through traffic are larger, and because shoulders play an important role in the operations of the roadway. Moreover, undesignated parking along highways is generally simpler to identify because there are fewer designated locations where trucks could be legitimately parked. In contrast, finding undesignated parking off the highway, in urban or rural areas, is much more difficult because there is significantly more parking activity, and there is no robust method for identifying which of this parking activity occurs in undesignated locations, let alone locations that are unsafe. Truck drivers often park in many locations that are not technically designed to accommodate trucks, but whether this parking constitutes a safety risk is a judgement that needs to be made on a case by case basis.

A new tool from Geotab was used to aggregate parking events on accessed controlled highways in the Rhode Island. Only parking events lasting more than 15 minutes were considered. This analysis did not identify any location on the access-controlled highways where trucks are frequently parking on shoulders on the mainline on ramps. This result was confirmed by law enforcement stakeholders that were consulted as part of this study, as they indicated that from their experience no single location on highways receives frequent undesignated truck parking.

This finding can be explained by the lack of extra wide shoulders or vacant lot next to the right-of-way, which attract undesignated parking. The amount of undesignated parking along highways is determined

[9] https://www.worktruckonline.com/10156435/research-best-and-worst-times-for-truck-parking

[10] https://www.fleetowner.com/news/regulations/article/21702519/finding-a-spot-for-truck-parking-can-be-a-battle-all-its-own

in part by the availability of locations where drivers are comfortable parking, that seem safe. As Rhode Island is a highly urbanized state, there are few of these locations on state highways. Additionally, the presence of turnouts and rest areas along the state highways provides drivers with options incase they need to stop.

While no major locations of unsafe parking were found along highways, there was one minor location that saw significant truck parking activity, and was not a designated parking facility. A pull-out areas on I-295 eastbound past the ST-146 interchange, just opposed to the Lincoln turnout westbound, showed moderate levels of truck parking. However, truck parking at this location was not judged to generate safety risks.

Figure 11: Minor Location of Undesignated Truck Parking on I-295

3.4 FORECASTS

Econometric forecasts from Transearch were used to estimate how much truck volumes are expected to increase in Rhode Island out to 2050. These forecasts are based on the freight volumes that would be needed to support the likely economy in 2050, accounting for changes in demographics and the structure of the economy. These forecasts assume that the infrastructure continues to operate at the same level of service as it does currently, implicitly assuming that investments in capacity keep up with the growth in demand. Therefore, the econometric forecasts from Transearch represent an optimistic outlook on freight growth, given that investments in capacity improvements are unlikely to outpace demand growth. With this context in mind, Figure 12 shows the percentage increase in volumes expected on major roadways.

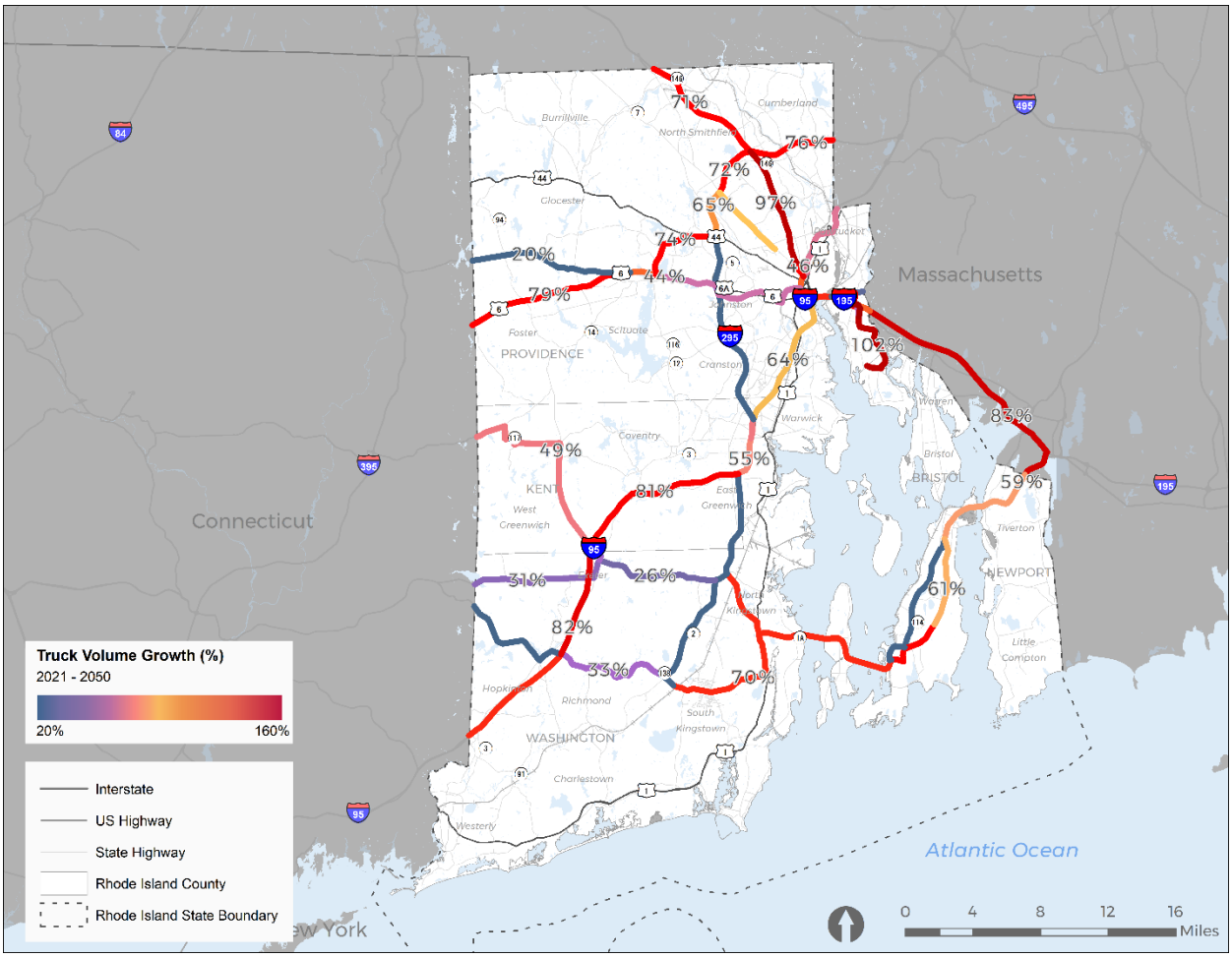
Truck volumes are expected to almost double by 2050 and result in a proportionally high increase in truck parking demand. Growth is expected to be the fastest on important highways that connect Rhode Island to Massachusetts and Connecticut. This growth is expected to increase the need for truck parking spaces:

- I-95 corridor volumes are expected to increase by up to 81%, resulting in a need for up to 165 additional parking spaces.
- I-295 corridor volumes are expected to increase by up to 72%, resulting in a need for up to 19 additional parking spaces.

- RT-146 corridor volumes are expected to increase by up to 97%, resulting in a need for an additional 10 parking spaces.

Truck volume increases at these corridors and other freight routes in the state are likely to increase truck parking demand by approximately 200 spaces by 2050. This assumes that the parameters influencing truck parking decisions do not change radically by 2050. Truck drivers are likely to still need to park, primarily overnight, for long-haul transportation. However, developments in connected and autonomous technologies could lead to changes in rest patterns and related regulations. It is more likely that urban truck parking needs for delivery or staging will evolve more rapidly over the coming decades, particularly because of e-commerce growth and related changes. Increased pressure on on-time performance could lead to longer and more frequent staging parking, exacerbating the challenges discussed in Section 1.1.

Figure 12: Forecasted Growth in Truck Volumes 2021 to 2050



Source: 2021 Transearch

3.5 SUMMARY OF TRUCK PARKING NEEDS

The stakeholder outreach and analysis of truck telematics data point to the following truck parking needs in Rhode Island:

- **Parking facilities in Rhode Island are at capacity, particularly for overnight long-haul parking.** Stakeholder outreach and data analysis indicate a clear need for additional parking spaces in Rhode Island, as it is difficult for drivers to find a space during peak hours. In the survey, 61% rated parking availability in the state as Poor or Very Poor, and the top parking issue was the general lack of parking availability. On a typical weekday, the TA West Greenwich facility runs out of capacity during the evening or at night. Other facilities on the I-95 corridor, such as the Richmond Welcome Center and Turnouts also have high levels of demand. While trucks stopping on this corridor primarily serve businesses in the Providence area, the proportion of interstate trucks is also high to/from Boston or further north. The main competing long-haul corridor in the region, I-90/I-84, also has limited parking availability during peak hours, as reflected in the demand data and the results of parking studies in neighboring jurisdictions. Parking availability is limited in Rhode Island and other Northeast states because they have high degrees of urbanization, making it costly to build expansive parking lots that can accommodate many trucks. Additionally, truck stops allow trucks to park for free based on fueling and other services provided, often through agreements with their companies, and therefore there is limited wherewithal to finance parking.
- **Addressing shortfalls for overnight parking requires regional coordination.** Because truck parking is a regional issue—where the decisions and investments made in neighboring states have a significant impact on truck parking needs in Rhode Island—closer coordination with those states on parking issues is needed, particularly given the high volume of interstate trucking.
- **Rhode Island faces significant urban truck parking/staging challenges related to commercial establishment and household deliveries.** Information gathered from stakeholder outreach, particularly through the focus groups and interviews, make it clear that truck parking in urban areas is generating conflicts with local residents and communities. The need for drivers to stage before making their deliveries is leading to both undesirable-location and illegal parking. As drivers park in locations that were not designed to accommodate their trucks, they cause safety issues and bring nuisance and disturbance to nearby communities. At the same time, truck drivers find it challenging (if not impossible) to find adequate parking spaces as they make deliveries in high-density urban areas. This affects both larger trucks making deliveries to commercial establishments and smaller trucks delivering packages or goods to households. Given that Rhode Island is one of the most urbanized states, these issues and conflicts are prominent.
- **Analysis of truck telematics data did not find any major locations of unsafe undesignated truck parking along access-controlled highways.** Undesignated truck parking occurs primarily in urban areas, for staging or making deliveries, however along highway shoulders or vacant lots adjacent to the right-of-way were not found to be used by trucks for parking. This is notable as this is the type of undesignated parking that is potentially the most unsafe.

- **Lack of information about parking availability.** One of the main challenges often brought up by freight stakeholders is the inability to know in real-time where there are parking spaces available. There are currently two ways that truck drivers ascertain availability information in Rhode Island, and both of them have significant drawbacks:
  - The **Park My Truck** app reports the availability of spaces at parking facilities, but it only covers three of the facilities in the region and availability is reported infrequently.
  - The **Trucker Park** app reports the availability of more facilities, but only in broad categories such as “some availability” and ”full”—it is crowdsourced and not entirely reliable.

  Encouraging more use of these apps could help drivers find available spaces and avoid parking in undesignated locations. Other technology solutions are presented in the next section to improve information about truck parking availability. This will be particularly helpful for newer drivers who are unfamiliar with the region.
- **Truck volumes are expected to almost double in Rhode Island by 2050, requiring a significant expansion in truck parking capacity.** The main highway corridors in the state are expected to see truck volumes increase from 70% to 97%, assuming that highway infrastructure capacity keeps up with the freight transportation likely demanded by the economy in 2050. If this growth materializes, truck parking demand will increase by a similar proportion (potentially more) if trends around delivery windows and on-time performance continue. And while some technological developments, such as autonomous technology, could decrease the need for parking, their deployment in the freight sector is not likely in the foreseeable future and changes to regulations would be uncertain. By assuming that truck parking demand increases proportionally with truck volumes, it is forecasted that Rhode Island will need approximately 200 additional truck parking spaces built by 2050 to maintain existing availability and system performance.

4 SOLUTIONS AND RECOMMENDATIONS

4.1 ROLE OF THE STATE

In general, the primary role of the state is to support the safe and efficient use of the highway system and the economic competitiveness of the state. The 2022 Rhode Island Freight and Goods Movement Plan established several specific goals in these areas, seeking operational efficiencies in the freight transportation system, promoting economic growth and competitiveness, and minimizing harmful impacts to communities and other travelers. Truck parking can play a key role in helping achieve these goals, particularly those related to operational efficiency, which includes improving safety and security, and improving system capacity, efficiency, and resiliency. Ensuring there is adequate availability of truck parking spaces allows drivers to comply with HOS regulations and get better rest, which translates into safer drivers and reduced unsafe undesignated parking. Being able to find a spot when convenient also reduces the detours required to find a space, decreasing trucking costs and potentially allowing drivers to be more productive with more revenue-generating drive time per day. These impacts not only benefit motor carriers and the broader transportation sector, but also other vehicles on the roads and the community at large: directly via reduced congestion and other traffic improvements, and indirectly via induced air quality benefits.

The private sector plays a large role in the availability of truck parking spaces in the region, supplying more than three-quarters of all spaces in the state. Ideally, private companies that own and operate truck stops should invest in capacity expansions to meet the demands of truck drivers. However, this is challenging in a region as urbanized as Rhode Island, where land along interstate corridors is expensive. This challenge, combined with the reality that the vast majority of truck drivers are not willing or able to pay for parking spaces, leads to an undersupply of truck parking capacity relative to what is needed by the freight sector; in turn leading to safety risks, inefficiencies, and externalities that have broad societal impacts, requiring greater involvement from state agencies. Moreover, current forecasts show Rhode Island truck activity nearly doubling out to 2050, which will increase truck parking demand by a rapid rate and further strain the private sector's ability to keep up with demand. Supporting the private sector, state agencies can play a role in anticipating and planning for this growth to minimize the strain on the system once it materializes.

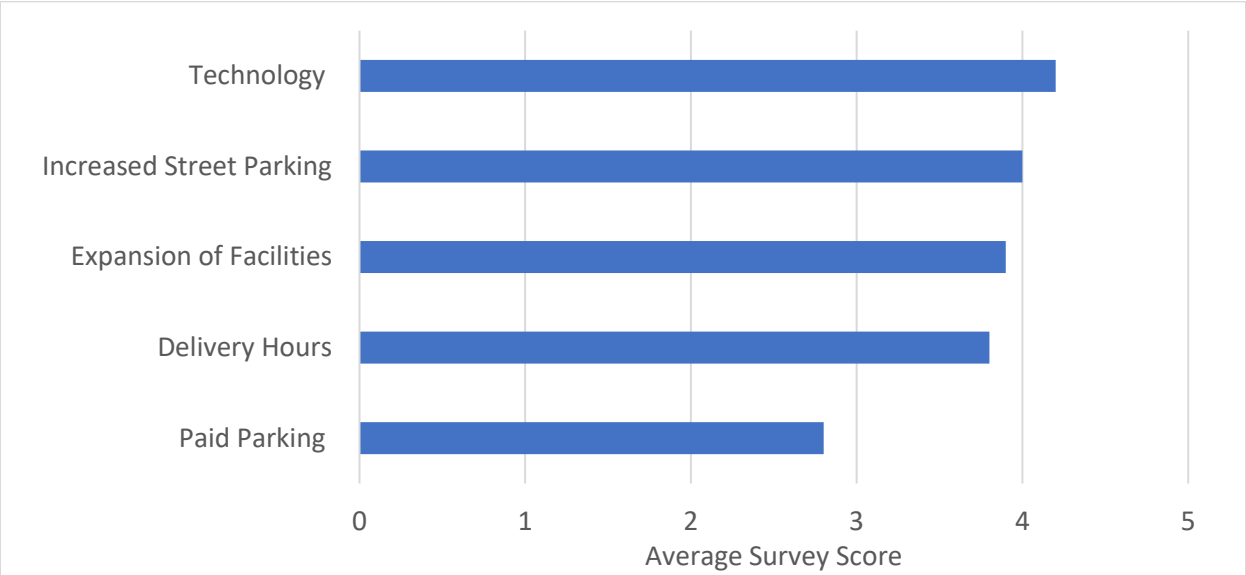
Combining input from RIDOA stakeholders via FAC meetings and interviews with a survey of truck drivers in Rhode Island, two major needs were identified regarding truck parking in Rhode Island:

- Lack of parking availability on interstates and freeways for overnight rest.
- Challenges in parking in urban areas for staging and delivery.

The following sections describe solutions for addressing these needs and provide an overview of available funding sources. Solutions were identified by matching Rhode Island's specific needs with a review of best practices. The solutions focused on those most preferred by stakeholders. Survey participants showed high levels of support for most strategies, but "Technology" solutions, which

primarily include ways of improving information about the availability of parking spaces, were the most popular. These strategies were followed by "Increased Street Parking" and "Expansion of Facilities," which also scored highly (see Figure 13).

Figure 13: Survey Scoring of Solutions Strategies



4.2 SOLUTIONS TO ADDRESS OVERNIGHT PARKING SHORTAGE

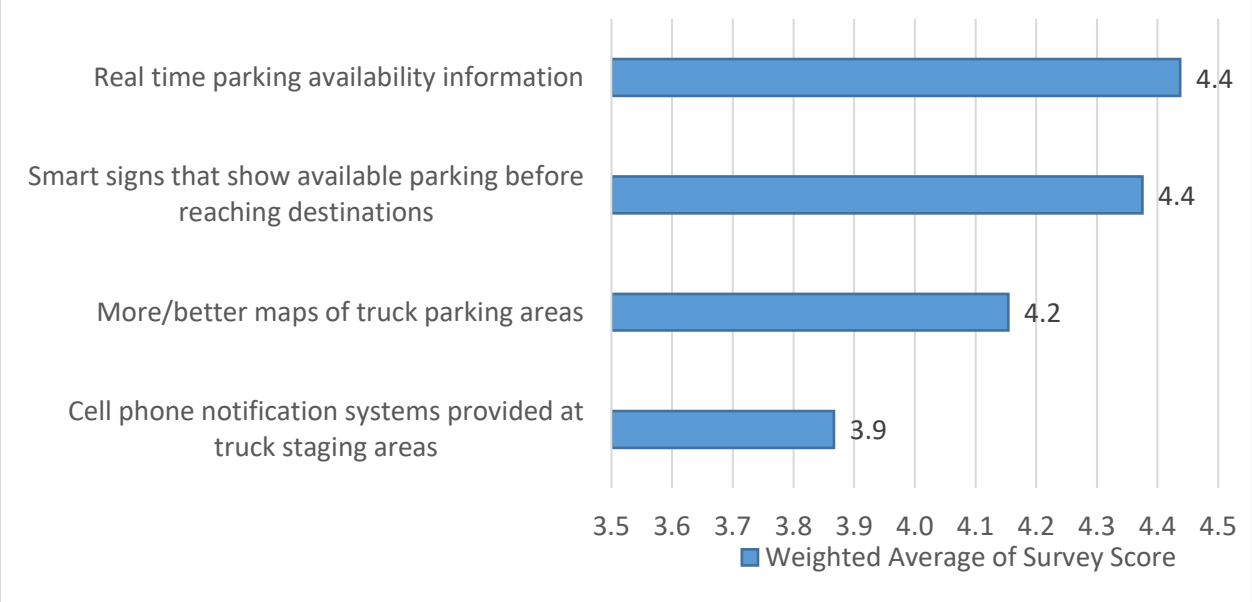
4.2.1 Truck Parking Information Strategies

Truck drivers need to make decisions about when and where to park, frequently under the pressure of meeting delivery schedules while adhering to HOS regulations. These decisions are often made on the road and with limited information about which parking facilities have available spaces. Newer drivers, or interstate drivers that do not frequently operate in Rhode Island, can struggle to even identify which parking facilities are convenient on the route and what amenities are offered. Even experienced drivers are affected by the lack of information about parking availability, particularly if they have unexpected events that impact their trip, such as severe adverse weather.

There are numerous websites, listings, and smartphone parking apps that provide information about truck parking facilities, but they often have significant gaps and routinely contradict each other. Some parking apps estimate the availability of facilities, but they have limitations. As mentioned previously, the Trucker Path app relies on crowdsourced reports from other drivers, which are often inaccurate and the availability is only reported in broad categories (e.g., full, almost full, not full). Facilities are often reported as full when there are a few spaces available, and vice versa. The Park My Truck app reports the number of spaces available as reported by the operators of the truck stops, but has limited coverage (only includes a limited number of private facilities and no public facilities) and some facilities do not update availability reliably.

Given these challenges, several technologies have been considered to improve truck parking information. The survey conducted as part of this study found that real-time parking availability and smart signs were the most preferred (see Figure 14). Static solutions such as better maps of available truck stops/rest areas in the region were also well-received by respondents. Cell phone notification systems did not score highly, but this may indicate individual truck driver preferences.

Figure 14: Scoring of Technology Solutions



Given the preference of stakeholders, and the needs identified in this study, it is recommended that Rhode Island support the development of a regional **real-time parking availability system**, covering both truck stops and rest areas. The implementation of this system should be regional—including Massachusetts and Connecticut at a minimum—because of their interconnection with Rhode Island and the prominence of interstate corridors. The Northeast is also an ideal location for a regional real-time parking availability system because parking availability is limited due to the degree of urbanization; truck drivers in this region will benefit the most from knowing where spots are available. The real-time parking availability system could report information to a website or parking application, for ease of use, and also report availability to smart signs along key highway corridors (also a high-scoring strategy from the survey). Parking availability information could also be made available to third-party applications.

Key truck stops and rest areas that are recommended to be covered by planned parking availability systems include the TA Travel Center #253 at West Greenwich and the Richmond Welcome Center on I-95 and TA Travel Center, Pilot Center #222, West Willington Service Plaza (in Connecticut), Mobil Truck Stop, and Flynn Truck Stop on the I-94/I-90 corridor. These stops recorded the highest number of parking instances recorded in the Geotab telematics data presented in Section 3.3.

RIDOA should take the following actions to accelerate the implementation of a real-time parking availability system:

- Place a high importance on interoperability with other states when implementing improvements that will disseminate real-time information about parking availability.
- Encourage other private truck stops in the state to list parking availability either on private apps such as Park My Truck and/or via participation in a regional parking availability system implemented by public agencies.
- Support the development of a coalition with neighboring states in order to address truck parking issues, with an emphasis on improving coordination and implementation of technological strategies.
- Develop materials to educate the public and elected officials about the importance of truck parking information systems and to describe safety and efficiency benefits.

The Data and Technology working group of the National Coalition on Truck Parking (NCTP) developed several products and recommendations that are helpful to Rhode Island in the leveraging of technologies to improve truck parking information:

- **Truck Parking App Survey[11]:** This document provided a summary of a truck driver survey American Transportation Research Institute (ATRI) conducted at the Mid America Trucking Show in Louisville, Kentucky to determine truck driver opinions on parking apps. The survey found that mapping features and driver input on parking spot availability are the two most important features. Trucker Path and myPilot are the two most popular apps used by truckers to find available truck parking.
- **Best Practices for Truck Parking Availability Detection and Information Dissemination by States:**[12] This document described the implementation of the Truck Parking Information Management System (TPIMS) by states that are part of the Mid America Association of State Transportation Officials (MAASTO). The goal of a TPIMS is to reduce time searching for truck parking by monitoring parking space availability and utilization at truck stops and providing real-time communication to drivers. Examples of TPIMS implementations included:
  - Entry/exit sensors used by Indiana DOT and Kentucky.
  - In-pavement and entrance/exit ramp sensors used by Iowa DOT.
  - Computer vision system used by Kansas DOT that employs cameras at 18 rest areas along I-70 to automatically identify available spaces.
  - The use of stereoscopic video analytics by Minnesota DOT.
  - Other similar systems used by states such as California, Colorado, and Florida.

The implementation of a real-time parking availability system could take time to materialize, therefore Rhode Island should also consider other approaches for improving information of truck parking facilities

[11] https://ops.fhwa.dot.gov/FREIGHT/infrastructure/truck_parking/workinggroups/technology_data/product/survey_results.pdf

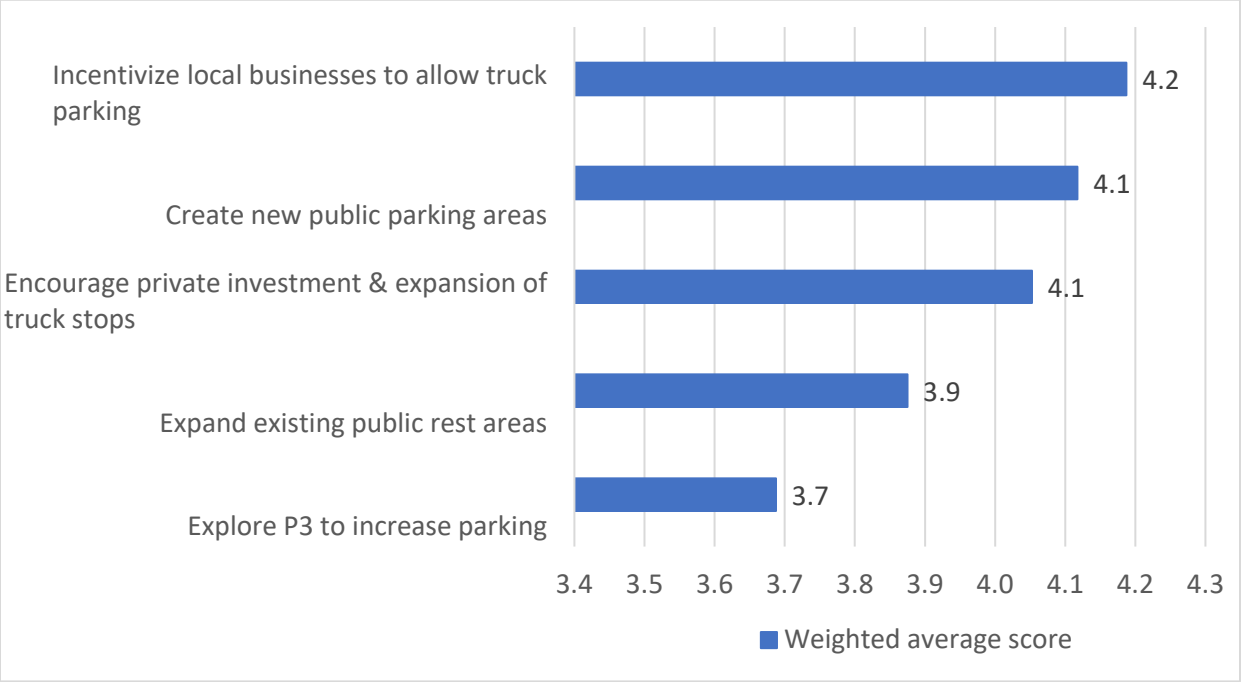
[12] National Coalition on Truck Parking: Technology and Data Working Group - Truck Parking Availability Detection and Information Dissemination, Federal Highway Administration. https://ops.fhwa.dot.gov/freight/infrastructure/truck_parking/workinggroups/technology_data/product/best_practices.htm

in the state. This could include making more and better maps available to truck drivers so that less-experienced drivers are aware of facilities in and around Rhode Island. At the same time, current signage should be reviewed to assess if enough information is being provided to truck drivers entering the state.

4.2.2 Parking Capacity Expansion

Improving information about truck parking availability would help redistribute demand and increase the utilization of existing assets, however this strategy alone would not fully address the needs of truck drivers as most of the parking facilities in and around Rhode Island are presently at capacity during peak hours of the day. Moreover, parking demand is expected to almost double by 2050, which necessitates the expansion of packing capacity in the state. Many approaches could accomplish this. The survey conducted by this study found that the most preferred capacity expansion strategy involved incentivizing local businesses to allow more truck parking (see Figure 15). Recommendations for how to implement this strategy are provided in Section 4.3, which focuses on urban truck parking challenges. Survey respondents also highly rated both the creation of new public and private parking facilities and the expansion of existing ones. The remainder of this section focuses on how to implement these strategies. While the use of P3 to increase parking ranked lowest, this could have resulted from a lack of awareness of P3 opportunities. As described in Section 4.4.2, there are several P3 opportunities that could facilitate new parking facilities or the expansion of existing ones.

Figure 15 : Scoring of Capacity Expansion Strategies



The recommended strategies to increase parking capacity can be found in Table 2. These strategies include both capacity expansion at public facilities and at private facilities through partnerships. Expansions should focus on the key interstate corridors, namely I-95 within Rhode Island. Capacity

expansion outside Rhode Island along the I-90/I-84 corridor would also be beneficial. Other freight corridors should also be considered, such as ST-146.

