Appendix H: Washington Truck Parking Assessment

(2022 Washington State Freight System Plan Update)

Appendix H: Washington Truck Parking Assessment documents the 2022 Washington State Freight Plan Update's process of compiling a new truck parking inventory, identified truck parking needs and issues through literature review and consultations, and truck parking conditions analysis, which includes an undesignated truck parking analysis.

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION

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Acronyms & Abbreviations

Abbreviation	Description
AADT	Annual Average Daily Traffic
APU	Auxiliary Power Units
ATRI	American Transportation Research Institute
EB	Eastbound
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FMSIB	Freight Mobility Strategic Investment Board
GPS	Global Positioning System
HOS	Hours-of-Service
HPMS	Highway Performance Monitoring System
JTC	Joint Transportation Committee
NB	Northbound
OR	Oregon
RV	Recreational Vehicle
SB	Southbound
SR	State Route
TEP	Truck Electrified Parking
TPIMS	Truck Parking Information Management System
US	United States
USDOT	US Department of Transportation
UW	University of Washington
VMT	Vehicle Miles Traveled
WA	Washington
WB	Westbound
WIM	Weigh-In-Motion
WSDOT	Washington Department of Transportation
WSP	Washington State Patrol
WSU	Washington State University

1. Introduction

Importance of truck parking

Trucks require safe and adequate truck parking to efficiently move goods to, from, within, and through Washington state. Truck drivers need parking to fulfill federal hours-of-service (HOS) regulations, wait for shipper/receiver appointments (staging), and access basic amenities (e.g., restrooms, food, fuel).

The US Department of Transportation (USDOT) Federal Motor Carrier Safety Administration (FMCSA) issues HOS regulations that define the maximum amount of time that truck drivers can be on-duty and drive and the breaks drivers must take to reset their maximum on-duty and drive time when moving a commercial load. Drivers need truck parking for "long HOS breaks," which requires drivers to spend either 10 consecutive hours off-duty or split that 10 hours into one period that is at least seven consecutive hours in the sleeper berth and a second period that is off-duty and at least two-hours long. Truck drivers also need parking for "short HOS breaks" to fulfill the 30-minute driving break regulation, which requires drivers take a 30-minute break after driving for eight consecutive hours.

Truck drivers also require parking as they stage near freight generators (facilities that receive and distribute goods, such as warehousing and distribution centers, manufacturing facilities, intermodal connectors, and ports). Truck drivers prefer to stage near their origin or destination, to meet their appointment window. The potential for travel delays due to congestion also incentivizes truck drivers to arrive early and wait for their appointment time, given the economic cost of missing an appointment. However, many freight generators do not allow drivers to park on-site before appointment windows. As a result, truck drivers are forced to find parking at alternative locations near the freight facility.

Impacts of inadequate truck parking

Adverse economic, safety, infrastructure, and quality of life impacts result when truck drivers are unable to access available truck parking to meet HOS, staging, and/or basic amenity needs. If truck drivers cannot find safe and adequate truck parking, they are forced to choose between the three options displayed in Figure 1, each of which results in cross-cutting negative impacts.

Figure 1: Impacts of inadequate truck parking

	Driver Option	Impacts
Driver