Table 2: Strategies to Increase Truck Parking Capacity

STRATEGY TYPE	RECOMMENDATION
Public capacity expansion	▪ Open public rest areas that have been closed. ▪ Develop design standards for truck stops and identify alternate truck parking locations such as roadside pullouts and brake check areas. ▪ Explore potential of vacant state-owned urban land and weigh stations for truck parking and rest areas.
Expansion via private partnerships	▪ Investigate expanding parking via P3s by utilizing excess right-of-way owned by state near private facilities and entering cost-sharing agreements for construction and maintenance of parking areas. ▪ TA Travel Center #253 at West Greenwich is at capacity. Engage with the owner to investigate facility expansion via P3s/cost-sharing, or with federal grant programs. ▪ Truck parking supply expansion via P3s and addition of parking supply at safety rest areas and weigh stations. ▪ Investigate warehouse parking as well as vacant land and parking assets owned by private businesses. ▪ Encourage private businesses to allow trucks to park overnight. Many businesses with sizeable parking assets prohibit overnight parking on their facilities. Incentives could focus on making additional truck parking available at shipper/receiver facilities. Potential tax incentives suggested by a Washington State Truck Parking Action Plan included business and occupation tax credits, property tax exemptions, construction-related tax credits, and potential statewide truck safety tax credits.[13]

The NCTP has a Parking Capacity working group[14] that developed three work products that could assist Rhode Island in expanding truck parking capacity:

- **Creative use of Right-of-Way (ROW):**[15] This document provides examples of low-cost solutions for creating parking capacity using existing facilities in or adjacent to the ROW. The examples focused on rest area and weigh station conversions to increase truck parking capacity, as well as on attempts to create parking at tourism centers. Other examples included truck parking inside an interchange at Big Springs, Nebraska, and consolidation of public ROW at the Golden Glades Interchange in northern Miami-Dade County to accommodate truck parking.
- **Involving Shippers/Receivers to Address Truck Parking Capacity:**[16] This document provided examples of methods that private companies have used to alleviate the shortage of truck parking.

[13] Washington Joint Transportation Committee Truck Parking Action Plan. 2021. https://leg.wa.gov/JTC/Documents/Studies/Truck%20Parking/Final_TruckParkingActionPlan_2021.pdf

[14] National Coalition on Truck Parking, FHWA. 2018. https://ops.fhwa.dot.gov/FREIGHT/infrastructure/truck_parking/workinggroups/index.htm#pc

[15] https://ops.fhwa.dot.gov/freight/infrastructure/truck_parking/workinggroups/parking_capacity/product/row.htm

[16] https://ops.fhwa.dot.gov/freight/infrastructure/truck_parking/workinggroups/parking_capacity/product/case_studies.pdf

These strategies include providing designated "bullpen" areas outside distribution centers and using dispatchers to assign drivers parking spots at or near distribution centers for staging purposes.

- **Considerations for Low-Cost Truck Parking:**[17] This document describes some of the factors truck parking operators may consider in order to minimize maintenance and operation costs at their facilities. These factors could be employed to reduce the cost of new and existing parking facilities in Rhode Island.

Another useful resource is the recently published FHWA Truck Parking Development Handbook,[18] which provides practical recommendations for developing truck parking projects. Some of the major recommendations applicable to Rhode Island include the following:

- Estimating the benefits of parking projects through an analysis of truck parking patterns, considering safety, productivity, costs, etc. These benefits should be compared to the project costs to demonstrate the worthiness of specific projects.
- Estimating the economic development impact of truck parking projects, by considering construction expenditures, operational revenues, and co-location of complementary services for trucking.
- Communicating the benefits and economic impacts to local stakeholders and communities, to overcome barriers and potential opposition to parking projects.
- Siting of truck parking facilities in appropriate freight-intensive land uses to minimize conflicts and address community concerns.
- Designing truck parking facilities considering best practices to maximize capacity and safety and include appropriate amenities. Table 3 describes some of the main design recommendations. Many of these recommendations could be applied to existing facilities to increase capacity and improve performance.

Table 3: Design Considerations for Truck Parking Facilities

DESIGN ELEMENT	OPTIONS	RECOMMENDATIONS
Parking Slot Type	▪ Straight Back-In (SBI) slots. ▪ Herringbone Drive-Through (HDT) slots.	HDT slots are recommended for TPAs to maximize driver efficiency and safety.
Swept Paths	▪ The parking slot needs to be wide enough to allow a truck to avoid hitting trucks parked next to it as it enters/exits.	Assuming HDTs with a 60-degree angle, parking slots need to be 20 feet wide.
Slot Density	▪ HDT slots with a 45-degree angle ▪ HDT slots with a 30-degree angle ▪ HDT slots with a 40-degree angle ▪ HDT slots with a 50-degree angle ▪ SBI slots with a 0-degree angle	While the SBI slots can achieve the highest parking density of 28.6 trucks per acre, HDT slots with a 45-degree angle are recommended (14.4 trucks per acre parking density).

[17] https://ops.fhwa.dot.gov/FREIGHT/infrastructure/truck_parking/workinggroups/parking_capacity/product/considerations.pdf

[18]

DESIGN ELEMENT	OPTIONS	RECOMMENDATIONS
Access, Layout, & Circulation	▪ Site access point with sufficient spacing from nearby intersections, interchanges, and other access points. ▪ HDT Circulation–outside-in. ▪ HDT Circulation–inside-out.	Different layouts are viable, providing alternative approaches to site utilization and pedestrian circulation. Traffic-impact study findings and state access-management standards must be considered.
Safety and Security	▪ Lighting ▪ Hard and soft controls ▪ Human trafficking prevention	Lighting and secure facilities are essential for safety. Assess the surrounding context to determine if the amount of additional security measures are appropriate.
Facility Amenities	▪ Toilet facilities ▪ Communication services ▪ Open space	Inclusion of all these amenities is recommended for TPAs.
Mitigating Impacts	▪ Traffic impacts ▪ Air, noise, and light pollution ▪ Waste management ▪ Crime and security	Facility design should reduce impacts on adjacent uses through design of access, buffering, waste planning, and security measures.
Future Freight Vehicles	▪ Electric vehicles ▪ Connected and autonomous vehicles	Technology may change site activities, but will not eliminate the need for truck parking.

Source: FHWA Truck Parking Development Handbook

4.3 SOLUTIONS TO ADDRESS URBAN PARKING CHALLENGES

Focus groups conducted with truckers operating in Providence and Warwick confirmed that a clear demand for parking exists in and around urban areas in Rhode Island, particularly in some freight-intensive industrial areas that require frequent truck deliveries. This included:

- In **Providence**, focus group respondents identified Allens Avenue as their critical travel corridor due to its access to I-95, proximity to the Port of Providence, and industrial land uses. Respondents cited congestion on this major freight corridor—coupled with narrow city streets and the city's replacement of truck loading zones with bike lanes—as the primary causes of poor parking availability in the city, which requires truckers to search for up to an hour to find parking, or resort to double parking or parking on curbs and sidewalks.
- In **Warwick**, participants highlighted parking demand for interstate trucks entering the city from the north and south, particularly those serving the airport. Participants identified capacity increases for truck parking on Airport Road and Post Road, south and to a new airport warehouse on Commerce Drive, as priorities for the immediate future.

Urban parking demand often extends beyond designated parking zones and leads to concentrations of undesignated truck parking in industrial clusters. Businesses in industrial clusters have minimal excess land that could be used to accommodate parked trucks who are waiting for their appointment or for dock space to open. This requires truck drivers to park just outside of the facility until they are allowed to load or unload cargo. In an industrial cluster, this manifests into many roads in and around the cluster

lined with trucks waiting to be allowed into facilities. Such staging demand is cited by participants in both the Providence and Warwick focus groups.

The parking needs highlighted above tend to result in unsafe street parking and lines of idling trucks. While the set of potential solutions to alleviate instances of undesignated parking will be specific to each location, they can generally be characterized by the type of need being addressed.

- **Parking in undesignated locations for staging needs.** In instances where drivers line up on roads in and around delivery zones for staging purposes, a variety of recommendations could be appropriate. Truck drivers entering industrial zones should be made aware of public or private truck stops in the vicinity of the cluster through static or dynamic message signs, smartphone and web apps, or the distribution of visor maps at trucking conferences and other meetings. However, this solution may not effectively alleviate the issue in all industrial zones. Even if the parking facility is just a few miles away from the staging zone, time and cost considerations may discourage drivers from parking there. If excess public ROW, vacant land, or unmarked public lots are available in the vicinity of the staging zone, a more appropriate solution could be to convert one or more of these spaces into off-street staging zones and add clear demarcations and roadway signs.

  If the parking demand exists for deliveries at establishments with in-house fleets (as some major retailers own and operate), a potential solution could be to investigate parking agreements directly with their company locations—if they do not already allow parking of external fleet vehicles, and assuming space is available. Consideration should be given to private online parking space marketplaces such as SecurSpace that attempt to connect drivers looking for parking options to those with dedicated or excess capacity.

- **On-street parking for urban delivery.** Where on-street parking is permitted, key corridors and access routes critical to freight operations should be individually reviewed to investigate the potential for street parking capacity increases. Focus group respondents in Providence specifically supported increasing designated parking on Empire, Washington, and Westminster Streets. Alternatively, consideration must be given to improving the effective utilization of existing curbside spots through real-time information systems. Curb management solutions such as Coord or ParkMe provide drivers in real-time the locations and availability of curbside parking spots managed by the city, enabling them to either reserve the on-street parking or appropriately plan their trip route and timing to city delivery destinations. The use of these types of applications by truck drivers has so far been limited.

  On streets near delivery zones where on-street parking is currently prohibited but the roadway geometrics safely allow for increased parking, another solution may be to modify parking ordinances to allow for more on-street capacity. On the other hand, if streets are too narrow or other design impediments make it unsafe for trucks to make on-street stops for staging, increased and more visible no-parking signage and increased enforcement of existing on-street parking prohibitions could nudge drivers to park at alternative locations. Such enforcement actions should be accompanied by other strategies so that drivers can find alternative truck parking nearby, since trucks parked for staging are serving businesses in the area.

- **Land use and facility strategies.** By modifying zoning ordinances, local land use authorities could require on-site and off-street staging areas for facilities and businesses that regularly receive freight shipments. The FHWA Truck Parking Development Handbook[19] contains a section that focuses on strategies to encourage or require truck parking, including at freight generating businesses. RIDOA should encourage local agencies to include truck parking considerations in their traffic impact assessments and direct them to resources such as the FHWA Truck Parking Demand Estimation Tool[20] that can be used to approximate the relationship between the number of daily truck trips and parking required within various distances of the delivery site. Proactively integrating truck parking needs into the planning process, such as requiring shippers and receivers to provide on-site parking or partnering with public agencies or adjacent businesses to develop and/or maintain a common parking facility, will help meet the parking demand while also helping to spread the costs of providing truck parking.

The solutions highlighted above may require RIDOA to collaborate with local agencies and balance conflict with communities that prioritize safety, quality of life, and environmental quality. In working with local agencies to modify parking ordinances, alleviate restrictions, or plan new parking facilities, it is critical to right-size capacity increases with expected future demand for parking as the costs for future mitigation (safety- or congestion-related) are often passed on to the local jurisdiction and result in community disruption and opposition to truck parking plans.

4.4 FUNDING

Funding will be essential to the implementation of many of the recommended truck parking solutions. This chapter discusses various federal and state sources as well as public-private partnership strategies. It draws from the work of the NCTP as well as efforts in other states.

4.4.1 Federal Funding Sources

Formula Programs

Truck parking is eligible under the following federal programs that provide funding by formula to states:[21]

- **Surface Transportation Block Grant** – For the construction of truck parking on federal-aid highways.
- **National Highway Freight Program** – Truck parking facilities and real-time traffic, parking, roadway condition, and multimodal transportation information systems are all eligible activities. Must be on the national highway freight network.
- **Highway Safety Improvement Program** – Truck parking can be funded under this program if it is consistent with the State Strategic Highway Safety Plan.

[19] https://ops.fhwa.dot.gov/freight/infrastructure/truck_parking/docs/Truck_Parking_Development_Handbook.pdf
[20] https://ops.fhwa.dot.gov/freight/infrastructure/truck_parking/docs/Truck_Parking_Development_Handbook.pdf
[21] Eligibility of Title 23 Federal Funds for Commercial Motor Vehicle Parking, USDOT Memorandum from Martin C. Knopp, October 18, 2018.

- **National Highway Performance Program** – Highway safety, including truck parking, is eligible if it supports meeting national performance goals.
- **Congestion Mitigation and Air Quality Improvement Program (CMAQ)** – Truck stop electrification systems are eligible under the federal guidelines if they primarily benefit a non-attainment or maintenance area.

Discretionary Grants

Truck parking is eligible under the following federal competitive grant programs:

- **Infrastructure for Rebuilding America (INFRA) Grants** – Cover up to 60% of total project costs for critical freight and highway projects. Highway freight projects on the National Highway Freight Network, highway projects on the NHS, and other specified intermodal projects. In 2016, the State of Colorado received a $9 million grant under the predecessor program (Fast Lane) for a TPIMS. In 2022, two out of the 26 projects that received INFRA Grants involved truck parking facilities. Winning projects are located in Tennessee and Florida.[22] Both projects involved the construction of additional parking capacity to reduce undesignated parking. This signals that INFRA could continue to be a good source of funds for truck parking projects.
- **Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant –** Funds are intended to support innovative projects that generate economic development and improve access to reliable, safe, and affordable transportation. Under the predecessor program (TIGER), MAASTO obtained a $25 million grant for its TPIMS.
- **Diesel Emissions Reduction Act (DERA) Program** – Makes funds available for diesel emissions reduction, including installing emission reduction systems (See 42 U.S.C 16132). The DERA appropriation is: 70% for national competitive grants and rebates that use certified diesel emission reduction technologies; 30% percent for states to fund programs for clean diesel projects.[23]

CMAQ and DERA-eligible truck idle reduction project types include:

- Verified Onboard Idling Reduction Technology (IRT)
- Truck Stop Electrification (TSE) and Electrified Parking Spaces (EPS)

For more information on emission reduction grant programs and examples of their successful application to idling reduction technologies see the Emissions Reduction Grant Program Fact Sheet.[24] This document provides an overview of the various emission reductions grant programs available to state and local governments to fund transportation projects. The document discussed the CMAQ and

[22] https://www.trucking.org/news-insights/bipartisan-infrastructure-law-delivering-truck-parking#:~:text=The%20bill%20would%20authorize%20a,restrooms%20and%20other%20security%20features.
[23] Emissions Reduction Grant Program Fact Sheet, National Coalition on Truck parking, 2018, p 1.
[24] Emissions Reduction Grant Program Fact Sheet, National Coalition on truck parking, 2018.

DERA programs. It also provided examples of CMAQ- and DERA-eligible IRT system implementations and TSE projects.

The FHWA Truck Parking Development Handbook includes guidance for conducting a benefit-cost analysis and economic-impact analysis of truck parking projects, following U.S. DOT guidelines and conventions. The handbook discusses the main benefits—decreased undesignated parking, avoided detours, improved productivity and reliability, and others—as well as developing methods to quantify and monetize these benefits. Following this guidance in grant applications would enhance their likelihood of success.

New Federal Initiatives

The Bipartisan Infrastructure Law passed in 2022 included increased funding levels for freight projects, including truck parking. Increased funding levels, and renewed priorities, have led to truck parking projects scoring well under grant programs. The Bipartisan Infrastructure Law originally had provisions that directly targeted investments in truck parking, however these were mostly removed before the Law was passed. Nonetheless, the Truck Parking Safety Improvement Act has been introduced in congress[25], which could contain a grant program specifically for truck parking projects, potentially dedicating $755 million over four years.[26]

4.4.2 Public-Private Partnerships

Public-Private Partnerships (P3s) provide opportunities for parking availability to be increased at lower costs to public agencies. However, the use of P3s to address parking needs has been limited by several factors, including the lack of significant revenue opportunities and federal laws that prohibit the commercialization of rest areas. While there are some specific exceptions to this regulation, interstate ROW commercialization is generally not allowed. Moreover, there is also considerable opposition from private-sector advocacy groups, such as the National Association of Truck Stop Operators.

Despite these limitations, there have been a few examples where P3s have been successfully implemented to increase parking availability. The Funding, Financing, and Regulations working group of National Association of City Transportation Officials developed the *Public-Private Partnerships (P3) Examples and Considerations* report. This document highlighted P3 initiatives and non-traditional funding sources to increase truck parking capacity. Examples included the following:

- The use of a P3s to develop the Brainerd Lakes Area Welcome Center in Minnesota, which provides short-term truck parking, bathrooms, and vending machines.
- An agreement between Virginia DOT and private-sector sponsors through which the private sector may sponsor Virginia rest areas to assist funding of operation costs.

[25] https://landline.media/truck-parking-bill-finds-new-life-with-surge-in-co-sponsors/
[26] https://www.trucking.org/news-insights/bipartisan-infrastructure-law-delivering-truck-parking#:~:text=The%20bill%20would%20authorize%20a,restrooms%20and%20other%20security%20features.

- The leveraging of local fuel tax revenue by the City of Decatur to incentivize a private company to create a truck stop in the community.

The following P3 opportunities could be pursued in Rhode Island:

- Pursue sponsorships at the Rhode Island Welcome Center to collect revenues and help pay for operating costs. Investigate how Virginia and other jurisdictions have recently implemented similar sponsorships with success.
- Identify and coordinate with facilities that have large parking lots that could be available to trucks when not in use. These could involve large retail outlets, stadiums, malls, or other large venues. Several national retail outlets currently permit individual stores to allow on-premises trucks parking, such as Walmart or Home Depot, however policies are store dependent and can change suddenly. Establishing channels of communication with the managers of these facilities could help identify beneficial opportunities.
- Help the TA Travel Center truck stop in West Greenwich secure funding to expand existing truck parking facilities. This could range from supporting federal grant applications to building low-cost lots next to private truck stops so drivers can make use of existing amenities. The TA Travel Center facility is the largest in Rhode Island and one of the largest in the region—a proven location that is convenient for trucks to park. As the facility is operating at capacity most days of the week, identifying low-cost approaches to expand capacity is a low-risk strategy to benefit the freight sector.
- Identify the largest shippers and receivers of truck freight in the state and work with them to ensure that enough on-site parking capacity is available. As explained previously, the high demand for staging parking in Rhode Island is in part driven by shippers and receivers not allowing trucks to enter the facility until their delivery window, which causes off-site parking. As recommended by the FHWA Parking Development Handbook, encouraging, financially incentivizing, or requiring large shippers and receivers to have ample parking capacity could alleviate this need. While it might be easier to build these considerations into new facility developments and projects, some existing facilities can likely accommodate more truck parking than they do.

5 Next Steps

The Rhode Island Statewide Truck Parking Study represents the first comprehensive study in the state to assess truck parking needs and identify potential solutions. This study benefited from extensive stakeholder outreach including a survey of industry participants, three focus groups, and several key stakeholder interviews. It also leveraged truck telematics data from Geotab to gain a better understanding of where and why trucks are parking. Combined, the stakeholder input and data analysis affirmed Rhode Island's truck parking challenges and enabled the development of practical solutions that address existing and future needs.

While RIDOA has an important role to play in meeting these challenges, it cannot be solely responsible for implementing the recommendations of this study. Extensive collaboration is needed between all levels of government in Rhode Island including the RIDOT, the Rhode Island State Planning Council, local and city governments, and enforcement agencies. Involvement and coordination with industry and trade groups, such as the RITA and the Commerce Corporation, is also critical for implementation. Collaboration on trucking parking needs can leverage the FAC and other similar forums to solicit and grow cooperation with key stakeholders, particularly those from the trucking industry.

Coordination is also required with neighboring states to solve truck parking challenges in Rhode Island. As the smallest state in the union, the parking policies and infrastructure in Massachusetts and Connecticut have a critical impact on parking demand and parking patterns in Rhode Island. This is especially the case given that Rhode Island lies on one of the main freight corridors in the country, I-95. Many truck drivers operating in the region often cross multiple state borders on a single trip, giving them a regional outlook on transportation infrastructure. Adopting perspectives similar to these neighboring states on planning, investments, and policy would ultimately benefit system users. Different avenues should be pursued to enhance collaboration with Massachusetts and Connecticut, along with other states in the Northeast. Neighboring states in different parts of the country have recently come together to develop regional solutions to address truck parking challenges, such as the Regional Truck Parking Information System of the MAASTO. The presence of smaller states and the prominence of national freight corridors make the Northeast an ideal location for these types of coordinated efforts.

Truck parking challenges need to be addressed in a holistic matter that balances the needs of the freight sector, the safety of everyone involved in the transportation system, and impacts to local communities. Regional, state, and local planning efforts should consider truck parking needs at all stages of project development. At the same time, these projects should recognize that the freight industry is dynamic, with needs that can rapidly evolve due to new technologies and changes in supply chains or operations. The content in this plan should be updated frequently to understand and reflect how needs have evolved.

As a next step, the state should develop an implementation plan to identify the more specific tasks needed to implement the study. In some cases, feasibility studies and proof-of-concept pilots may be appropriate to determine the effectiveness, limitations, and projected costs of implementing specific

recommendations under consideration. Pilot programs for low-cost solutions, such as expanding rest areas within existing ROW, redesigning/remarking rest areas to better utilize existing footprints, or increasing participation in existing truck parking web apps, could expedite implementation.

Appendix A TRUCK PARKING LOCATIONS AND CAPACITY

#	Name	Address/Phone	Highway/Exit	Number of Parking Spaces						Sources, References, and Notes
				Source #1			Source #2			
				Designated/ Striped	Unpaved/ Unstriped	Total # Spaces	Designated/ Striped	Unpaved/ Unstriped	Total # of Spaces	
RHODE ISLAND										
Private										
R1	Travel Centers of America-TA Travel Center #253	849 Victory Hwy West West Greenwich, RI 02817 401-397-7774	1-95 S, Exit 5B Rte. 102	180	-	180	180	-	180	Source #1: www.allstays.com and www.truckstopreport.com. Source #2: *Google Map* aerial verification and on-site manager verification (5-16-22).
RHODE ISLAND Sub Total - Private				**180**	**0**	**180**	**180**	**0**	**180**	
Public										
R2	RI Welcome Center	Wood River Junction Richmond, RI 02894	I- 95 N, between Exits 2 & 3	16	-	16	16	-	16	Source #1: Stephen Devine, RIDOT Transit Office (3-31-22). Source #2: *Google Map* aerial verification.
R3	Turnout	Richmond, RI 02898	I-95 N, Exit 4	-	3	3	-	3	3	Former weigh station. Source #1: Joseph Bucci, P.E., RIDOT Highway & Bridge Maintenance Division (4-7-22). Source #2: *Google Map* aerial verification.
R4	Turnout	Richmond, RI 02898	I-95 S, Exit 4	-	5	5	-	5	5	Former weigh station. Source #1: Joseph Bucci, P.E., RIDOT Highway & Bridge Maintenance Division (4-7-22.) Source #2: *Google Map* aerial verification.
R5	Turnout	Lincoln, RI 02865	I-295 N, between Exits 18 & 20; MM 19	11	-	11	11	-	11	Former Blackstone River State Park Visitors Center. Source #1: Joseph Bucci, P.E., RIDOT Highway & Bridge Maintenance Division (4-7-22). Source #2: *Google Map* aerial verification.
R6	Turnout	Lincoln, RI 02865	I-295 N, between Exits 18 & 10	-	8	8	-	8	8	Former weigh station; just west of Location #5. Source #1: Joseph Bucci, P.E., RIDOT Highway & Bridge Maintenance Division (4-7-22). Source #2: *Google Map* aerial verification.

#	Name	Address/Phone	Highway/Exit	Number of Parking Spaces						Sources, References, and Notes
				Source #1			Source #2			
				Designated/ Striped	Unpaved/ Unstriped	Total # Spaces	Designated/ Striped	Unpaved/ Unstriped	Total # of Spaces	
R7	Turnout	North Smithfield, RI 02896	Rte. 146 N; MM 14.8	-	5	5	-	5	5	Former weigh station; south of Old Great Road. Source #1: Joseph Bucci, P.E., RIDOT Highway & Bridge Maintenance Division (4-7-22). Source #2: *Google Map* aerial verification and On-Site Reconnaissance (4-9-22).
R8	Turnout	North Smithfield, RI 02896	Rte. 146 S; between MMs 10 - 11	-	5	5	-	5	5	Former weigh station; south of 140/146 interchange. Source #1: Joseph Bucci, P.E., RIDOT Highway & Bridge Maintenance Division (4-7-22). Source #2: Google Map aerial verification and On-Site Reconnaissance (4-9-22).
R9	Turnout	Portsmouth, RI 02871	Rte. 24 S; north of Exit 2	-	8	8	-	8	8	§ Former weigh station. Source #1: Joseph Bucci, P.E., RIDOT Highway & Bridge Maintenance Division (4-7- 22). Source #2: *Google Map* aerial verification and On-Site Reconnaissance (4-8-22).
RHODE ISLAND Sub Total - Public				**27**	**34**	**61**	**27**	**34**	**61**	
RHODE ISLAND TOTAL				**207**	**34**	**241**	**207**	**34**	**241**	
MASSACHUSETTS										
Private										
M1	Flynn Truck Stop	307 Hartford Turnpike Shrewsbury, MA 01545 508-753-9698	US20 E	-	15	15	-	15	15	Source #1: www.allstays.com. Source #2: *Google Map* aerial verification.
M2	Interstate Travel Plaza	580 Washington Street Wrentham, MA 02903 508-384-9501	I-495, Exit 14a U.S. 1	-	25	25	-	25	25	Source #1: www.allstays.com. Source #2: *Google Map* aerial verification.
M3	Mobil Sturbridge	236 Haynes Street Sturbridge, MA 01566 508-347-5792	I-84 SB, Exit 1, I-84 NB, Exit 1	-	8	8	-	8	8	Source #1: www.allstays.com (6 spaces) and www.truckstopreport.com (10 spaces) = average 8 spaces. Source #2: *Google Map* aerial verification.
M4	Pilot Travel Center #222	Haynes Street Sturbridge, MA 01566 508-347-9104	I-84, Exit 1 400 Rte. 15	188	-	188	94	-	94	Source #1: www.allstays.com (125 spaces) and www.truckstopreport.com (250 spaces) = average 188 spaces. Source #2: *Google Map* aerial and Site Manager (4-20-22 and 5-16-22) verifications (4-20-22 and 5-16-22).

#	Name	Address/Phone	Highway/Exit	Number of Parking Spaces						Sources, References, and Notes
				Source #1			Source #2			
				Designated/ Striped	Unpaved/ Unstriped	Total # Spaces	Designated/ Striped	Unpaved/ Unstriped	Total # of Spaces	
MASSACHUSETTS Sub Total - Private				**188**	**48**	**236**	**94**	**48**	**142**	**NOTE:** Difference in total State private spaces [236 vs 142] is result of over-estimation by Source #1 for Location #4 - Sturbridge. Source #2 count for the location based on *Google Map* aerial and Site Manager verification. Source #2 advised as best estimate.
Public										
M5	Bridgewater Service Plaza	Fall River Expressway Bridgewater, MA 02324 508-697-9699	Rte. 24 N, after Exit 22	9	9	18	9	9	18	**NOTE:** MASS DOT Rest Area website [https://www.massachusettsrestareas.com/ma-ma24-state-route-24-Massachusetts-Bridgewater-service-plaza-rest-area-northbound/] provides general information but no space counts. MASS DOT District #5 [508-824-6633] did not have space counts; recommended call on-site Burger King Manager. Source #1: Plaza Burger King Site Manager [508-697-9699] provided space estimate (4-20-22). Source #2: *Google Map* aerial verification.
M6	Bridgewater Service Plaza	Fall River Expressway Bridgewater, MA 02324	Rte. 24 S, after Exit 24	9	6	15	9	6	15	Source #1: Plaza Burger King Site Manager [508-697-9672] in telephone inquiry did not know # of spaces; offered estimate. (4-20-22). Source #2: *Google Map* aerial verification.
M7	Charlton Service Plaza	6 Massachusetts Turnpike Charlton, MA 01507 508-248-3308	I-90 W, after Exit 90, MM 84.8	-	6	6	-	8	8	Source #1: www.truckstopreport.com Source #2: *Google Map* aerial verification.
M8	Charlton Service Plaza	166 Sturbridge Road Massachusetts Turnpike Charlton, MA 01507 508-248-4735	I-90 E, after Exit 78, MM 80.2	-	6	6	-	6	6	Source #1: www.truckstopreport.com Source #2: *Google Map* aerial verification.
M9	Natick Service Plaza	117 Massachusetts Turnpike, Natick, MA 01760 508-653-9457	I-90 E, MM 117.6 EB	-	7	7	-	7	7	Source #1: www.allstays.com (6 spaces) and www.truckstopreport.com (8 spaces) = average 7 spaces. Source #2: *Google Map* aerial verification.
M10	Rest Area	Swansea, MA 02777	I-195 N, MM 6	-	-	-	-	10	10	Source #1: No space count for rest area on State website [https://gis.massdot.state.ma.us/restarealocator/]. Source #2: *Google Map* aerial verification; area paved not striped.
M11	Rest Area	Foxborough, MA 02035	I-95 N, MM 2	-	-	-	-	8	8	Source #1: No space count on State rest area website [https://gis.massdot.state.ma.us/restarealocator/.] Source #2: *Google Map* aerial verification; area paved not striped.

#	Name	Address/Phone	Highway/Exit	Number of Parking Spaces						Sources, References, and Notes
				Source #1			Source #2			
				Designated/ Striped	Unpaved/ Unstriped	Total # Spaces	Designated/ Striped	Unpaved/ Unstriped	Total # of Spaces	
M12	Rest Area	Attleboro, MA 02703	I-95 S, MM 9	-	-	-	-	12	12	Source #1: No space count on State rest area website [https://gis.massdot.state.ma.us/restarealocator/.] Source #2: *Google Map* aerial verification; area paved not striped.
M13	Rest Area	Uxbridge, MA 01569	Rte. 146 N, Before Exit 6, Between MMs 4.3-5.2	-	-	-	15	-	15	Source #1: No space count on State rest area website [https://gis.massdot.state.ma.us/restarealocator/.] Source #2: *Google Map* aerial verification; area paved and striped. On-site reconnaissance (4-9-22).
M14	Rest Area	Uxbridge, MA 01569	Rte. 146 S, After Exit 6	-	-	-	-	13	13	Source #1: No space count on State rest area website [https://gis.massdot.state.ma.us/restarealocator/.] Source #2: *Google Map* aerial verification; area paved not striped. On-site reconnaissance (4-9-22).
M15	Rest Area	Taunton, MA 02718	SR 140 SB	-	-	-	-	4	4	Source #1: No space count on State rest area website [https://gis.massdot.state.ma.us/restarealocator/.] Source #2: *Google Map* aerial verification; area paved not striped.
M16	Rest Area	Taunton, MA 02718	SR 140, NB	-	-	-	-	3	3	Source #1: No space count on State rest area website [https://gis.massdot.state.ma.us/restarealocator/.] Source #2: *Google Map* aerial verification; area paved, not striped.
M17	Rest Area	Sturbridge, MA 01566	I-84 EB	-	-	-	-	3	3	Source #1: https://gis.massdot.state.ma.us/restarealocator/ - no space count. Source #2: *Google Map* aerial verification; area paved, not striped.
M18	Rest Area	Sturbridge, MA 01566	I-84 WB	-	-	-	-	5	5	Source #1: No space count on State rest area website [https://gis.massdot.state.ma.us/restarealocator/.] Source #2: *Google Map* aerial verification; area paved, not striped.
M19	Rest Areas	Middleborough, MA 02346	I-495 NB - SB / South of Exit 12/ North of Exit 8					8	8	Source #1: No space count on State rest area website [https://gis.massdot.state.ma.us/restarealocator/.] Source #2: *Google Map* aerial verification; area paved, not striped.
M20	Welcome Center	Mansfield, MA 02048	I-95 N, MM 10	-	-	-	10	-	10	Source #1: No space count on State rest area website [https://gis.massdot.state.ma.us/restarealocator/.] Source #2: *Google Map* aerial verification.
M21	Westborough Service Plaza	Massachusetts Turnpike, Westborough, MA 01581	I-90 WB, MM 104.6	40	-	40	27	8	35	Source #1: www.truckstopreport.com. Source #2: *Google Map* aerial verification.
MASSACHUSETTS Sub Total - Public				**49**	**34**	**92**	**70**	**110**	**180**	**NOTE:** Differential in total number of public spaces by Source [92 vs 180] due to no rest area trucking parking reporting in Source #1-Truck Parking Directory. Source #2 based on state website, on-site reconnaissance, and aerial map count. Source #2 advised as best estimate.

#	Name	Address/Phone	Highway/Exit	Number of Parking Spaces – Source #1: Designated/ Striped	Source #1: Unpaved/ Unstriped	Source #1: Total # Spaces	Source #2: Designated/ Striped	Source #2: Unpaved/ Unstriped	Source #2: Total # of Spaces	Sources, References, and Notes
MASSACHUSETTS TOTAL				**237**	**82**	**328**	**164**	**158**	**322**	**NOTE:** Differential in number of total State private and public spaces by Source (328 vs 322) due to *a)* no rest area reporting in Source #1 - Trucking Parking Directory and over-estimation of # of private spaces. Source #2 verifies counts via aerial mapping and discussion with Site Managers. Source #2 advised as best estimate.
CONNECTICUT										
			Private							
C1	American Auto Stop – Pilot #882	273 Clarks Falls Road North Stonington, CT 06359 860-599-2020	I-95, Exit 93 Hwy. 216	120	-	120	120	-	120	Source #1: www.allstays.com and www.truckstopreport.com. Source #2: *Google Map* aerial verification.
C3	Plainfield Service Plaza	Plainfield, CT 06354 860-230-9948	I-395 S, Exit 35	-	-	-	10	2	12	Source #1 State website reference [https://portal.ct.gov/DOT/PP_Intermodal/Documents/Connecticut-Rest- Area] offers general description but no space count. Source #2 counts supported by *Google Map* aerial and Mobil Station Site Manager [860-230-9948 / 4-20-22] verifications.
C2	Plainfield Service Plaza	Plainfield, CT 06354 860-230-9948	I-395 N, Exit 32	-	-	-	12	3	15	Source #1: State website [https://portal.ct.gov/DOT/PP_Intermodal/Documents/Connecticut-Rest- Areas] does not provide space count. Source #2: *Google Map* aerial verification and telephone inquiry to on-site ATM Manager [860-230-087] who advised aerial map best source (4-20-22).
C4	TA Travel Center	327 Ruby Road Willington, CT 06279 860-684-0499	I-84 N, Exit 71	240	-	240	240	-	240	Source #1: www.allstays.com. Source #2: *Google Map* aerial verification and Site Manager verification (5-16-22).
CONNECTICUT Sub Total - Private				**360**	**0**	**360**	**382**	**5**	**387**	**NOTE:** Difference in State total private space count (360 vs 387] is result of Source #1 not listing Plainfield Service Plaza. Source #2 count includes plaza; recommended as best estimate.
			Public							
C5	Service Plaza	West Willington, CT 06279 860-684-3517	I-84 E, past Exit 69, MM 85	8	-	8	8	-	8	Source #1: State website [https://portal.ct.gov/DOT/PP_Intermodal/Documents/Connecticut-Rest- Areas] provides general description; not space count. Plaza Manager [860-684-3517] in telephone inquiry estimated 8 spaces. (4-20-22). Source #2: *Google Map* aerial verification.

#	Name	Address/Phone	Highway/Exit	Number of Parking Spaces – Source #1 Designated/ Striped	Source #1 Unpaved/ Unstriped	Source #1 Total # Spaces	Source #2 Designated/ Striped	Source #2 Unpaved/ Unstriped	Source #2 Total # of Spaces	Sources, References, and Notes
C6	Service Plaza	West Willington, CT 06279 860-684-4058	I-84 W, Exit 70, MM 85	-	-	-	19	-	19	Source #1 State website source [https://portal.ct.gov/DOT/PP_Intermodal/Documents/Connecticut-Rest- Areas] provides general description but not space count. Source #2: *Google Map* aerial verification only as Plaza Manager [860-684-4058 / 4-20-22] unable to verify number of spaces on site.
C7	Welcome Center	North Stonington, CT 06359 860-599-1332	I-95 S, Exit 92, MM 108	33	-	33	35	-	35	Source #1: www.truckstopreport.com (40 spaces) and Welcome Center Manager [860-599-1332] (25 spaces) (4-7-22) = average 33 spaces. Source #2: *Google Map* aerial verification.
CONNECTICUT Sub Total - Public				**41**	**0**	**41**	**62**	**0**	**62**	**NOTE:** Differential in State total public space count by Source [401 vs 449] due to W. Willington Plaza WB not included in Source #1 count and minor 2-space difference for Welcome Center. Source #2 count includes plaza. Source #2 advised as best estimate.
CONNECTICUT TOTAL				**401**	**0**	**401**	**444**	**5**	**449**	
RI-MA-CT = TOTAL # OF PRIVATE AND PUBLIC TRUCK PARKING SPACES				**845**	**116**	**970**	**815**	**197**	**1012**	**NOTE:** Differential in total truck parking space count for all States by Source [970 vs 1012] explained in above column notes. Source #2 count advised as best estimate.

Appendix B TRUCK PARKING FACILITY SERVICES

ID #	Name/Location	Truck Parking Services and Amenities																					Notes
		Restrooms	Fuel	EV Charging Station	Convenience Market	Parking Lot Lighting	Repair Facilities	Truck Wash	Showers	WI-FI	Vending Machines	Travel Information	Public Phones	Restaurant(s)	Truck Scale	Drivers Lounge/TV	UPS/Fed Ex	ATM	Public Laundry	Propane (bulk/not)	Picnic Table/Shelter	Pet Areas	
RHODE ISLAND																							
Private																							
R1	TA #253 West Greenwich	X	X		X	X	X	X	X	X	X	X		X	X	X	X	X	X			X	$22/day - reserved parking, *Transflo* scanning
Public																							
R2	Welcome Center Richmond	X				X					X	X									X		CIP 2023-2025: EV stations, HVAC, bathroom remodel, well replacement. $1.5M
R3	Turnout Rest Area Richmond																						Former weigh station
R4	Turnout Rest Area Richmond																						Former weigh station
R5	Turnout Rest Area Lincoln																						Former weigh station
R6	Turnout Rest Area Lincoln																						Former weigh station
R7	Turnout Rest Area N. Smithfield																						Former weigh station
R8	Turnout Rest Area N. Smithfield					X																	Former weigh station
R9	Turnout Rest Area Portsmouth																						Former weigh station

ID #	Name/Location	Truck Parking Services and Amenities																					Notes
		Restrooms	Fuel	EV Charging Station	Convenience Market	Parking Lot Lighting	Repair Facilities	Truck Wash	Showers	WI-FI	Vending Machines	Travel Information	Public Phones	Restaurant(s)	Truck Scale	Drivers Lounge/TV	UPS/Fed Ex	ATM	Public Laundry	Propane (bulk/not)	Picnic Table/Shelter	Pet Areas	
MASSACHUSETTS																							
Private																							
M1	Flynn Truck Stop Shrewsbury	X	X																				
M2	Interstate Plaza Wrentham	X	X	X	X	X			X	X X		X				X	X					X	$14/day park fee. Unpaved truck parking area on other side of highway (Route 1); must walk across and up highway to access services.
M3	Mobil Sturbridge	X	X	X	X	X				X													
M4	Pilot #222 Sturbridge	X	X		X	X			X	X		X		X	X	X	X	X	X			X	$18/day-reserved parking. Diesel Exhaust Fluid, *Transflo* scanning, Check Cashing, e-DAT, Western Union
Public																							
M5	Service Plaza Bridgewater (NB)	X	X		X									X				X					
M6	Service Plaza Bridgewater (SB)	X	X		X					X		X		X				X					
M7	Service Plaza Charlton (WB)	X	X		X					X				X				X				X	Walking trails, limited paved parking
M8	Service Plaza Charlton (EB)	X	X		X					X				X				X				X	Walking trails, limited paved parking
M9	Service Plaza Natick	X	X		X	X								X				X					
M10	Rest Area Swansea																				X		
M11	Rest Area Foxborough																						
M12	Rest Area Attleboro																						
M13	Rest Area Uxbridge (NB)																						

ID #	Name/Location	Truck Parking Services and Amenities																					Notes
		Restrooms	Fuel	EV Charging Station	Convenience Market	Parking Lot Lighting	Repair Facilities	Truck Wash	Showers	WI-FI	Vending Machines	Travel Information	Public Phones	Restaurant(s)	Truck Scale	Drivers Lounge/TV	UPS/Fed Ex	ATM	Public Laundry	Propane (bulk/not)	Picnic Table/Shelter	Pet Areas	
M14	Rest Area Uxbridge (SB)	X																			X		Outside Portable Toilets, picnic tables
M15	Rest Area Taunton																						
M16	Rest Area Taunton																						
M17	Rest Area Sturbridge																						
M18	Rest Area-Sturbridge																						
M19	Rest Areas Middleborough																						
M20	Welcome Center Mansfield	X																			X	X	Outside Portable Toilets, walk areas
M21	Service Plaza Westborough	X	X		X	X				X				X				X				X	
CONNECTICUT																							
Private																							
C1	Pilot #882 N. Stonington	X	X		X	X			X	X		X	X	X	X	X	X	X	X				
C3	Service Plaza Plainfield	X	X		X	X						X									X	X	
C2	Service Plaza Plainfield (NB)	X	X		X	X						X						X			X	X	
C4	TA Center Willington	X	X		X	X	X		X	X		X	X	X	X	X	X	X	X			X	$20/day – reserved parking. Western Union, Refrigeration Reefer, *Transflo* scanning
Public																							
C5	Service Plaza W. Willington (SB)	X				X					X										X		
C6	Service Plaza	X				X					X										X		

ID #	Name/Location	Truck Parking Services and Amenities																				Notes
		Restrooms	Fuel	EV Charging Station	Convenience Market	Parking Lot Lighting	Repair Facilities	Truck Wash	Showers	WI-FI	Vending Machines	Travel Information	Public Phones	Restaurant(s)	Truck Scale	Drivers Lounge/TV	UPS/Fed Ex	ATM	Public Laundry	Propane (bulk/not)	Picnic Table/Shelter	Pet Areas	
	W. Willington (NB)																						
C7	Welcome Center N. Stonington	X				X					X	X									X	X	Seasonal staffing, walk areas

Appendix C SURVEY RESULTS

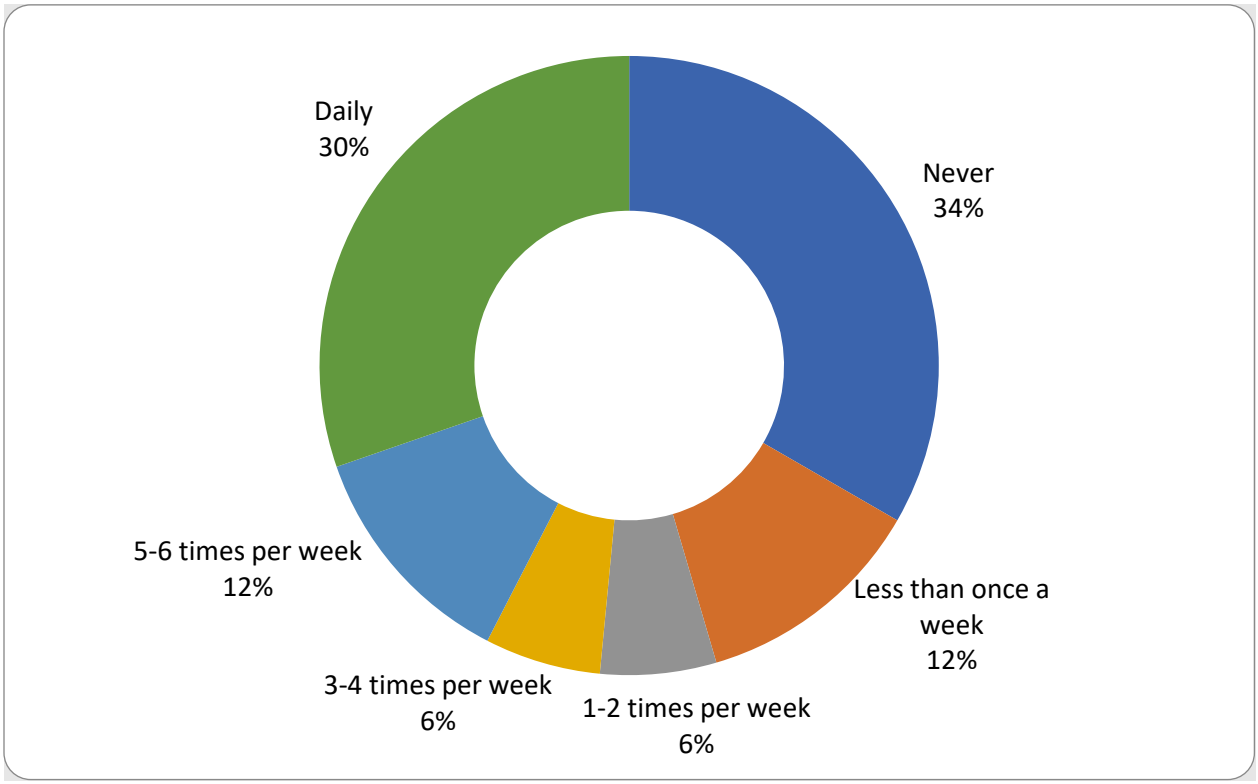
C.1 TELL US ABOUT TRUCK PARKING

Participants were asked eleven questions about their parking habits and preferences. This section received 375 total responses. A summary of survey questions is included in Appendix A. The survey results are presented below, from general questions about truck parking to more specific questions about truck parking issues in the Rhode Island Area.

How often do you park in Rhode Island?

Survey participants were asked how often they parked in the Rhode Island area. They were asked to make one selection from a list that ranged from 'Never' to 'Daily.' Figure C-1 shows that the majority of respondents indicate they park in the region one or more times a week and 30% park daily.

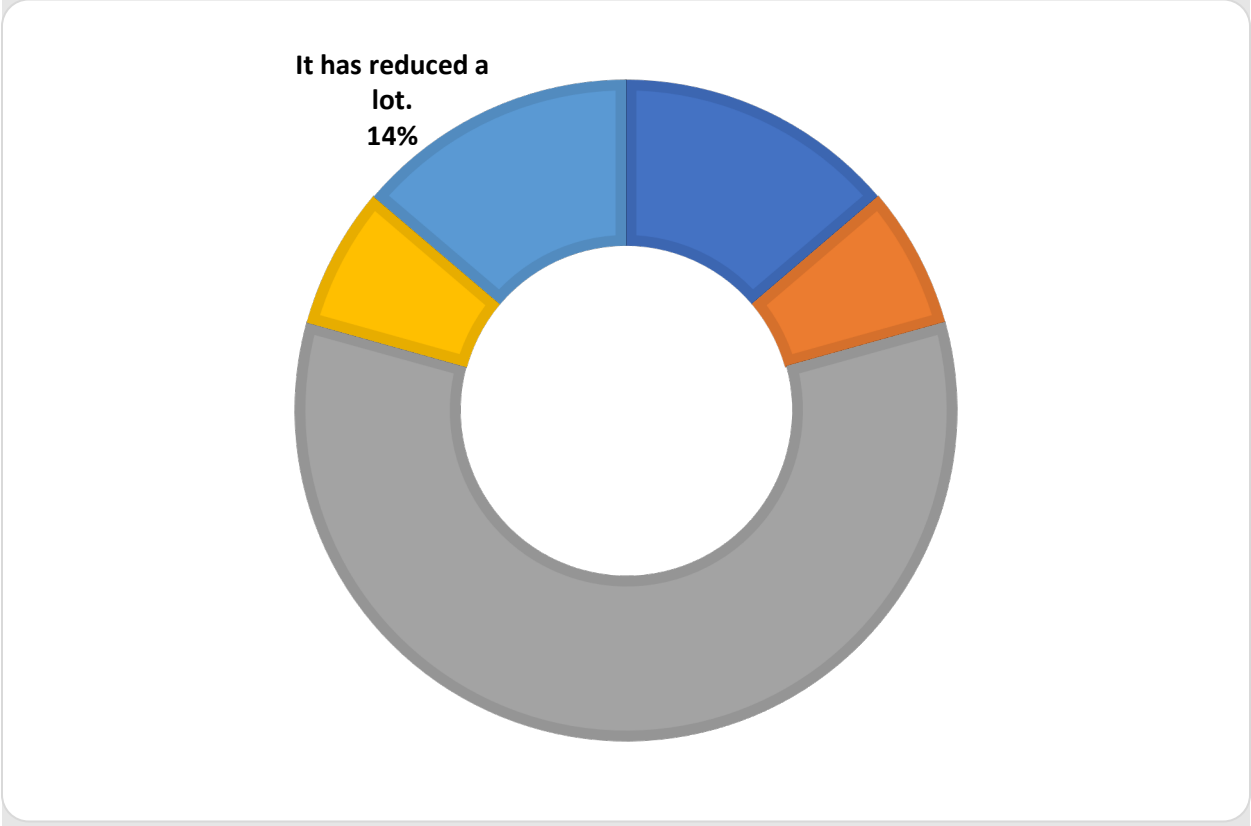
Figure C-1: How often do you park in Rhode Island?



How is the Rhodeworks tolling program affecting your frequency of parking in Rhode Island?

Survey participants were asked to identify how the RhodeWorks Tolling Program (https://www.dot.ri.gov/tolling/index.php) is affecting their frequency of parking in Rhode Island. Figure C-2 shows that most participants (58%) chose 'It hasn't changed significantly,' while 14% responded 'It has reduced a lot,' and 14% responded, 'it has increased a lot.'

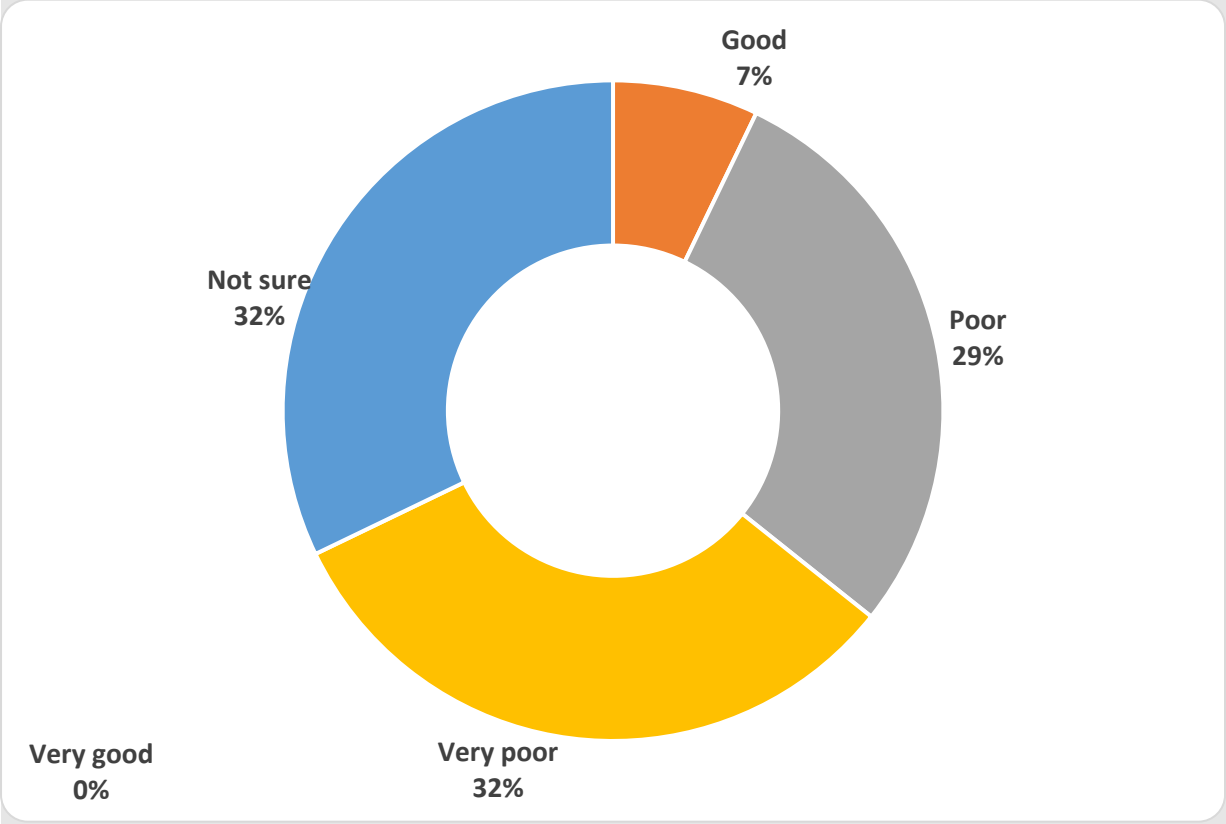
Figure C-2: How is the RhodeWorks tolling program affecting your frequency of parking in Rhode Island?



How would you rate the availability of truck parking in Rhode Island?

Survey participants were asked to rate the availability of truck parking in the Rhode Island area. The results, shown in Figure C-3, indicate that truck parking is a significant problem in Rhode Island. The most frequently selected rating was 'Poor' (29%) or 'Very poor' (32%). Only 7% of participants responded that parking availability was 'Good' and no respondents rated it 'Very Good.'

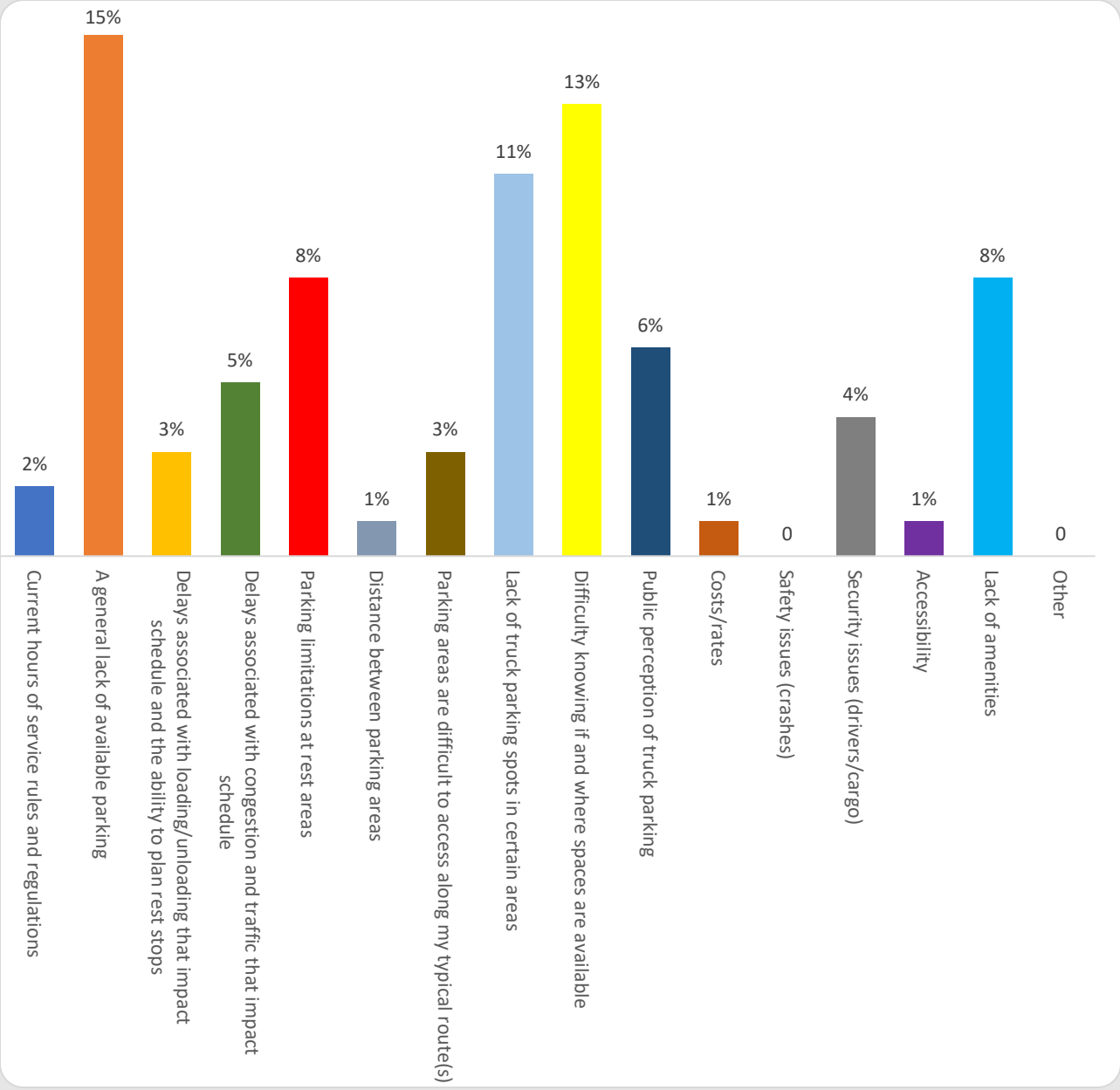
Figure C-3: How would you rate the availability of truck parking in Rhode Island?



What are the main truck parking issues in Rhode Island? choose up to 5.

Survey participants were asked to select the top five issues, from a list of twelve, to describe the main truck parking issues in Rhode Island. As shown in Figure C-4, the results indicate that the biggest issue is 'A general lack of availability for parking' (15%), 'Difficulty knowing if and when parking spaces are available' (13%), 'Lack of truck parking spots in certain areas' (11%), 'Lack of amenities' (8%), and 'Parking limitations at rest areas' (8%). The results suggest that drivers have difficulty finding available parking in Rhode Island and there are insufficient amenities.

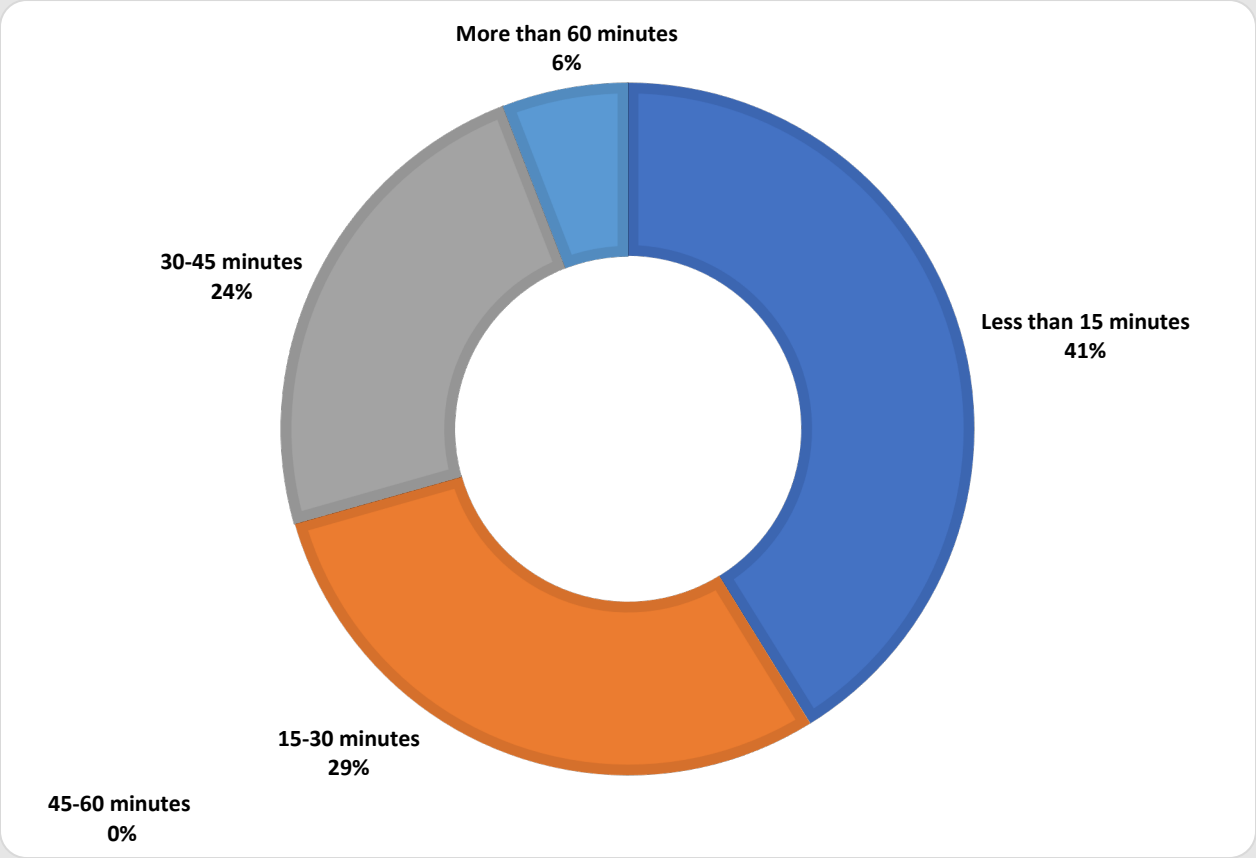
Figure C-4: What are the main truck parking issues in Rhode Island? Choose up to 5.



How much time do you typically spend looking for parking?

Survey participants were asked how much time they typically spent looking for parking. They were asked to pick from one of five choices, ranging from 'Less than 15 minutes' to 'More than 60 minutes.' The responses, depicted in Figure C-5, suggest that most survey participants (59%) spend more than 15 minutes looking for parking. A little over 40% say they spend less than 15 minutes looking for parking. These results indicate that most drivers spend less time than in many states, but this is in keeping with the greater focus on short term parking among survey respondents.

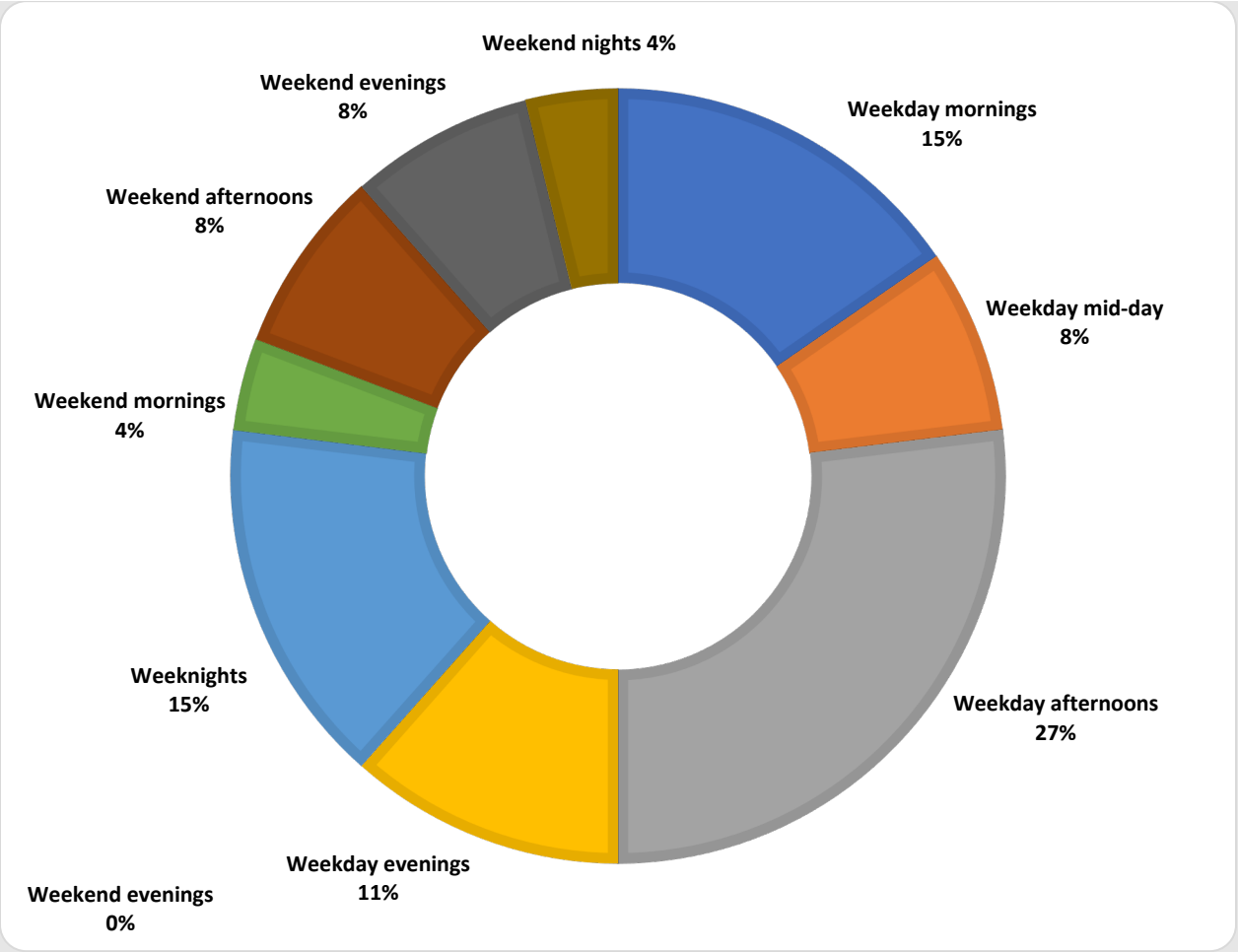
Figure C-5: How much time do you typically spend looking for parking?



When do you have the most trouble finding available parking in Rhode Island? choose all that apply.

Survey participants were asked what time of day they have the most trouble finding parking in the Rhode Island area? They were asked to select all choices that apply from a list of ten potential options. As shown in Figure C-6, the hardest time to find parking is in the weekday afternoons (27%) as well as weekday evenings (11%) and weeknight (15%). In other studies where the majority of respondents are looking for overnight parking or long-breaks, weekend nights are the most difficult time to find parking. The results for Rhode Island reflect the respondents' focus on shorter trips which generate a need for parking for short breaks, staging and delivery among many of the drivers.

Figure C-6: When do you have the most trouble finding available parking in Rhode Island? Choose all that apply. Percentage of respondents that selected option.

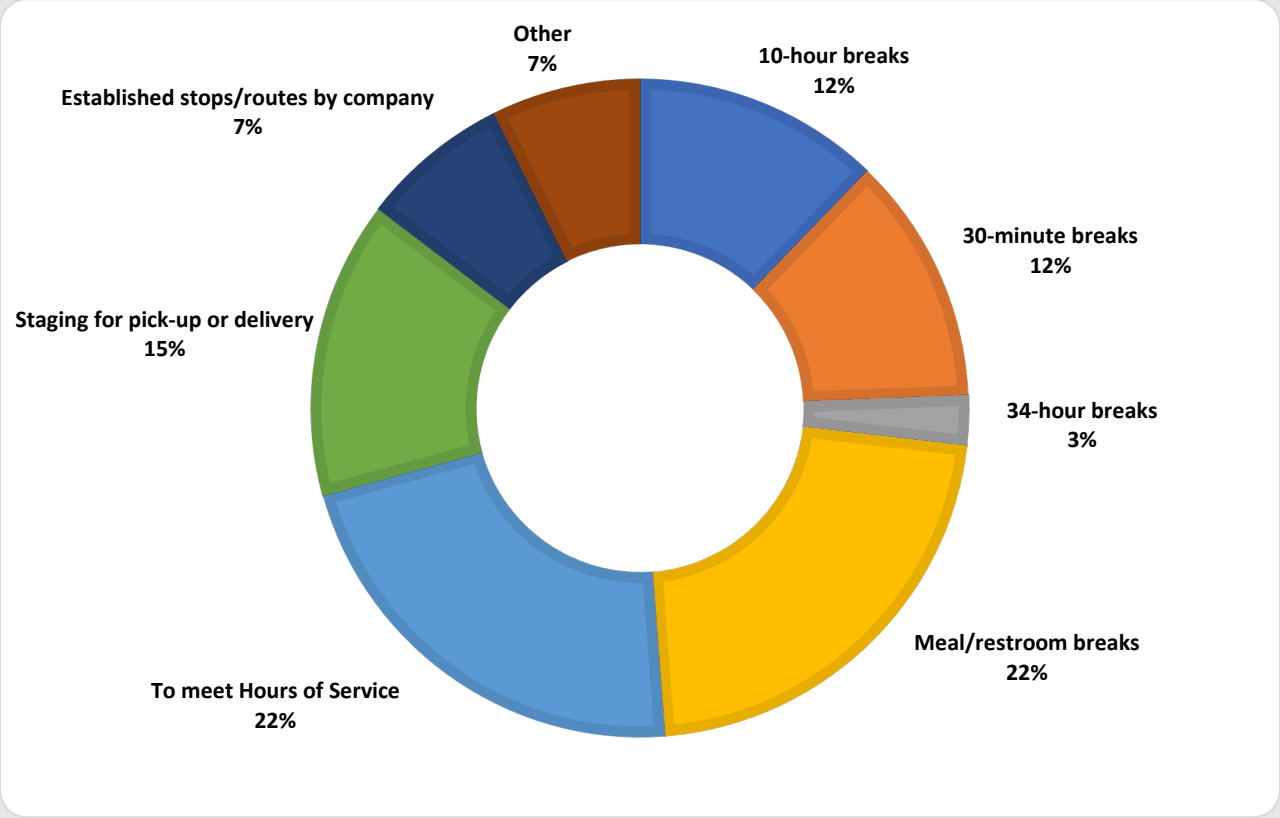


Why do you need truck parking?

Survey participants were asked why they need truck parking from a list of eight choices. As shown in Figure C-7, the top two selected choices were 'To meet HOS' (25%) and 'Meal/restroom breaks' (22%), followed by 'Staging for pick-up or delivery' (15%). The least selected choices were '34-hour breaks' (3%) and 'Established stops/routes by company' (7%). These results indicate that many respondents are seeking parking for shorter breaks and staging. T

The 'To meet HOS) requirements' option is ambiguous, as it can refer to 10-hour and 30-minute breaks. The 30-minute requirement has now been eliminated but was in force during survey collection.

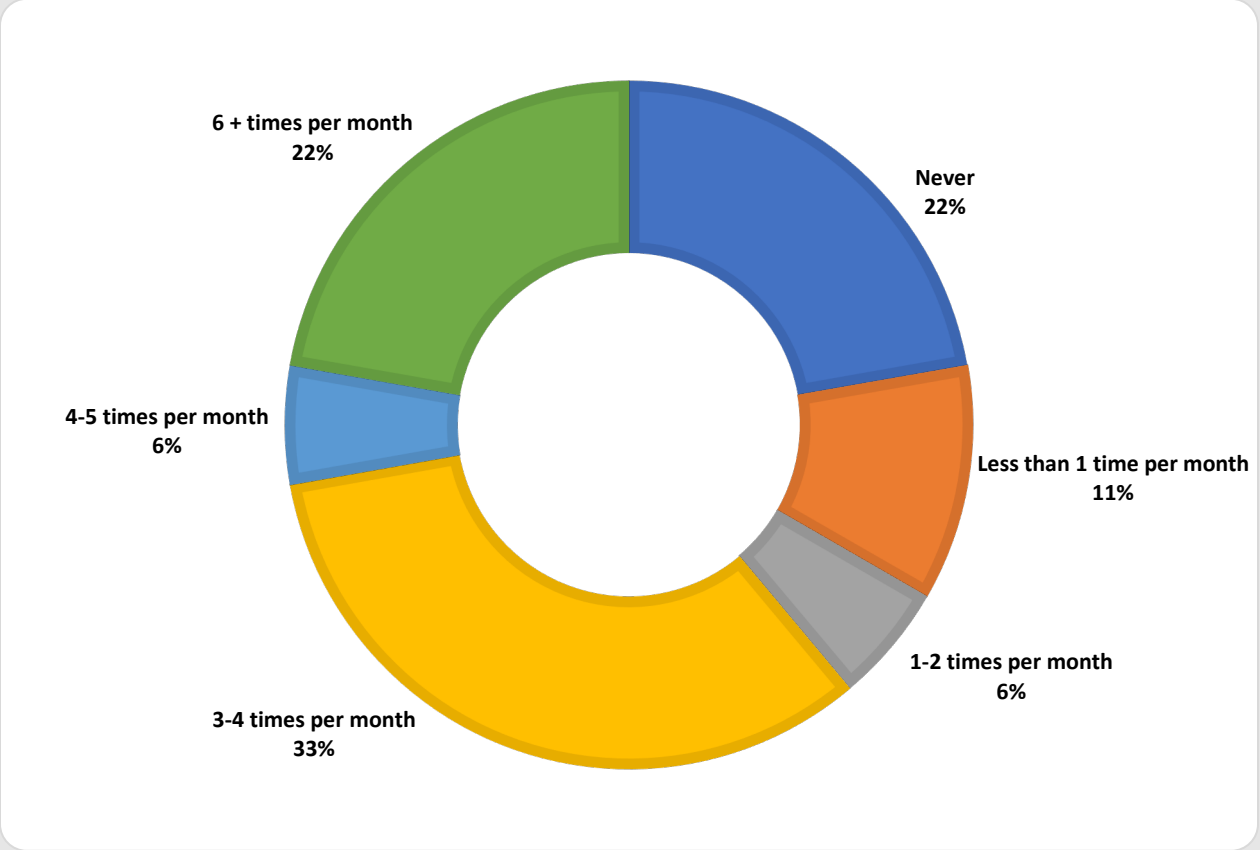
Figure C-7: Why do you need truck parking?



How often do you have trouble finding designated truck parking (truck stop, rest area, etc.) in Rhode Island?

Survey participants were asked how often they have trouble finding designated truck parking in the Rhode Island area. The results shown in Figure C-8 that truck parking is difficult to find. More than half (61%) of respondents have difficulty finding designated truck parking in the area more than 3 times per month. A small number of respondents (22%) never have difficulty finding designated truck parking in the area.

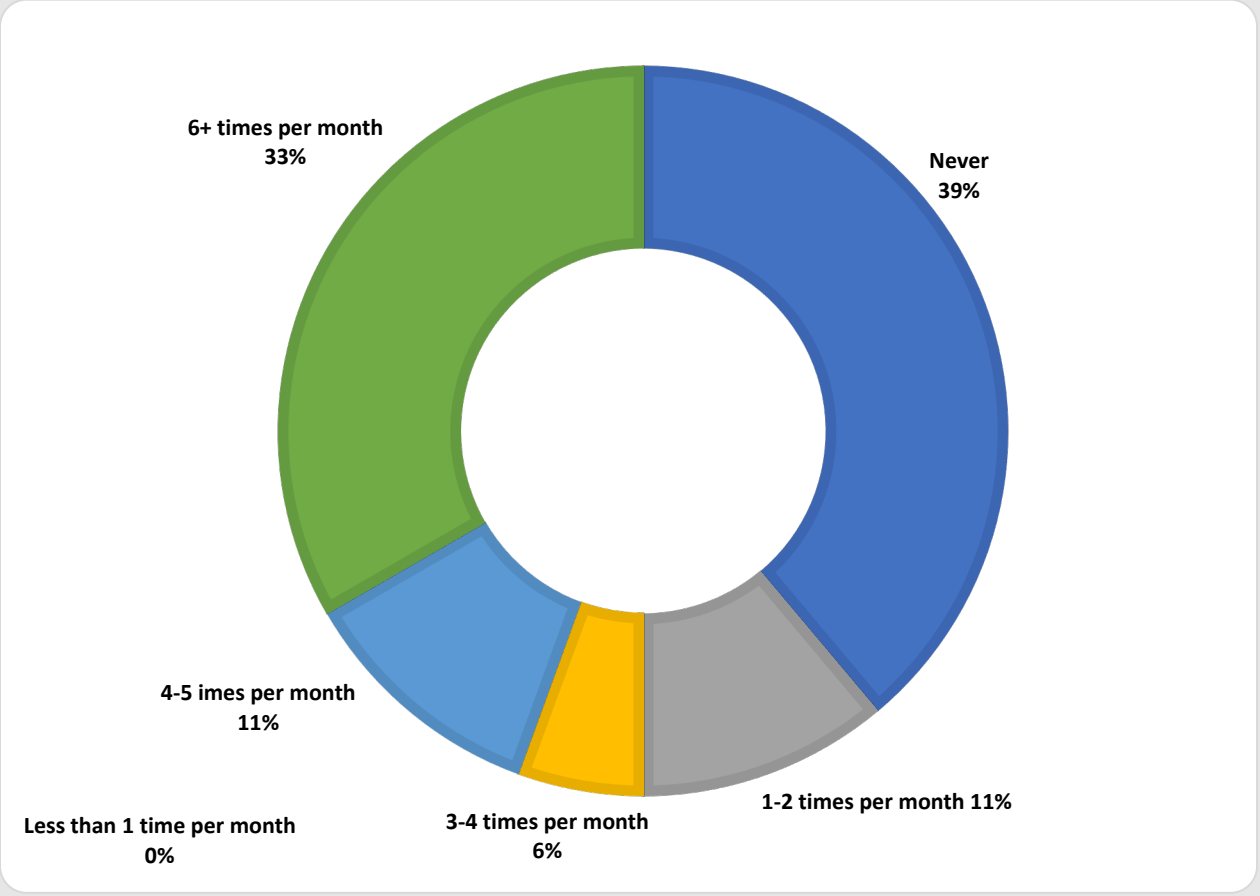
Figure C-8: How often do you have trouble finding truck parking (truck stop, rest area, etc.) in Rhode Island?



How often do you park outside of Rhode Island due to lack of parking in Rhode Island?

Survey participants were asked how often they parked outside the Rhode Island area. They were asked to make one selection from a list that ranged from 'Never' to '6+ times per month'. Figure C-9 shows that 61% of respondents report parking outside of Rhode Island at least once per month due to lack of parking.

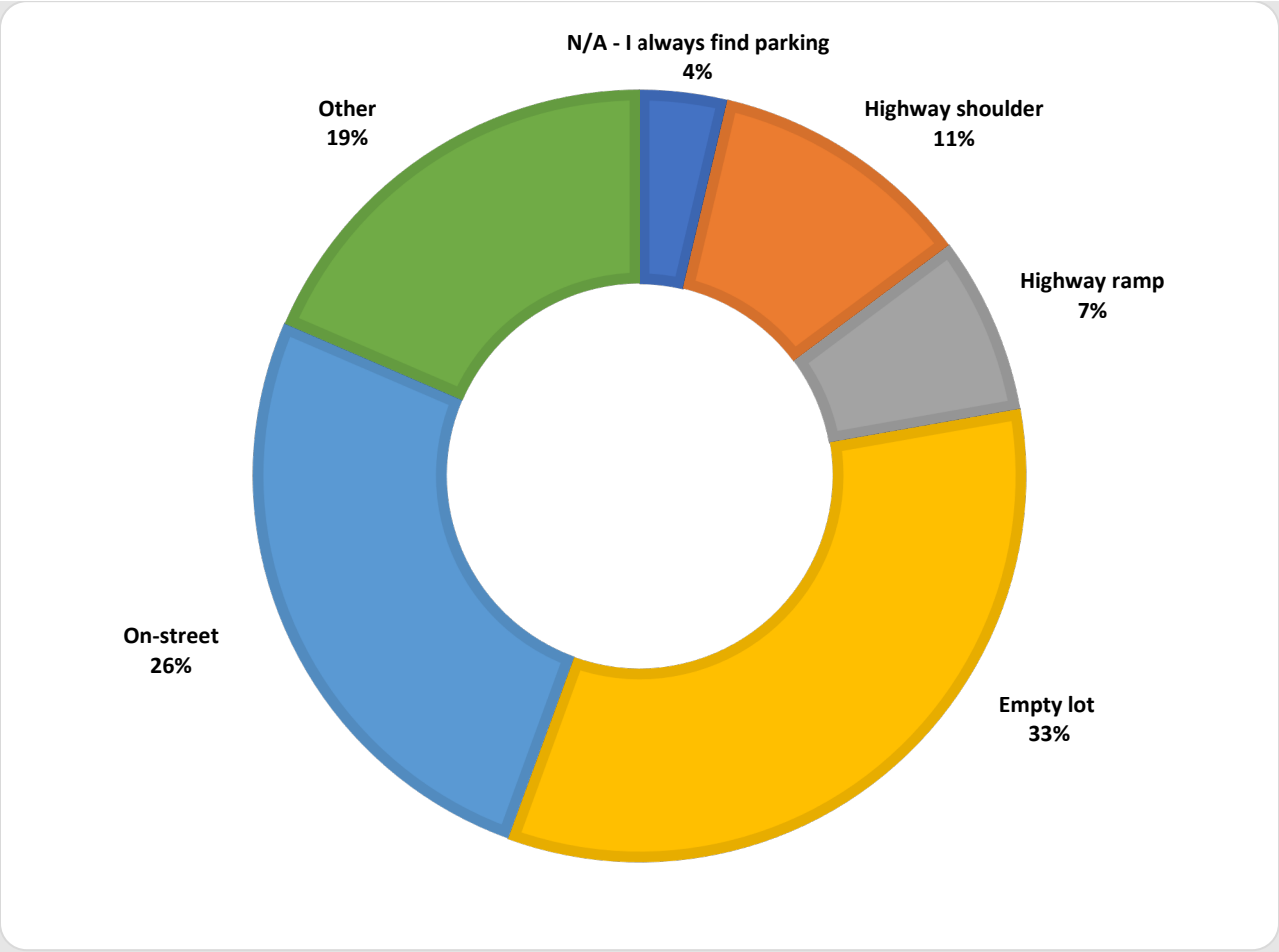
Figure C-9: How often do you park outside of Rhode Island due to lack of parking in Rhode Island?



if you cannot find a designated truck parking space, what type of parking location are you likely to choose? choose all that apply.

Survey participants were asked to select from one or more of six location types for where they would park if they could not find a designated truck parking space. As shown in Figure C-10, the most selected locations were 'Empty lot' (33%), 'On-street' (26%) and 'Highway shoulder' (11%). The number of selections for 'Other' (19%) and 'Highway ramp' (7%) were also significant. The results suggest that drivers have a variety of preferences for parking locations if they are unable to find a designated truck parking space. Very few respondents (4%) said that they can always find parking, which reinforces the finding that truck parking is a problem in Rhode Island.

Figure C-10: If you cannot find a designated truck parking space, what type of parking location are you likely to choose? Choose all thar apply.



What specific features and/or amenities do you look for when choosing where to park? choose up to 5.

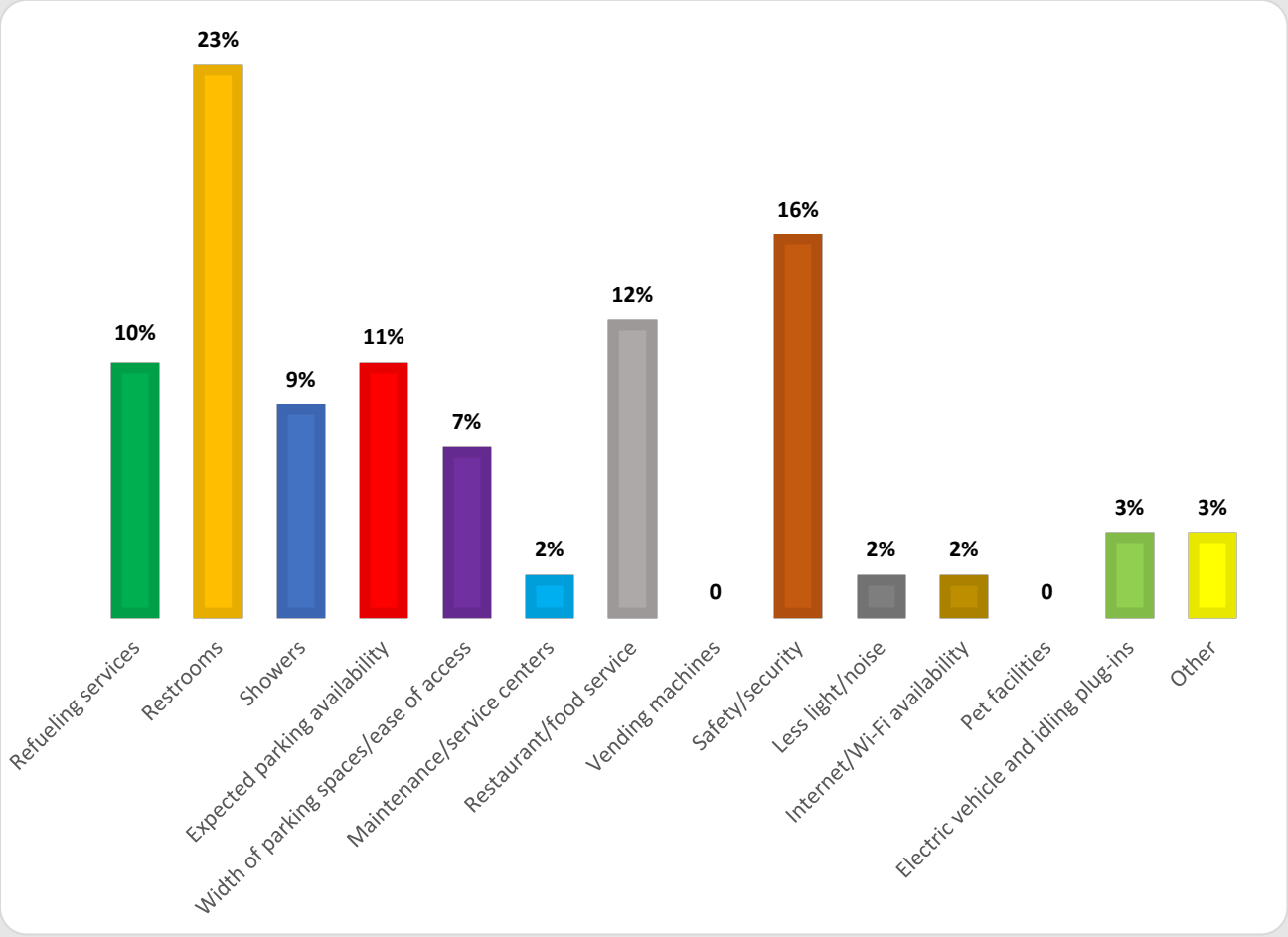
Survey participants were asked to select up to five choices from a list of twelve features and amenities that would influence their decision of where to park. The results are displayed in Figure C-11.

The features and amenities most selected by participants could be categorized as follows:

- Restrooms were selected by 23% of respondents.
- Safety and security were chosen by 16% of respondents.
- Restaurants and food service were selected by 12% of respondents.
- Parking-related features (availability and width of spaces) were selected by 18% of respondents.
- Refueling services and Maintenance/service centers were chosen by 12% of respondents.

The results suggest that essential or basic amenities heavily influence the decision of where to stop for survey participants. On the other hand, features and amenities such as less light/noise, internet/Wi-Fi, pet facilities, and vending machines were not as frequently selected by survey participants.

Figure C-11: What specific features and/or amenities do you look for when choosing where to park? Choose up to 5.



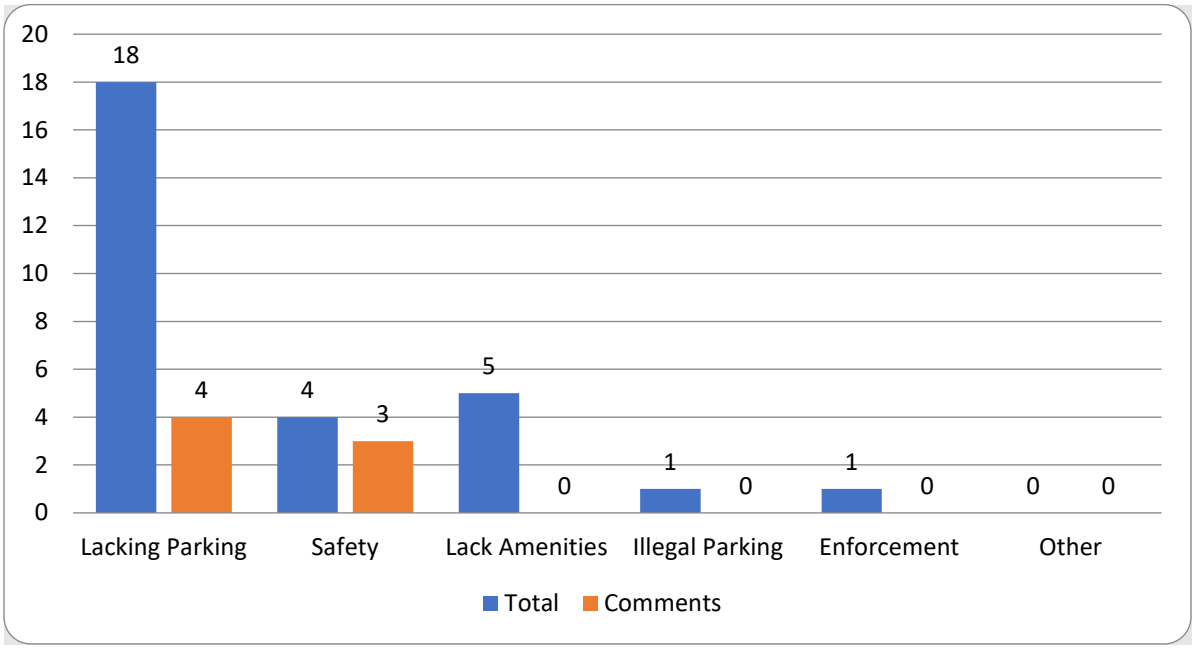
C.2 LOCATION OF TRUCK PARKING ISSUES

Survey participants were asked to place at least three markers on a map of the greater Rhode Island area to identify locations of truck parking issues. There were six types of markers to represent the following issues:

- Lacking Parking
- Safety
- Lack Amenities
- Illegal Parking
- Enforcement
- Other (please comment)

Each participant was asked follow-up questions to understand the parking issues in the specific location, such as why the driver was parking there and if they had any open-ended comments. The following link shows the map with the markers placed by participants: Google Map of Truck Parking Markers in the Rhode Island Area. A total of 12 respondents placed 29 markers and provided 7 comments tied to specific locations. Figure C-12 and comments were distributed among the identified issues. The majority (62%) of markers represented areas lacking parking. Most of the remaining markers represented safety or the lack of amenities. Very few markers were placed for illegal parking, enforcement, or other reasons. The results reinforce the conclusion that lack of truck parking is the most significant issue for respondents.

Figure C-12: Distribution of Map Markers

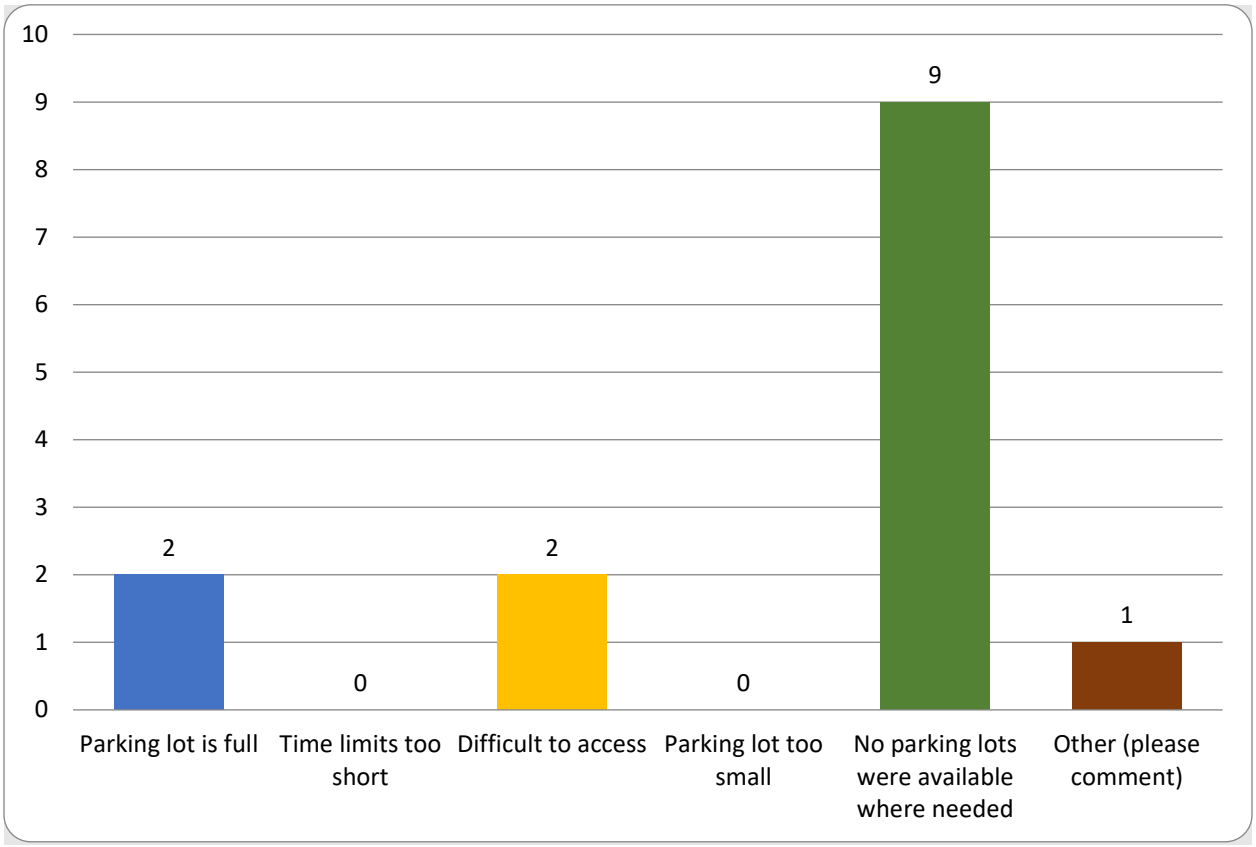


Participants were given the opportunity to provide more detail. The following sub-sections present the responses to these follow-up questions.

Lacking Parking

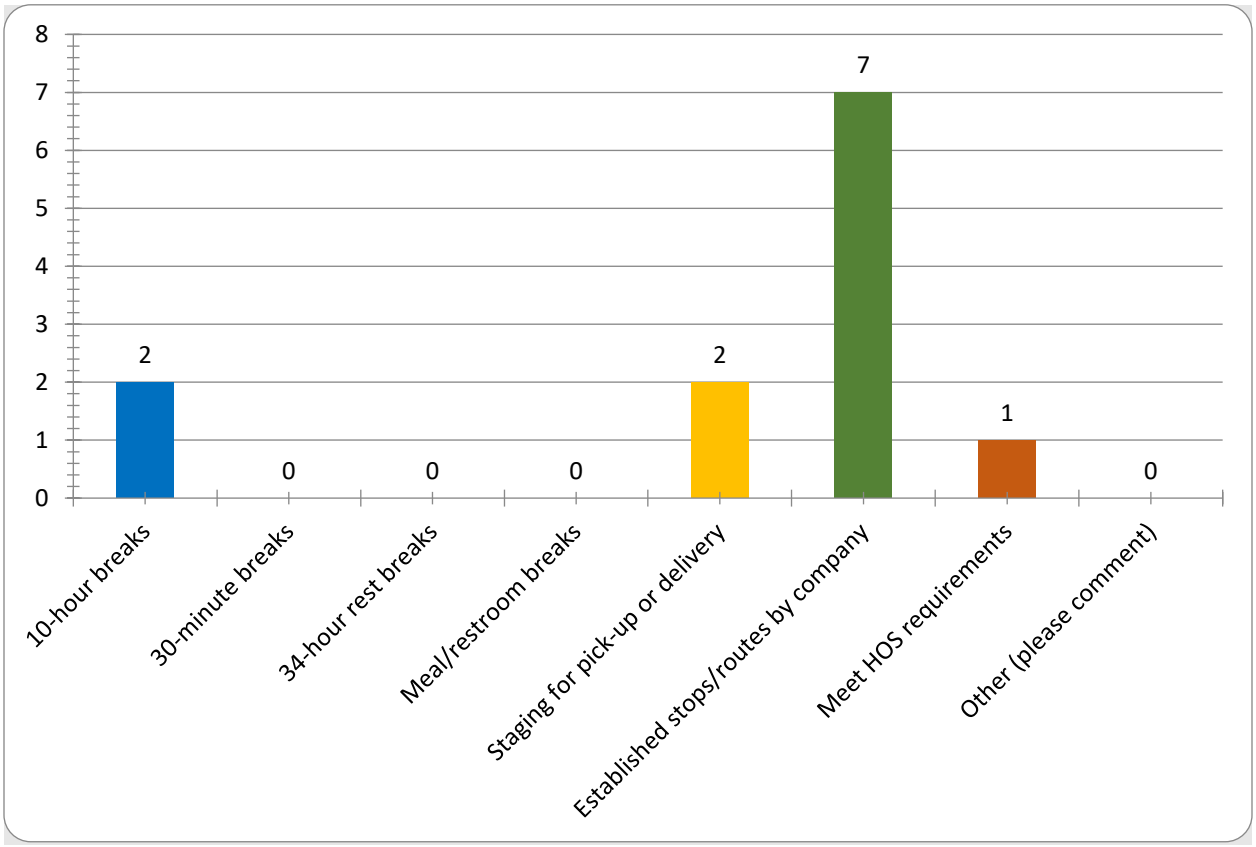
Participants were asked two follow-up questions regarding the lack of parking: "Why is there insufficient parking?" and "Why do you park there?". As shown in Figure C-13, the most comment response was that parking lots were not available where needed whereas two respondents said that parking lots were too full or difficult to access. One of the comments in response to this question was: "Nearest loading zone is across the street causing an unsafe delivery situation."

Figure C-13: Why is there insufficient parking?



Participants were also asked "why do you park there?" about the point on the map where they had placed the marker. The results, shown in Figure C-14, demonstrate that many respondents who identified specific lack of parking, park for 'Established stops/routes,' while a smaller number park for '10-hour breaks,' 'Staging for pickup or delivery,' or to 'Meet HOS requirements.'

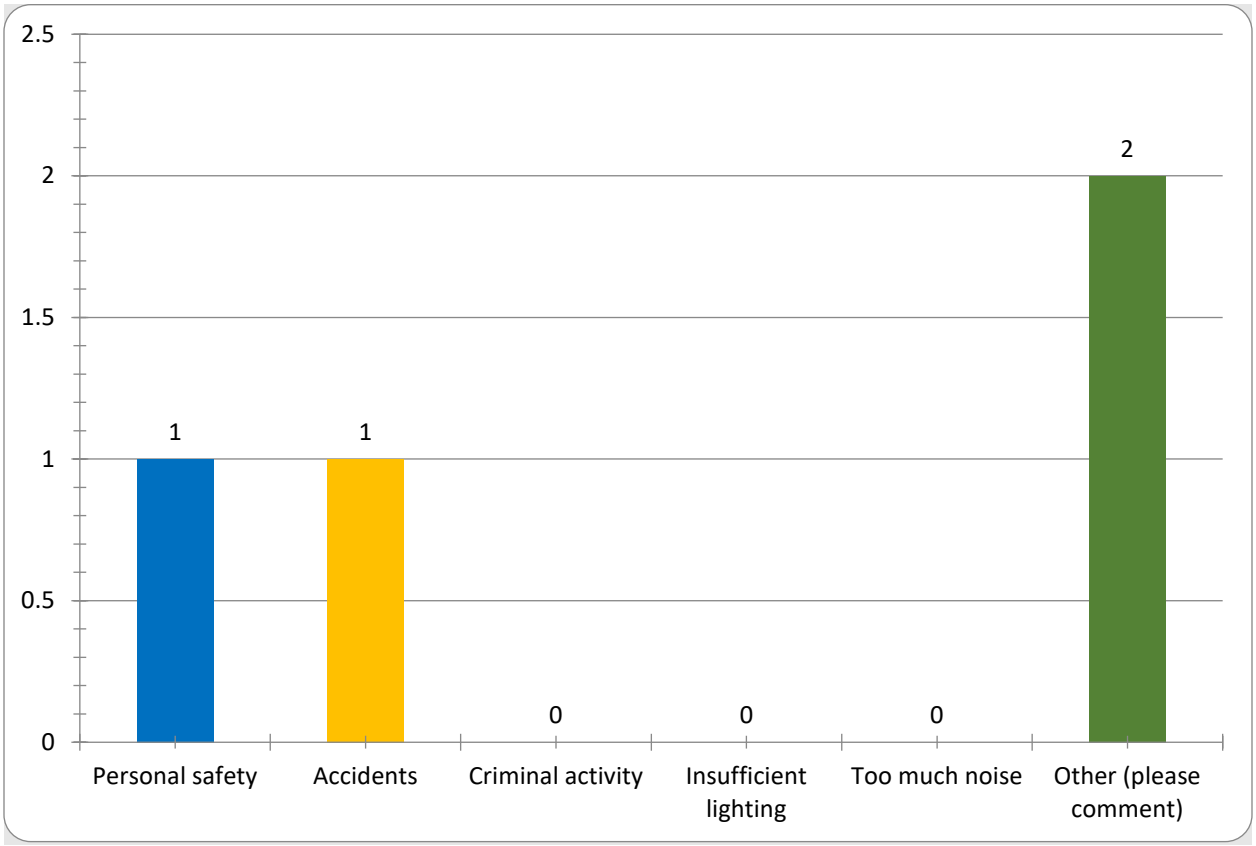
Figure C-14: Why Do You Park There? [Lacking Parking]



Safety

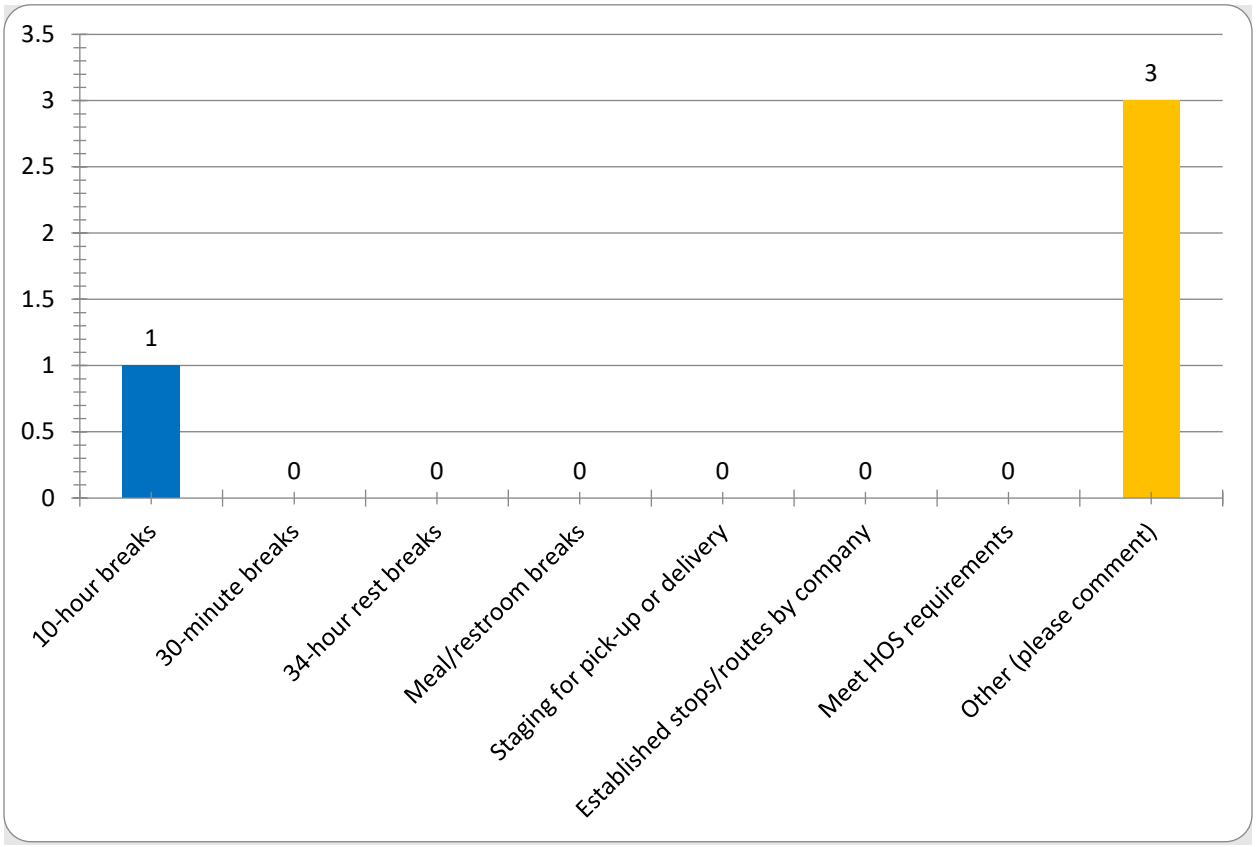
Participants were asked two follow-up questions regarding safety: "What is the safety/security issue?" and "Why do you park there?". Although only a limited number of responses were provided, the issues most cited by participants were 'Personal safety,' 'Accidents,' and 'Other' (Figure C-15). One participant commented that "[There is] insufficient lighting."

Figure C-15: What is the Safety/Security Issue?



In terms of reasons for parking in this location, one respondent cited '10-hour breaks' (Figure C-16). Three responded 'Other'. One participant commented: "[There is a] concern over the new 500k sq. ft. warehouse and traffic congestion from Airport Road to Route 37."

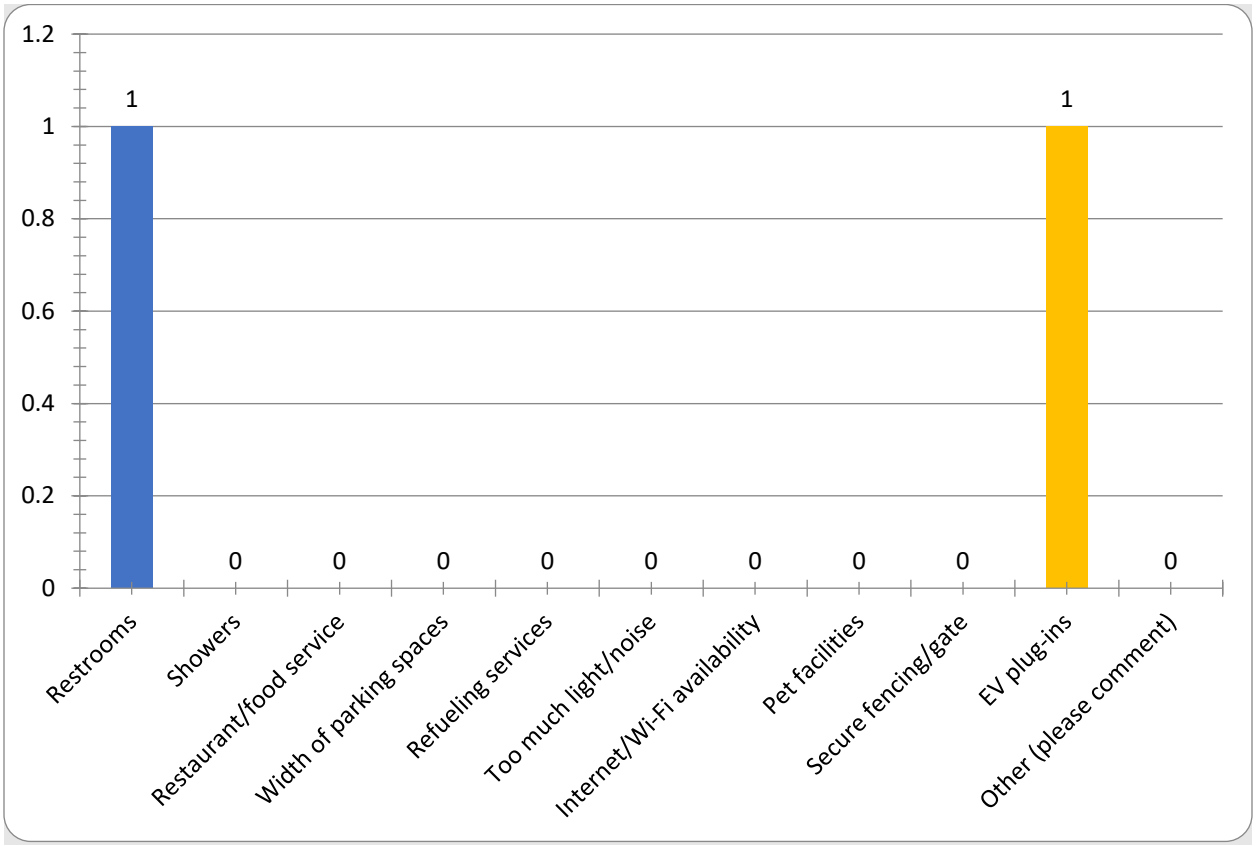
Figure C-16: Why Do You Park There? [Safety]



Lack of Amenities

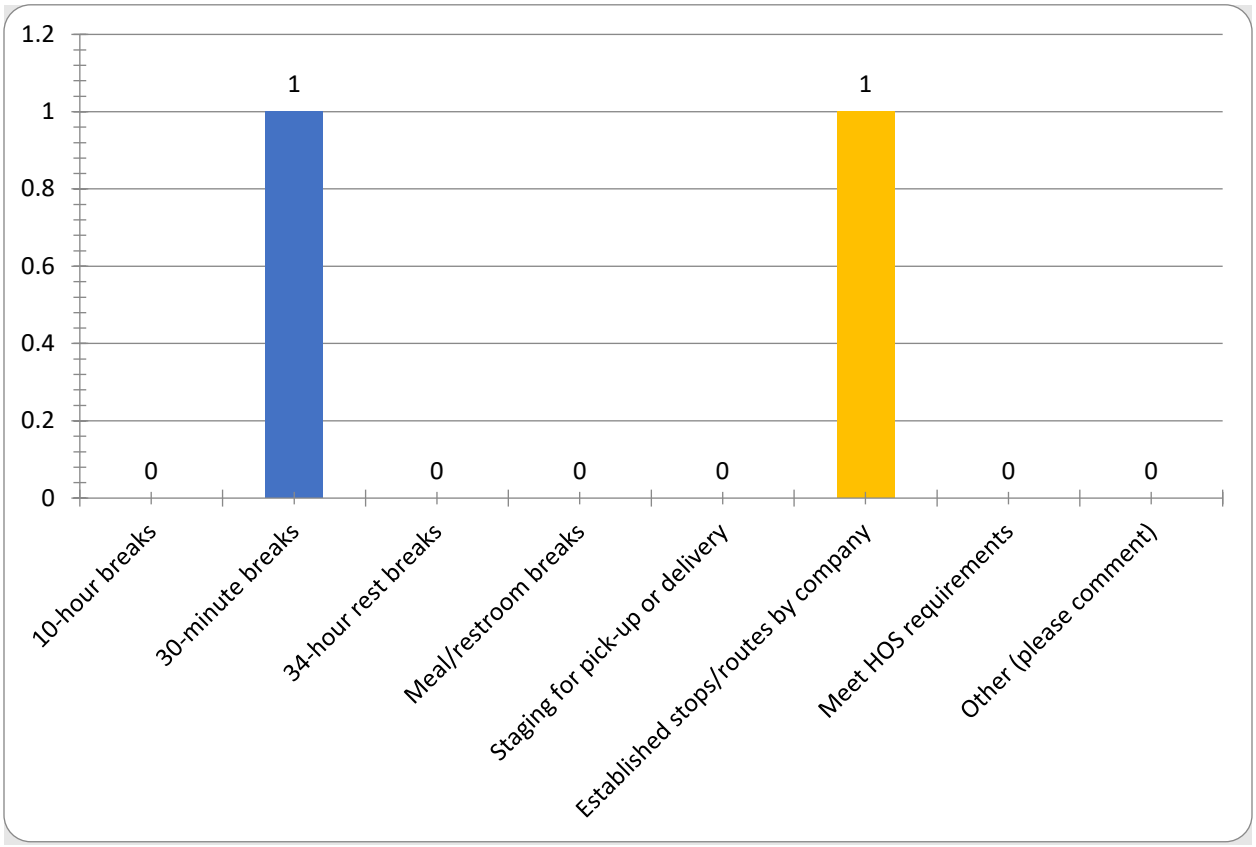
Participants were asked two questions regarding the lack of amenities: "What amenities are lacking?" and "Why do you park there?". There were few responses, but 'Restrooms', and 'EV plug-ins' were mentioned as lacking (Figure C-17).

Figure C-17: What Amenity Is Lacking?



In terms of why they parked where amenities were lacking, as shown in Figure C-18, the responses included '30-hour breaks' and 'Established stops/routes by company'.

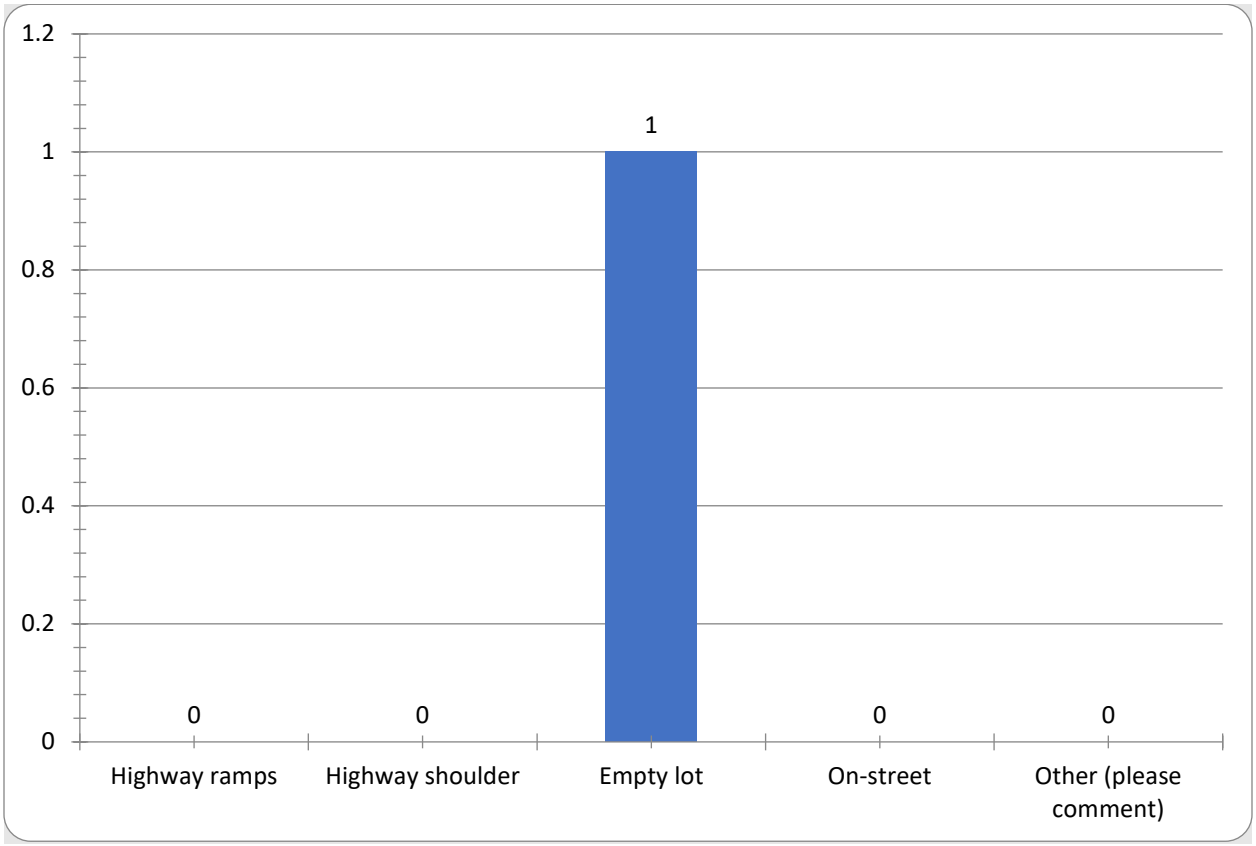
Figure C-18: Why Do You Park There? [Lack of Amenities]



Illegal Parking

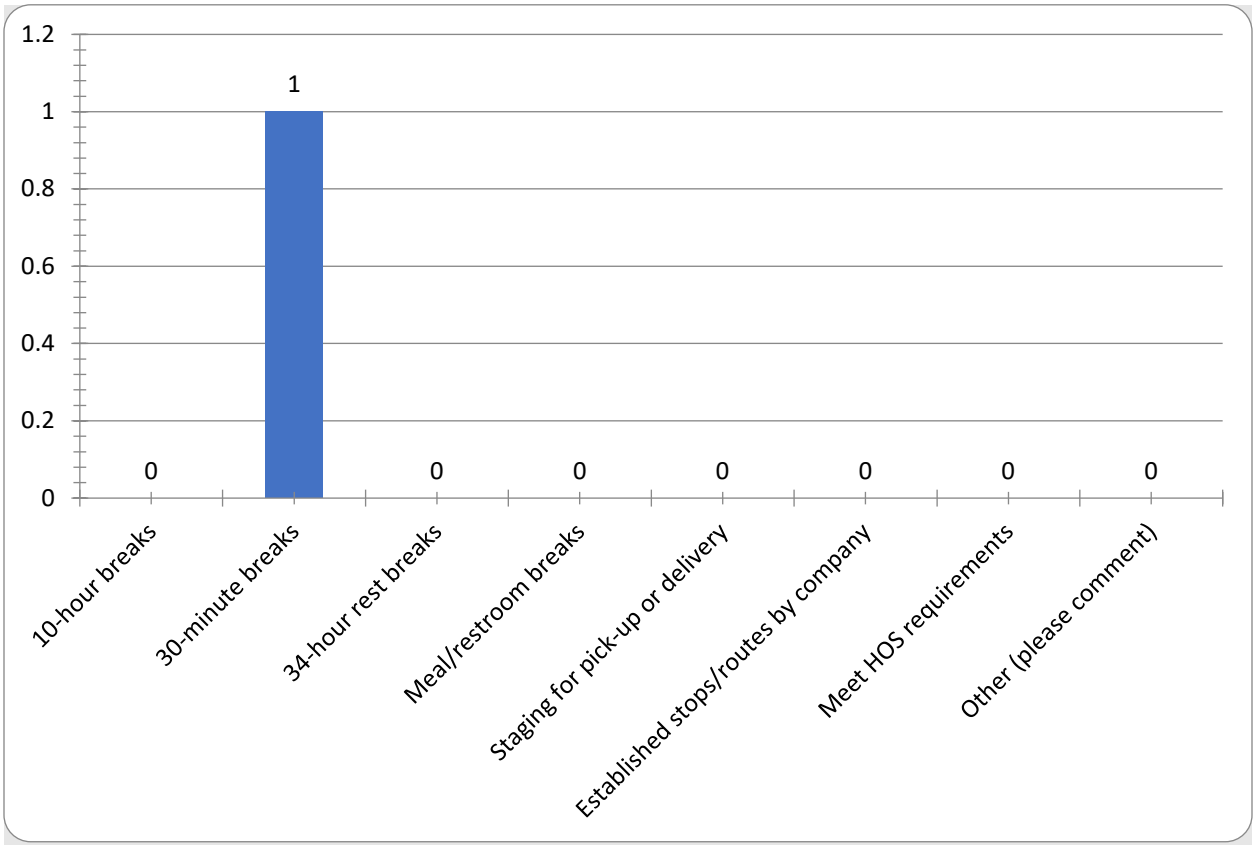
Participants were asked two questions regarding illegal parking: "Where does illegal parking occur?" and "Why do you park there?". One response cited 'Empty lot' (Figure C-19).

Figure C-19: Where does Illegal Parking Occur?



When asked why trucks parked illegally, as shown in Figure C-20, one participant responded '30-minute breaks'.

Figure C-20: Why Do You Park There? [Illegal Parking]



Enforcement

Participants were asked two questions regarding enforcement: "Which rule is being enforced?" and "Why do you park there?". No respondents answered these follow up questions.

Other

There were also zero responses for 'Why do you park there?'.

C.3 POTENTIAL STRATEGIES

Participants were asked to rate potential strategies on how well they thought each one would alleviate truck parking issues. Five main strategies were set forth and each strategy included several sub-strategies which were also rated.

The participants were asked to rate strategies on a scale of 1 (least beneficial) to 5 (most beneficial). Participants could also include a comment about each strategy and/or sub-strategy. In total, the strategies received 101 ratings and 0 comments.

Table C-1 presents the average Score for each strategy, which was calculated by adding up the ratings and dividing them by the number of inputs for each strategy or sub-strategy. The higher the average Score, the more beneficial the strategy or sub-strategy in the view of participants. The 'Technology' 'strategy received the highest Average Score, followed closely by 'Increased Street Parking', 'Expansion of Facilities' and 'Delivery Hours.' The lowest rated strategy was 'Paid Parking.'

Table C-1: Potential Strategies Ranked by Average Score

STRATEGIES	AVERAGE SCORE
Technology	4.2
Increased Street Parking	4.0
Expansion of Facilities	3.9
Delivery Hours	3.8
Paid Parking	2.8

The following sections describe the survey results for each of these strategies and the associated sub-strategies in the same order as shown in Table C-1.

Technology

'Technology' was the highest ranked of all the strategies**.** This strategy includes four sub-strategies which were also ranked by participants.

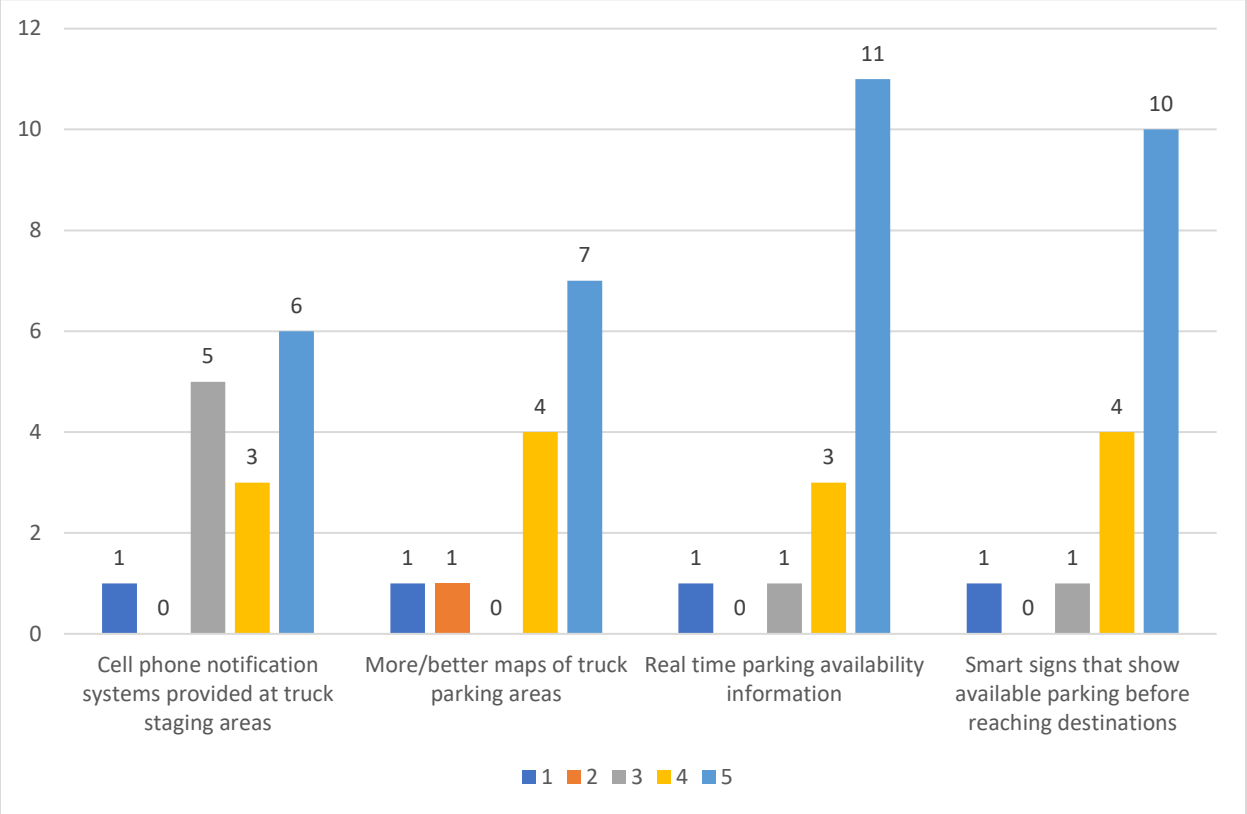
As shown in Table C-2 and Figure C-21, the highest rated sub-strategy by Average Score was 'Real time parking availability information' with an Average Score of 4.4.' *This was the highest rated sub-strategy among all sub-strategies ranked by participants.* It was followed by the second highest rate sub-strategy 'Smart signs that show available parking before reaching destinations' with an Average Score of 4.3. 'More/better maps of truck parking areas' had an Average Score of 4.1, and 'Cell phone notification systems provided at truck staging areas' had an Average Score of 3.8. The results suggest that the participants believe all these sub-strategies would be worth pursuing or exploring further.

Table C-2: Technology – Sub-strategies Ranked by Average Score

ITEM	AVERAGE SCORE
Real time parking availability information	4.4
Smart signs that show available parking before reaching destinations	4.3

ITEM	AVERAGE SCORE
More/better maps of truck parking areas	4.1
Cell phone notification systems provided at truck staging areas	3.8

Figure C-21: Technology – Sub-strategies Ranked



There were no comments provided by participants on this strategy and associated sub-strategies.

Increased Street Parking

'Increased Street Parking was the second-highest rated strategy. This strategy includes four sub-strategies which were also ranked by participants.

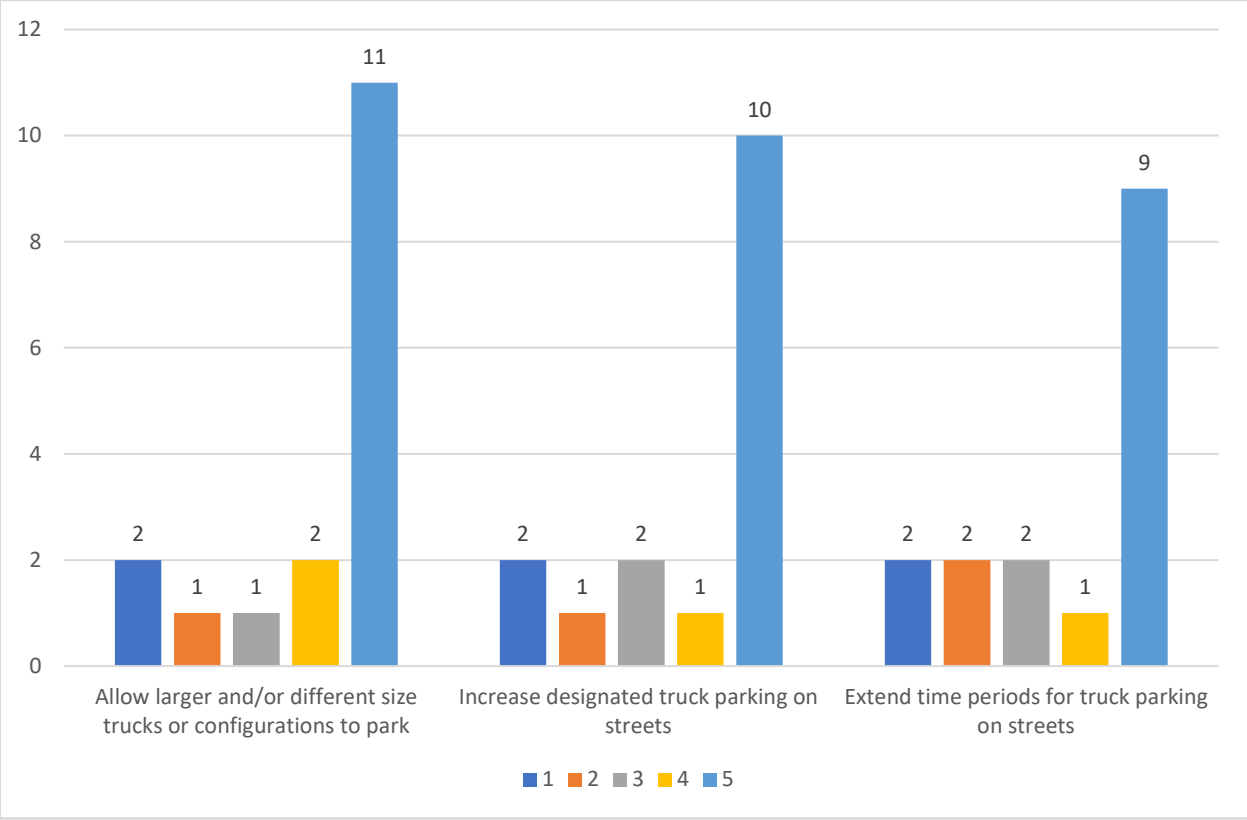
Figure C-22, the highest sub-category for the Increased Street Parking strategy was 'Allow larger and/or different size trucks or configurations to park' followed by 'Increase designated truck parking on streets.' The lowest sub-strategy in this category was 'Extend time periods for truck parking on streets,' although there was still substantial support.

Table C-3: Increased Street Parking – Sub-strategies Ranked by Average Score

ITEM	AVERAGE SCORE
Allow larger and/or different size trucks or configurations to park	4.1
Increase designated truck parking on streets	4.0

ITEM	AVERAGE SCORE
Extend time periods for truck parking on streets	3.8

Figure C-22: Increased Street Parking- Sub- strategies Ranked



There were zero comments provided by participants on this strategy and associated sub-strategies.

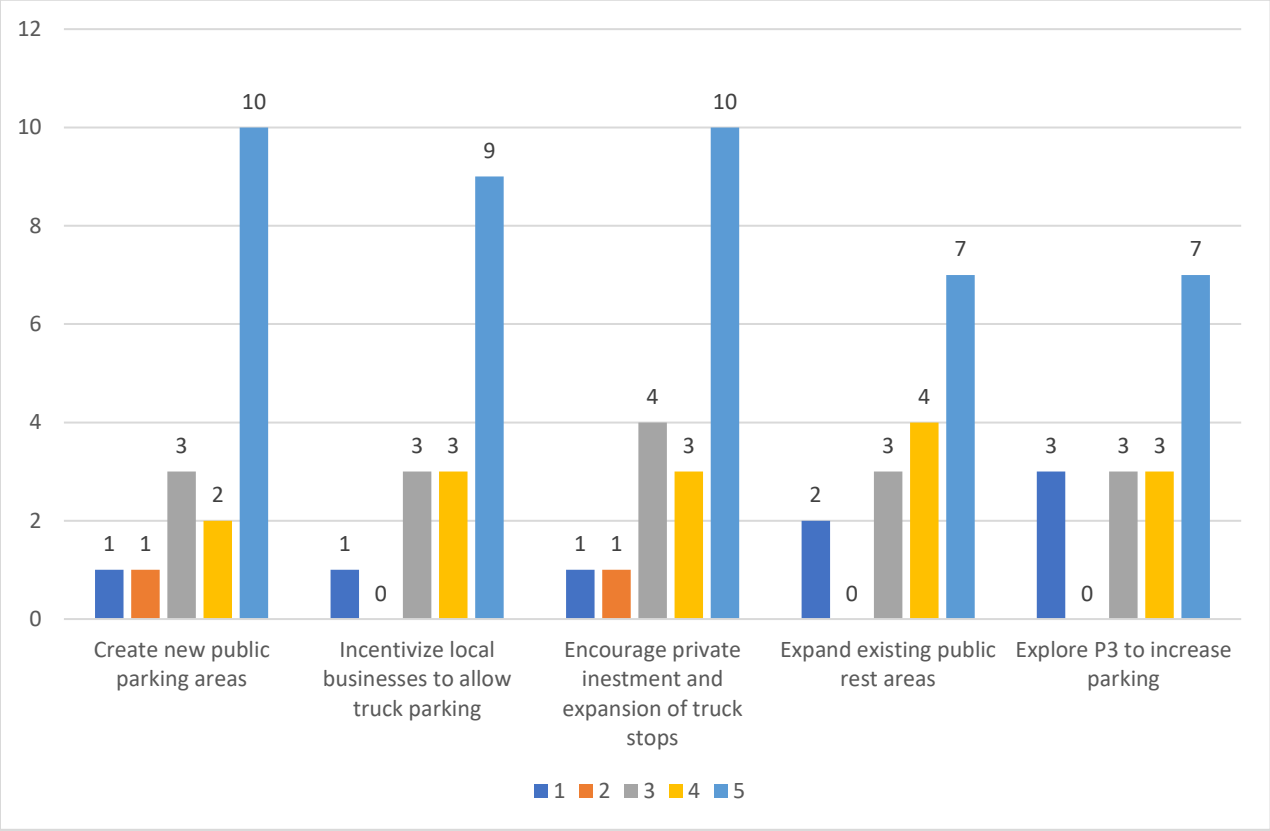
Expansion of Facilities

'Expansion of Facilities' was the third highest ranked strategy. As shown in Table C-4 and Figure C-23, there were three high ranked sub-strategies, 'Create new public parking areas', 'Encourage private investment and expansion of truck stops,' and 'Incentivize local businesses to allow truck parking'. These were followed closely by 'Expand public rest areas,' and 'Explore Public-Private Partnerships (P3) to increase parking '.

Table C-4: Expansion of Facilities – Sub-strategies Ranked by Average Score

ITEM	AVERAGE SCORE
Create new public parking areas	4.1
Incentivize local businesses to allow truck parking	4.1
Encourage private investment and expansion of truck stops	4.1
Expand existing public rest areas	3.8
Explore public-private partnerships to increase parking	3.6

Figure C-23: Expansion of Facilities – Sub-strategy Rankings



There were zero comments provided by participants on this strategy and associated sub-strategies.

Delivery Hours

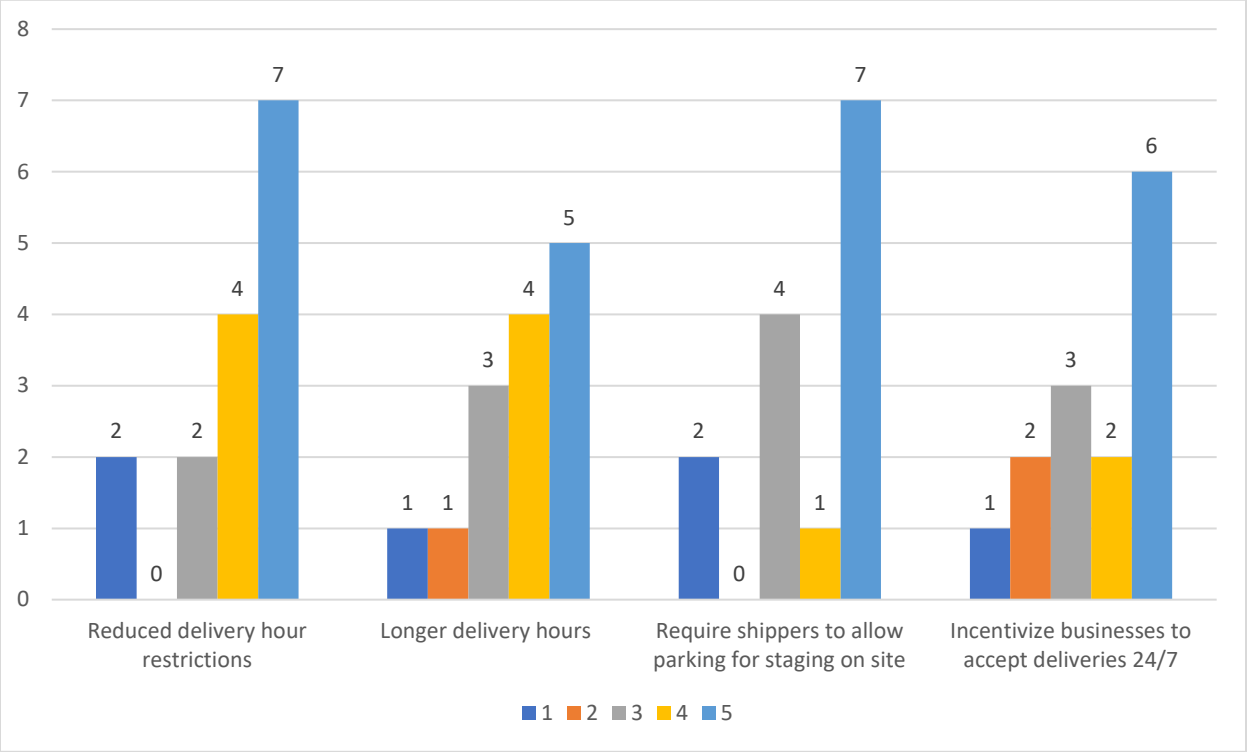
'Delivery Hours' was the fourth highest ranked strategy. This strategy includes four sub-strategies which were also ranked by participants.

As shown in Table C-5 and Figure C-24, the highest rated sub-strategy by Average Score was 'Reduced delivery hour restrictions. There was also support for 'Longer delivery hours,' 'Require shippers to allow parking for staging on site' and 'Incentivize businesses to accept deliveries 24/7.'

Table C-5: Delivery Hours – Sub-strategies Ranked by Average Score

ITEM	AVERAGE SCORE
Reduced delivery hour restrictions	3.9
Longer delivery hours	3.7
Require shippers to allow parking for staging on site	3.7
Incentivize businesses to accept deliveries 24/7	3.7

Figure C-24: Delivery Hours – Sub-strategies Ranked



There were zero comments provided by participants on this strategy and associated sub-strategies.

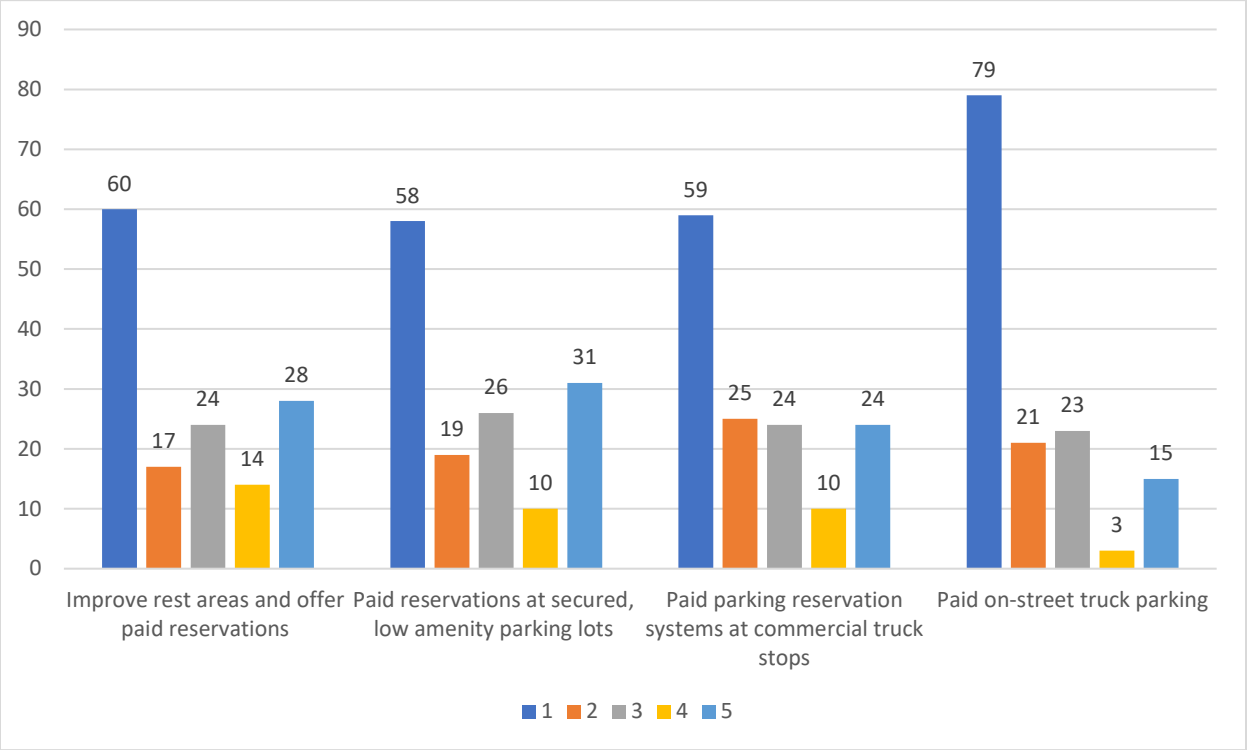
Paid Parking

'Paid Parking was the lowest rated strategy. This strategy includes four sub-strategies which were also ranked by participants. Figure C-25, the sub-strategies in this grouping were rated lower than other sub-strategies. Among them 'Improve rest areas and offer paid reservations,' rated the highest followed by 'Paid reservations at secured, low amenity parking lots'. and 'Paid parking reservation systems at commercial truck stops' received an average score of 2.6. The lowest sub-strategy was 'Paid on-street truck parking' with an Average Score of 2.3. It would appear that none of the paid parking ideas are popular, while the idea of paid on-street truck parking could be deemed highly unpopular.

Table C-6: Paid Parking – Sub-strategies Ranked by Average Score

ITEM	AVERAGE SCORE
Improve rest areas and offer paid reservations	3.2
Paid reservations at secured, low amenity parking lots	3.0
Paid parking reservation systems at commercial truck stops	2.6
Paid on-street truck parking	2.3

Figure C-25: Paid Parking – Sub-strategies Ranked



There were zero comments provided by participants on this strategy and associated sub-strategies.

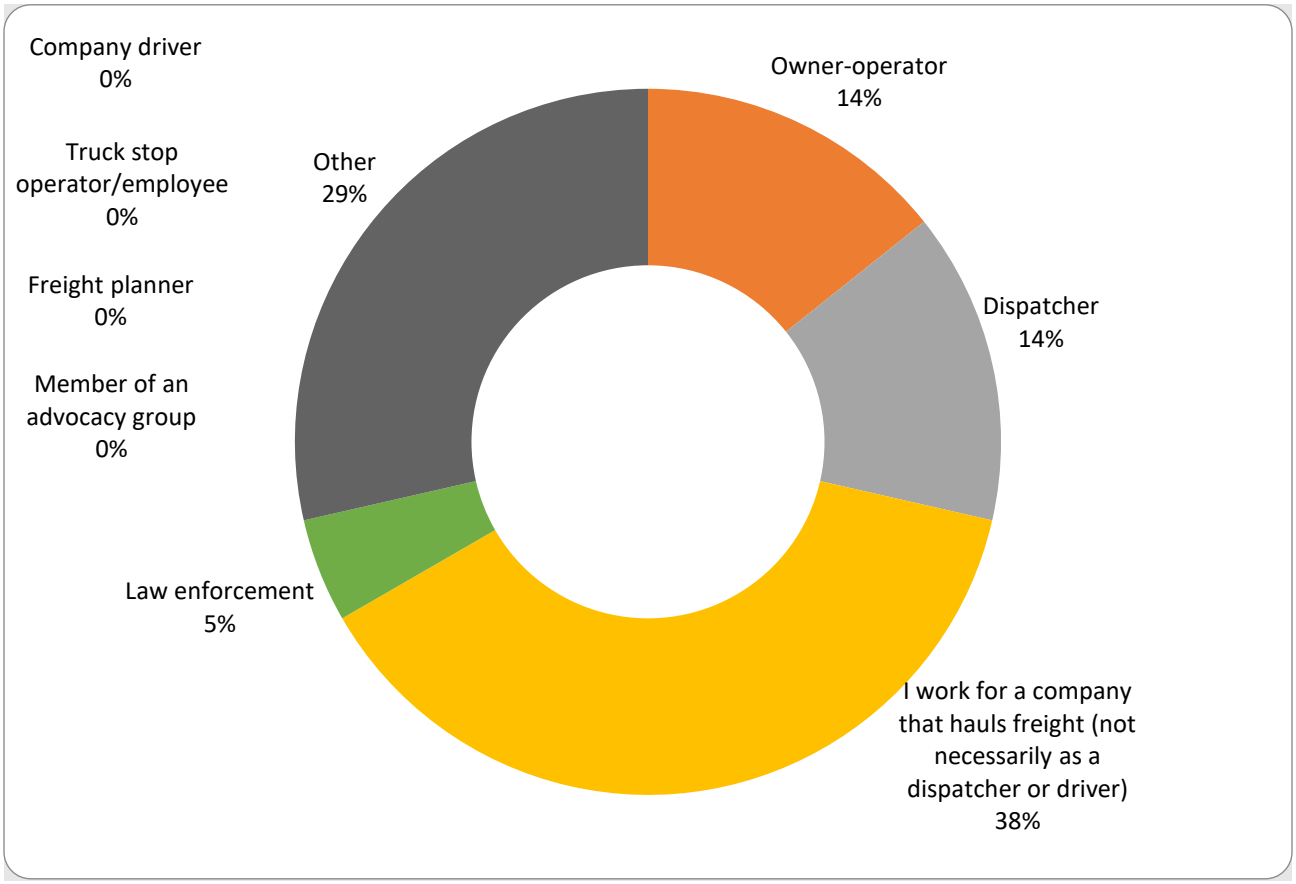
C.4 DEMOGRAPHICS AND TRUCK PARKING EXPERIENCE

Participants were asked six questions in order to better understand their truck driving experience and personal backgrounds. They were also asked if they would like to be added to the project's stakeholder list, and 7 participants requested to be included.

How would you describe yourself?

As shown in Figure C-26, the vast majority (38%) of study participants described themselves as working for a company that hauls freight. There was an even number of participants that described themselves as Owner-operator (14%) and Dispatcher (14%), while 29% described themselves as Other, and 5% described themselves as Law Enforcement.

Figure C-26: How Would You Describe Yourself?

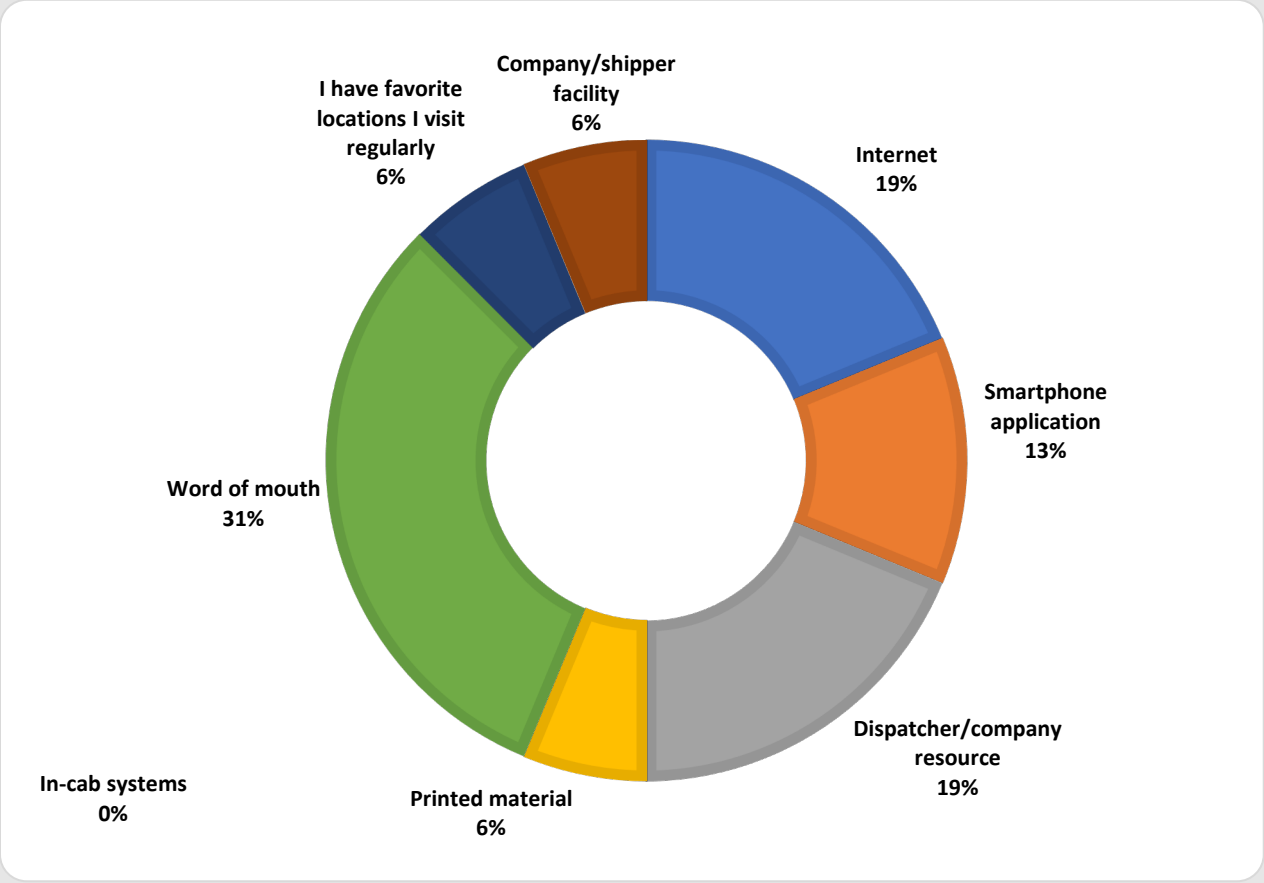


How would you typically locate parking?

Participants were asked how they would typically locate parking. They were provided a list of eight choices.

As shown in Figure C-27, 31% of the respondents said they typically rely on word of mouth to locate parking. Approximately 19% of participants selected dispatcher/company resource to locate parking, while 32% rely on the use technology to locate parking. The two least selected responses were company/shipper facility (6%) and printed materials (6%).

Figure C-27: How Do You Typically Locate Parking?

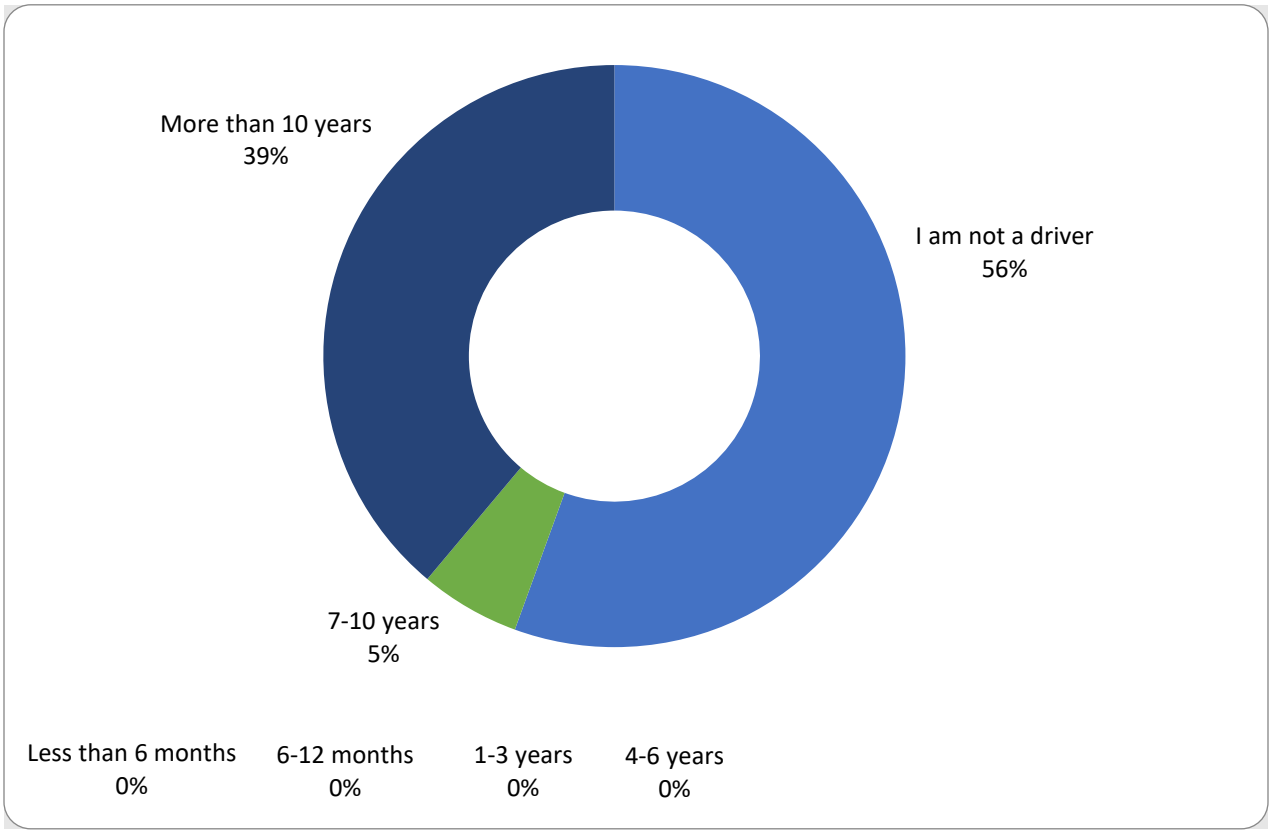


How Long Have You Driven Commercial Trucks?

Participants were asked how long they have driven commercial trucks. They were provided a list of potential choices, ranging from 'Less than 6 months' to 'More than 10 years.'

As shown in Figure C-28, the largest group, comprising 56% of the respondents, said they are not a driver. Nearly 40% have driven commercial trucks for more than 10 years and 5% have driven a truck between 7 and 10 years.

Figure C-28: How Long Have You Driven Commercial Trucks?

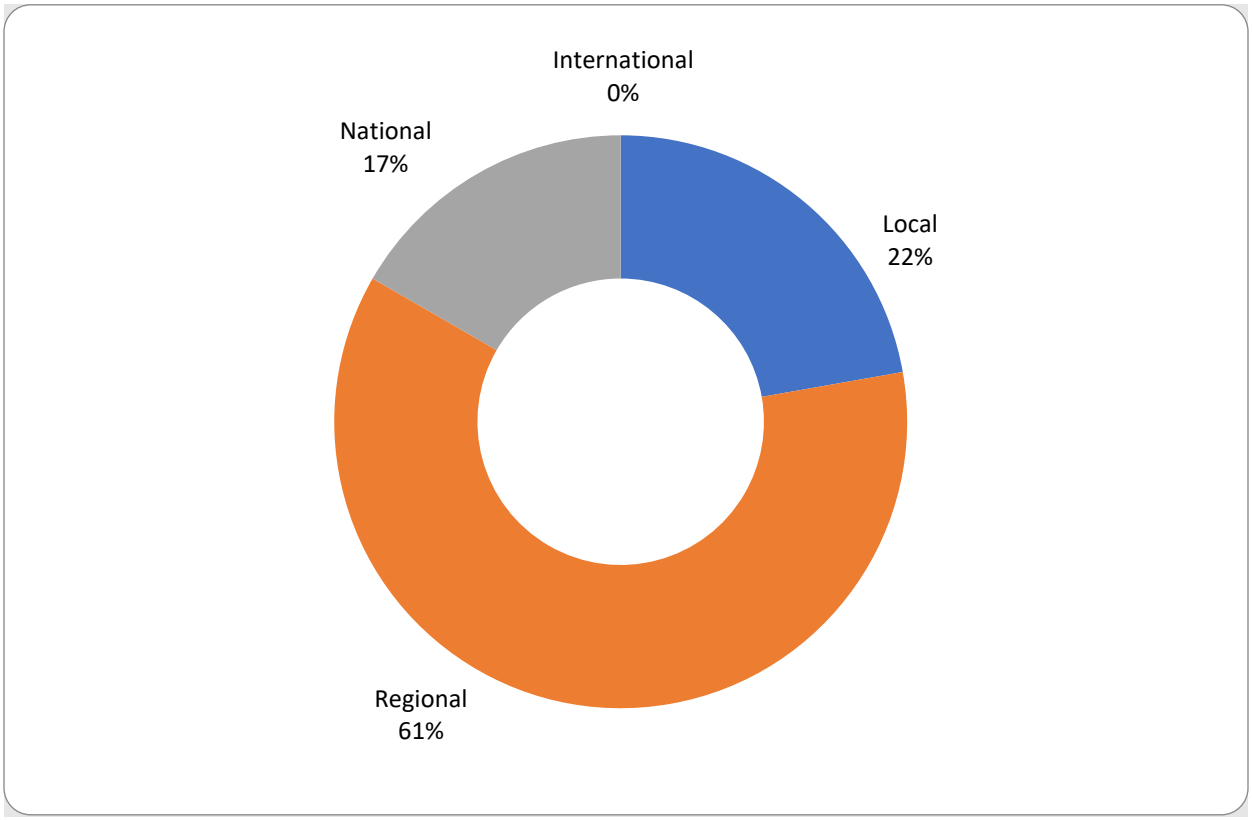


What is Your Usual Range of Operations?

Participants were asked to select their usual range of operations from a list of four choices, ranging from 'Local' to 'International.'

As shown in Figure C-29, eleven participants (61%) responded that their usual range of operations is 'Regional,' with a smaller number saying that their usual range is 'Local' (22%), and 'National' (17%). No participant responded to being 'International.'

Figure C-29: What is Your Usual Range of Operations?

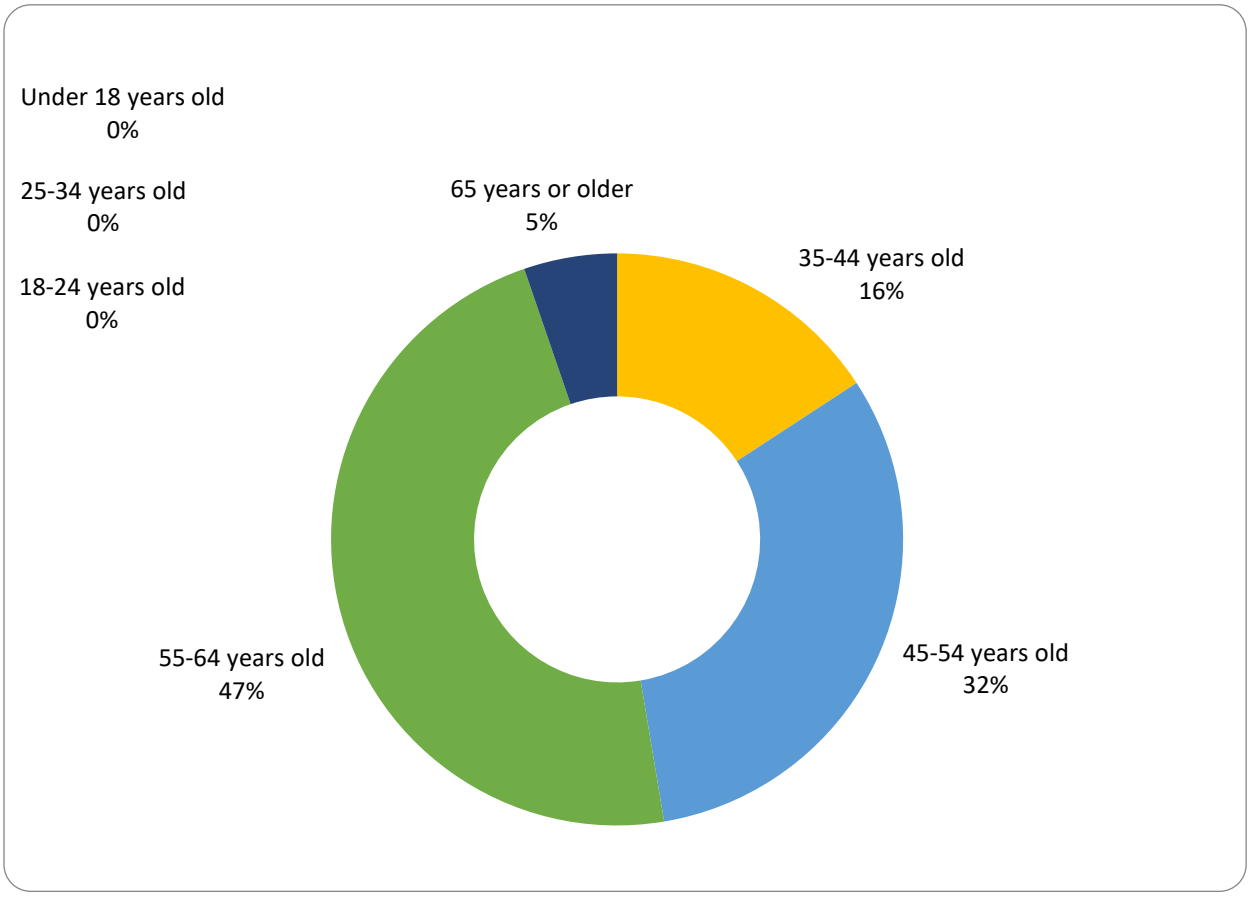


How Old are You?

Participants were asked to select their age group from a list that ranged from '18 to 24 years old' to '65 years or older.'

As shown in Figure C-30, almost 50% of participants responded they are between 55-64 years old, 32% between 45-54 years old, and 16% between 35-44 years old. A very small percentage of participants (5%) responded they are 65 years old and older.

Figure C-30: How Old are You?

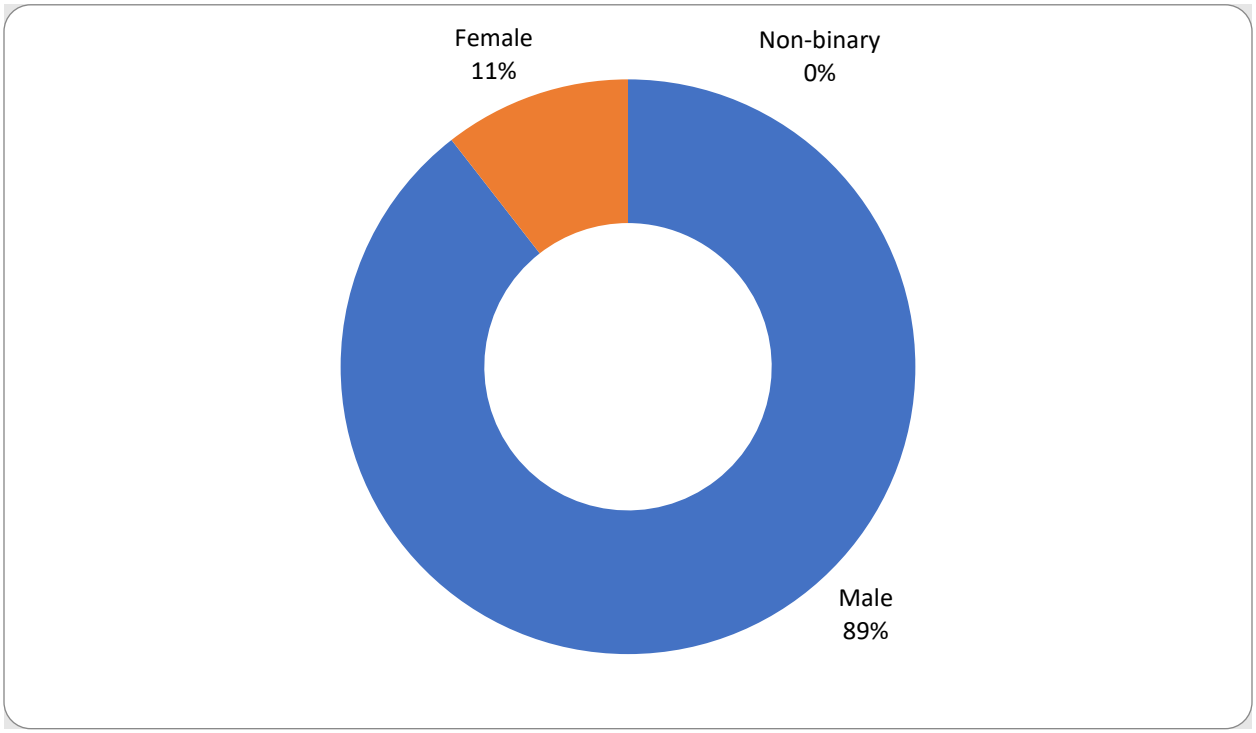


gender - How do you identify?

Participants were asked to select their gender from a list that gave them three options.

As shown in Figure C-31, 89% of participants identify as male and 11% as female.

Figure C-31: Gender – How Do You Identify?



C.5 METROQUEST SURVEY QUESTIONS

Welcome Screen

The welcome screen does not have questions. It provides the public with information about the survey.

The Rhode Island Division of Statewide Planning is seeking feedback on truck parking issues and strategies as part of a truck parking study for Rhode Island. Responses are anonymous, but your input will help shape recommendations that will address near and long-term truck parking needs

Standard Survey Screen

Topic 1: Frequency

1. How often do you park in Rhode Island?
2. How has tolling affected your need for parking in Rhode Island?

Topic 2: Issues

1. How would you rate the availability of truck parking in Rhode Island?
2. What are the main truck parking issues in Rhode Island? Choose up to 5.

Topic 3: Timing

1. How much time do you typically spend looking for parking?
2. When do you have the most trouble finding available parking in Rhode Island? Choose all that apply.

Topic 4: Need

1. Why do you need truck parking? Choose up to 3.
2. How often do you have trouble finding designated truck parking (truck stop, rest area, etc.) in Rhode Island?
3. How often do you park outside of Rhode Island due to lack of parking in Rhode Island?

Topic 5: Location

1. If you cannot find a designated truck parking space, what type of parking location are you likely to choose? Choose all that apply.
2. What specific features and/or amenities do you look for when choosing where you park? Choose up to 5.

Map Marker Screen

1. Lacking Parking – Why is there insufficient packing?
2. Safety – What is the safety/security issue?
3. Lack Amenities – What amenity is lacking?
4. Illegal Parking – Where does illegal parking occur?
5. Enforcement – Which rule is being enforced?
6. Other – Please comment
7. Follow up question – why do you park there?
8. Comment – open ended

Strategy Rating Screen

Strategy: Expansion of facilities

Sub strategies for rating:

a. Encourage private investment and expansion of truck stops
b. Incentivize local businesses to allow truck parking
c. Expand existing public rest areas
d. Create new public parking areas
e. Explore public-private partnerships to increase parking

Strategy: Technology

Sub strategies for rating:

a. Smart signs that show available parking before reaching destinations
b. Cell phone notification systems provided at truck staging areas
c. Real time parking availability information (via website or app)
d. More/better maps of truck parking areas

Strategy: Increased Street parking
Sub strategies for rating:

a. Increase designated truck parking on streets
b. Extend time periods for truck parking on streets
c. Allow larger and/or different size trucks or configurations to park

Strategy: Paid parking
Sub strategies for rating:

a. Paid parking reservation systems at commercial truck stops
b. Improve rest areas and offer paid reservations
c. Paid reservations at secured, low amenity truck parking lots
d. Paid on-street truck parking

Strategy: Delivery hours
Sub strategies for rating:

a. Longer delivery hours
b. Reduced delivery hour restrictions
c. Incentivize businesses to accept deliveries 24/7
d. Require shippers to allow parking for staging on-site

Wrap Up Screen

1. How would you describe yourself?
2. How do you typically locate parking?
3. How long have you driven commercial trucks?
4. What is your usual range of operations?
5. How old are you?
6. Share your email to receive project updates

Appendix D INTERVIEWS AND FOCUS GROUPS

D.1 ONE-ON-ONE INTERVIEWS

The participants in one-on-one interviews were:

- Gina Lindell, Corporal, Rhode Island State Police, Commercial Enforcement Unit – interviewed March 23, 2022
- Christopher Waterson, General Manager, Waterson Terminal Services LLC/Port of Providence – interviewed March 25, 2022
- Andrew Schiff, Chief Executive Officer, Rhode Island Community Food Bank – interviewed March 28, 2022
- Jeffrey Smith, Senior Manager, Transportation and Logistics, Ocean State Job Lot – interviewed April 14, 2022
- Steven Fischer, Facility Warehouse Manager, Cargill – written comments submitted April 18, 2022 when Mr. Fischer inadvertently missed the date of the session
- Michael Collins, Co-Owner, M&D Transportation – interviewed May 3, 2022

The main findings of the interviews were:

- When asked to rate the availability of truck parking in RI, 67% of respondents cited “poor” and “very poor.”
- All of the respondents believe the primary truck parking issues in the state are *availability* and *location*.
- To compensate for the lack of parking, most respondents (60%) advised truckers “drive through RI to another state” and/or “park in a large commercial lot.” One respondent, a facility manager, advised differently, saying “most haulers have agreements with our facility to park on site; otherwise, they find parking on side roads or vacant lots.”
- A majority of respondents (67%) advised parking deficiencies result in “delivery delays” and “routing delays” that result in higher labor costs.
- In assessing geographic areas in the state for truck parking, 33% of respondents cited “southern Rhode Island as the best location;” 33% believe truck parking is “bad everywhere;” and 17% cited “northern Rhode Island as the worst.”
- All respondents advised “hours of service” is the primary reason for needing parking, with HOS compliance comprising 70% to 90% of the need. The secondary reasons were “mechanical issues,” “weather,” “staging,” “fuel,” and “amenities.”

- One-third of the respondents (33%) believe "between 4:00 PM and 5:00 AM" is the most difficult time to find parking. Others reported "night time;" "when businesses are open;" and "we drive before 7:00 AM and after 5:00 PM to avoid problems."
- All respondents said truckers "call their dispatch" and/or "search and find a place to park" when they encounter a parking availability problem; with one respondent advising they "park where not permitted."
- One-third (33%) of respondents cited "one hour" as the time lost looking for parking. One reported "30 – 40 minutes." Another reported minimal time is lost by drivers when they coordinate with dispatchers.
- Half of respondents (50%) reported they have no delivery or pick up arrangements with shippers and receivers. One respondent, a warehouse manager, advised only dedicated carriers are permitted to park on-site at his facility; others must find their own parking.
- "Noise, anti-idling, and parking restrictions" were cited by 50% of respondents when asked what regulations in the state are problematic. "Tolls" were cited by 17%.
- "Google maps, phone and parking apps, and dispatch assistance" were cited by 67% of respondents when asked how truckers search for parking.
- Half of respondents (50%) replied "yes" when asked if truckers use routing software to find parking. *PC Miler* and *ProMiles* apps were examples given.
- "Safety" was identified by 83% of respondents when asked what do drivers look for when choosing a location to park. Other responses included "lighting," "adequate turning radii," "accessibility," "food," "fuel," and "bathrooms/showers."

When asked to agree or disagree with 18 possible strategies that may be implemented in Rhode Island to improve truck parking, the majority of the strategies had fairly high levels of support:

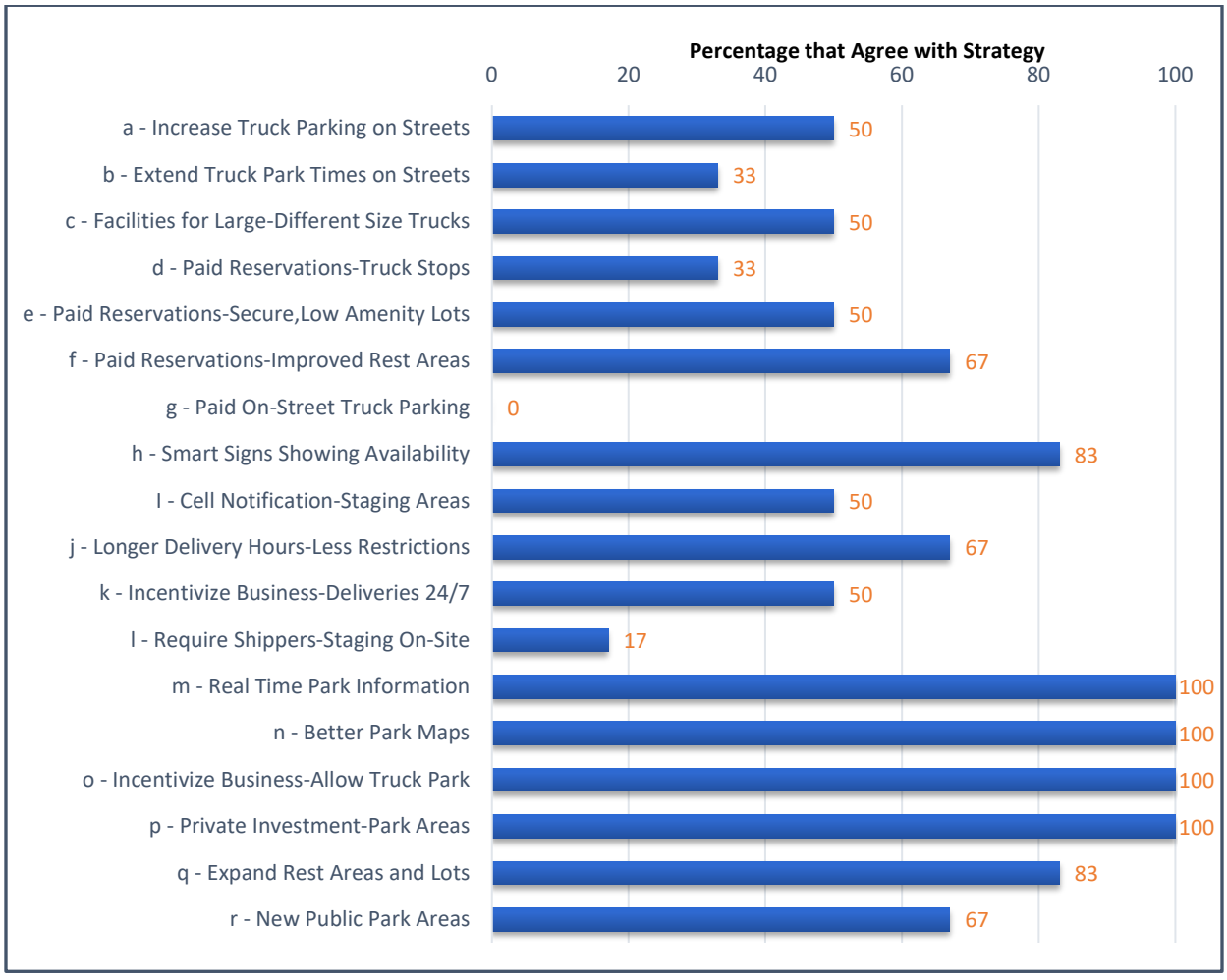
- Strategies with unanimous respondent support (100%) were:
  - Real time parking availability information via website or app
  - More/better maps of truck parking areas
  - Incentivize local businesses to allow truck parking
  - Encourage private investment and expansion of truck stops
- Strategies with near unanimous respondent support (83%) were:
  - Smart signs that show available parking before reaching destinations
  - Expanded existing public ruck rest areas and truck parking lots
- Strategies with 50% to 67% respondent support were:
  - Increase designated truck parking on streets
  - Allow larger and/or different size trucks or configurations to park
  - Paid reservations at secured, low amenity truck parking lots
  - Improve rest areas and offer paid reservations

- Cell phone notification system at truck staging areas
- Longer delivery hours/reduced delivery hour restrictions
- Incentivize businesses to accept deliveries 24/7
- Create new public parking areas

- Strategies with less than 50% stakeholder support were:
  - Extend time periods for truck parking on streets
  - Paid parking reservation systems at commercial truck stops
  - paid on-street truck parking
  - Require shippers to allow parking for staging on-site

The strategy with the least stakeholder support, representing 83% disagreement, was (g) paid on-street truck parking. These findings are illustrated in Figure D-1. When asked what other strategies should be considered for Rhode Island, respondents offered a) study truck volumes and their direction of travel to determine demand along the system and locations for more parking and b) significantly increase the quality of truck stops off major highways and interstates.

FigureD-1: One-on-One Stakeholder Interviews – Truck Parking Strategy Preferences.



D.2 WOMEN TRUCKERS FOCUS GROUP

The session was held, via Zoom, on May 3, 2022. The participants were:

- Debora Babin Katz, TrucBrush Corporation, Easton, MA
- Monique Chartier, RITA, Warwick, RI
- Melva Villalona, Flagship Trailways & LS Logistics, Cranston, RI [joined session at Question
- Chris Maxwell, RITA, Warwick, RI

The main findings of the focus group were:

- When asked to rate the availability of truck parking, participants generally agreed parking is only "fair" in Rhode Island because there are no locations in or near retail and industrial hubs such as Quonset Point and Providence. It was also noted that the ATRI cites truck parking as a top 10 industry issue. It is also a top priority of the Women in Trucking Association.
- All participants believe the primary truck parking issues in Rhode Island are *availability* and *location*. They believe truck parking today is scattered, not secure, not accommodating, and hard to find in the state. They also noted, during the pandemic, access to clean bathrooms was often denied to truckers.
- To compensate for the lack of parking, the participants said truckers search 15 minutes to one hour for a space. They also advised women tend to reserve a parking space close to the central building for safety and to avoid walking long distances in the dark.
- When asked how parking issues directly or indirectly impact trucking operations and efficiencies, participants agreed if parking is not safe, secure, and easily available in Rhode Island, there will be "less of an appetite for women" to travel on state routes. The 2018 AITR study was cited; reporting over $3,000 in lost revenue annually for each driver searching for a parking space.
- The participants believe Rhode Island is too small to distinguish or assess parking by geographic areas.
- All participants agreed 70% of the need for parking is for HOS compliance. The remaining 30% is for delivery, staging, retention, weather, and traffic-related needs.
- "Between 4:00 PM and 5:00 AM" was cited as the most difficult time for finding parking based on federal motor carrier surveys. Women trucking surveys were cited as "6:00 PM and later" being the most difficult time.
- One respondent, a long-distance commercial bus driver, reported when she cannot find a parking facility, "I just keep going rather than stop." She commented women should have safe options for bathroom and rest stops but "if there is nothing, I just continue because I don't want to lose my HOS. I have no choice."
- When asked how much time do drivers typically spend looking for parking, the general response was "one hour."

- The participants agreed some drivers have arrangements with shippers and receivers to coordinate the time for pick-up and delivery; some do not.
- The participants generally agreed that Rhode Island regulations are not problematic for truckers, however, regulations within the 39 cities and towns pose a greater problem because "most are not truck friendly and don't want trucks on their roadways." Designated safe havens for resting and staging outside or on the borders of the municipalities were suggested.
- It was agreed that telematics will govern and aid the search for truck parking in Rhode Island in the future. GPS and apps such as *Trucker Path*, *myPilot*, and *TruckSmart* were cited.
- The participants agreed that the use of routing software for finding truck parking is increasing.
- "Clean bathrooms, showers, adequate parking, and a secure location" as well as "vending machines – something to eat" were cited when participants were asked what services drivers look for when choosing a location to park. They referred to a national TA study that reported surveyed women truckers favor "more LED lighting, reserve-it-parking programs, stay-safe programs, rest room and shower improvements, laundry upgrades, text messaging [a message when laundry is done, for example, reduces the # of times the woman leaves her truck], paid security, health-beauty products, and healthy food choices."

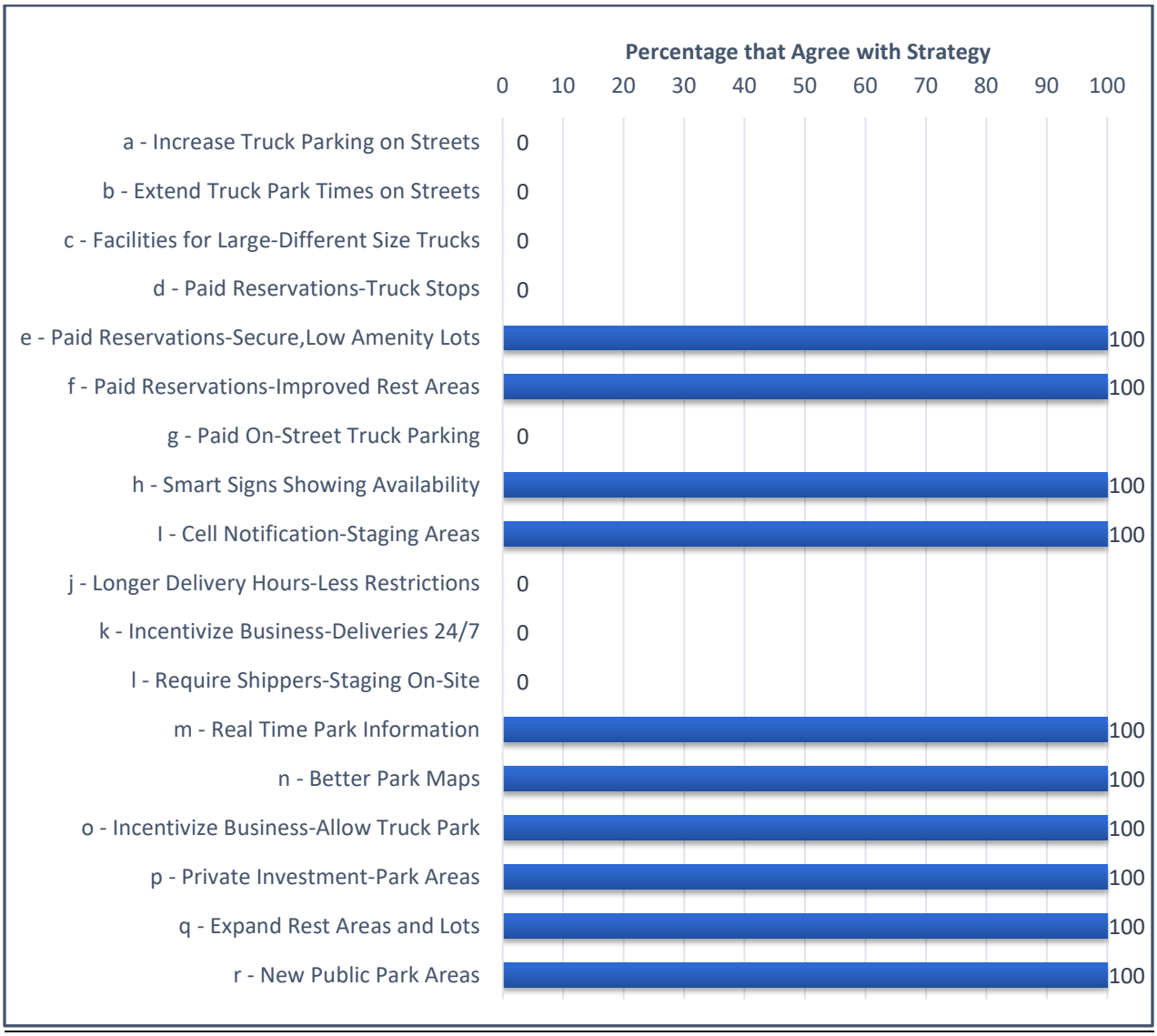
When asked to agree or disagree on 18 possible strategies that may be implemented in Rhode Island to improve truck parking, a majority were supported by the focus group:

- Ten strategies received unanimous support:
  - Paid reservation at secured, low amenity truck parking lots (provided there are pay and no pay options)
  - Improve rest areas and offer paid reservations (providing there are pay and no pay options)
  - Smart signs that show available parking before reaching destinations
  - Cell phone notification system at truck staging areas
  - Real time parking availability information via website or app
  - More/better maps of truck parking areas
  - Incentivize local businesses to allow truck parking
  - Encourage private investment and expansion of truck stops. They suggested that investment and expansion be incentivized along I-295 due to availability of land and the opportunity it presents to bypass metropolitan areas, congestion, and the I-95 s-curves.)
  - Expanded existing public truck rest areas and truck parking lots (but only if secure)
  - Create new public parking areas (but only if secure)
- Four strategies received unanimous disagreement and lack of support from the focus group:
  - Increase designated truck parking on streets
  - Extend time periods for truck parking on streets
  - Allow larger and/or different size trucks or configurations to park

  - Paid on-street truck parking
- Four strategies were cited as "not relevant" or received mixed reviews:
  - Paid reservations at truck stops
  - Longer delivery hours with less time restrictions
  - Incentivize business to allow deliveries 24/7
  - Require shippers to offer staging on-site

These preferences are shown in Figure D-2. When asked what other truck parking strategies should be considered for Rhode Island, participants advised "safety is paramount and an increasing issue for both men and women truckers." In response to Question #16 – *Is there anyone else you suggest we reach out to for an interview or to include on the study distribution list?* – Rebecca Brewster of the ATRI and Gail Wearsch of TA Petro were recommended.

Figure D-2: Women Trucking Focus Group – Truck Parking Strategy Preferences.



D.3 CITY OF PROVIDENCE, RI SERVICE AREA FOCUS GROUP

The session was held, via Zoom, on May 4, 2022. The participants were:

- David Everett, Principal Planner, City of Providence, RI
- Dick Cucino, D&N Equipment Services, Johnston, RI
- Bill Dove, D&N Equipment Services, Johnston, RI
- Frank Parella, Centrex Distributors, Inc., West Greenwich, RI
- John Clougher, Centrex Distributors, Inc., West Greenwich, RI
- Mike Kiwanis, Sims Metal, Providence, RI
- Cristina Kiwanis, Sims Metal, Providence, RI
- Robert Ellsworth, Schnitzer Steel, Providence, RI
- Chris Maxwell, RITA, Warwick, RI
- Joshua O'Neil, RIDOA, Division of Statewide Planning, Providence, RI

The main findings of the focus group were:

- When asked to rate the availability of truck parking in Providence, the general consensus was "poor." The participants cited narrow city streets that do not accommodate large trucks; congestion on Allens Avenue, a critical truck corridor; and the city's continuing replacement of truck loading zones with bikes lanes.
- There was general consensus that the primary truck parking issues in Providence are the "lack of parking for deliveries" and "width of roads, no access, no ample side-of-the-road areas."
- To compensate for the lack of parking, the group agreed there are no options. Citing Allens Avenue as their major travel corridor, participants reported congestion is "pretty much from 6 in the AM to 4 in the PM" and "you have no choice but to sit there."
- When asked how parking issues directly or indirectly impact trucking operations, those in the group that provide downtown deliveries said they try "to get in and out of certain parts of downtown as quickly as possible and…avoid lunch and dinner volumes" and "you may lose 5, 10 or 20 minutes per delivery depending on the time of day and the area."
- In assessing geographic areas in the city for truck parking, the participants generally agreed Allens Avenue is extremely difficult but – due to its access to I-95 and proximity to the Port of Providence and industrial land uses – it is the only option available for truckers.
- The participants believe staging represents 20% of the reason for the need for parking. The primary reason is for deliveries.
- All participants agreed that "mid to late afternoon and after 3:00 PM" are the most difficult times for finding parking in the city.
- When asked what do drivers typically do when they encounter parking problems, the agreed response was "our drivers double park. We park on curbs, sidewalks, and pay a lot of parking tickets."
- When asked how much time is required to find a parking space, the general response was "it takes roughly 1 hour a day."
- The participants advised they have no delivery or pick up arrangements with shippers or carriers.

- When asked if there are city regulations that are problematic for truck parking, participants believe city anti-idling regulations are not enforced thus, not a problem.
- It was generally agreed that truckers do not use apps for locating parking in the city.
- It was generally agreed that truckers do not use routing software for city parking with the exception of one respondent who uses *Road Show* software.
- Participants said they do not look for amenities when choosing a location to park in the city.

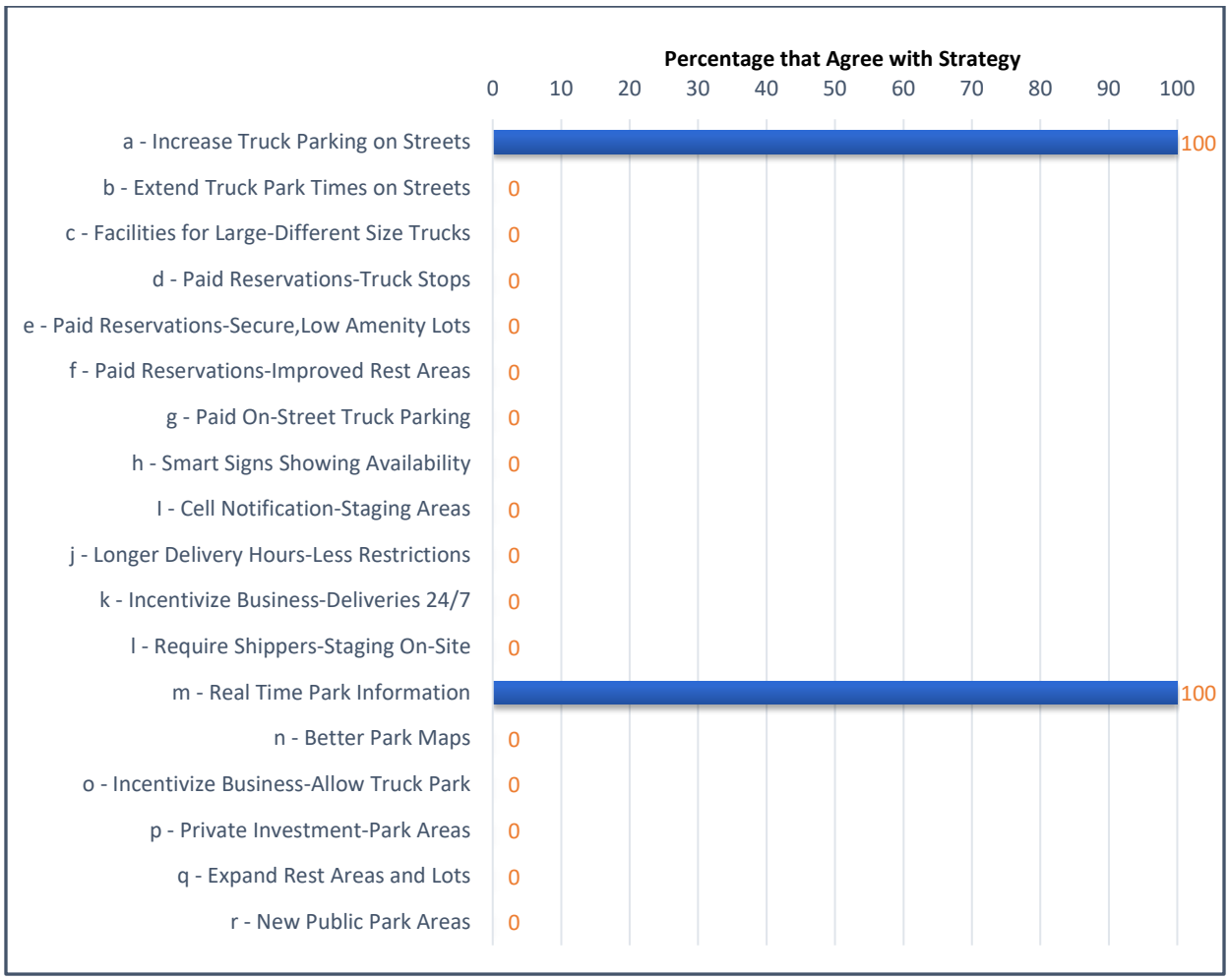
When asked to agree or disagree on 18 possible strategies that could be implemented in Providence and Rhode Island to improve truck parking, participants supported only two strategies. They stated most of the strategies were not applicable.

- Strategies (2) that received unanimous agreement and support were:
  - Increase designated truck parking on streets [Empire, Washington, and Westminster streets]
  - Real time parking availability information (via website or app)
- Strategies (4) that did not receive support were:
  - Paid on-street truck parking
  - Longer delivery hours/reduced delivery hour restrictions
  - Incentivize businesses to accept deliveries 24/7
  - More/better maps of truck parking areas
- Strategies (9) believed "not applicable" were:
  - Allow larger and/or different size trucks or configurations to park
  - Paid parking reservations systems at commercial truck stops
  - Paid reservations at secured, low amenity truck parking lots
  - Improve rest areas and offer paid reservations
  - Cell phone notification system at truck staging areas
  - Require shippers to allow parking for staging on-site – not applicable except if conditions on Allens Avenue get worse
  - Incentivize local businesses to allow truck parking
  - Encourage private investment and expansion of truck stops
  - Expand existing public truck rest areas and truck parking lots
- Strategies (3) that received mixed reviews with no comment either way were:
  - Extend time periods for truck parking on streets
  - Smart signs that show available parking before reaching destinations
  - Create new public parking areas within the city – with one participant saying if automobiles continue to park in truck loading zones, this may be necessary and the city representative advising Providence will not support additional parking.

These preferences are illustrated inFigure D-3 When asked if other truck parking strategies should be considered for Providence or Rhode Island, one participant commented, “additional truck loading zones that are available and open for us.”

In response to Question #16 – *Is there anyone else you suggest we reach out to for an interview or to include on the study distribution list?* – the group suggested UPS/Fed Ex. *Note:* These carriers were invited to participate in the project focus groups and one-on-one interviews. The requests were declined.

Figure D-3: Providence Service Area Focus Group – Truck Parking Strategy Preferences



D.4 CITY OF WARWICK, RI SERVICE AREA FOCUS GROUP

The session was held, via Zoom, on May 4, 2022. The participants were:

- Thomas Kravis, Director of Planning, Warwick, RI
- Robert Hart, Police Captain, Warwick, RI
- Ryan Roche, DL Terminals & JSA, Cranston, RI
- John Cougher, Centrex Distributors, Inc., West Greenwich, RI
- Chris Maxwell, RITA, Warwick, RI

The main findings of the focus group were:

- When asked to rate the availability of truck parking in Warwick, responses were “very poor,” “neutral,” and “not an issue.”
- There was general consensus that the primary truck parking issue in Warwick is “finding parking at places of business.” Another issue cited by participants is parking for interstate trucks entering the city from the north and south. It was explained that the Rhode Island Airport Corporation (RIAC), headquartered in Warwick, has plans to expand which will increase the number of trucks serving the airport. It was agreed increasing the capacity for truck parking on Airport Road and Post Road, south and to a new airport warehouse on Commerce Drive were priorities for the immediate future. The group also discussed the importance of roadway improvements either considered or currently programmed by the RIDOT for the Airport Connector, Main Avenue and State Route 37.
- To compensate for the lack of truck parking in the city, responses included “we try to get in and out; make our deliveries before the volumes pick up” and “we make other deliveries and come back to that location later.”
- When asked how parking issues directly or indirectly impact trucking operations, one participant commented, “The delivery will take longer if we have to park down the street rather than at the delivery site. This impacts our efficiencies.” Another participant indicated parking issues in Warwick do not impact their operations.
- In assessing geographic areas in the city for truck parking, the group generally agreed the city does not have acute issues; at least not as imbalanced as in the state as a whole where parking services are only provided on its southern end.
- Participants commented the reason for finding parking in Warwick depends on current and future conditions. For current conditions, they agreed 95% to 99% of the need is to find parking for deliveries. In the future with RIAC expansion, that may change to 50% relating to hours-of-service and 50%, relating to staging for deliveries.
- Participants agreed that “10:30 AM – 11:00 AM and after” is when deliveries become more difficult. Because of this, they try to arrange deliveries between 8:00 AM and 10:00 AM.
- When asked what do driver typically do when they encounter parking problems, the response was ”we go on to the next deliveries and circle back.”

- When asked how much time do drivers typically spend looking for parking, responses ranged from "we don't have an issue….and usually find parking quickly" to "at most it takes 10 to 15 minutes." City law enforcement noted, "every morning at 8:45 AM, we direct traffic for over 125 UPS delivery trucks."
- It was generally agreed by focus group participants that there are no delivery or pick up arrangements with shippers or receivers.
- When asked if any city regulations are problematic for truckers, there was general agreement that when sanitation trucks pick up at 7:00 AM, this violates the city noise ordinance. The trucks are monitored and cited when necessary.
- It was generally agreed that a) truckers currently do not use apps for locating parking in the city and b) this may be needed for staging in the future for interstate truck traffic generated by RIAC expansion.
- It was generally agreed that truckers do not use routing software for parking information within the City. The one exception to this was one participant's use of *Road Show* software.
- Participants indicated "safety" is the number one concern when looking for amenities when choosing a location to park. Motorized lifts (Electric Pallet Jacks) were mentioned as examples of aids deployed when conveying heavy loads along city streets to delivery sites.

When asked whether they agree or disagree with 18 possible strategies that may be implemented in Warwick or Rhode Island to improve truck parking, five strategies were supported:

- Strategies (5) on which participants unanimously agreed were:
  - Allow larger and/or different size trucks or configurations to park.
  - Cell phone notification system at truck staging areas.
  - Real time parking availability information (via website or app).
  - More/better maps of truck parking areas.
  - Create new public parking areas
- Strategies (2) with mixed focus group support were:
  - Increase designated truck parking on streets (40%) – in the future, to accommodate RIAC expansion, participants believe designated areas for truck lay over or staging will be needed.
  - Incentivize local businesses to allow truck parking (80%) – with the proviso that the strategy be timed and coordinated with future RIAC expansion
- Strategies (3) on which participants unanimously disagreed were:
  - Paid on-street truck parking.
  - Smart signs that show available parking before reaching destinations.
  - Longer delivery hours/reduced delivery hour restrictions
- Strategies (8) that participants believed were not applicable or relevant were:
  - Extend time periods for truck parking on streets.

- Paid parking reservations systems at commercial truck stops.
- Paid reservations at secured, low amenity truck parking lots.
- Improve rest areas and offer paid reservations.
- Incentivize businesses to accept deliveries 24/7.
- Require shippers to allow parking for staging on-site.
- Encourage private investment and expansion of truck stops.
- Expanded existing public truck rest areas and truck parking lots.

These preferences are illustrated in Figure D-4. When asked if other truck parking strategies should be considered for Warwick or Rhode Island, it was suggested truck parking expertise should be incorporated in RIDOT development site reviews.

In response to Question #16 – Is there anyone else you suggest we reach out to for an interview or to include on the study distribution list? – the group cited the RIAC and UPS/Fed Ex.

Figure D-4: Warwick Service Area Focus Group – Truck Parking Strategy Preferences.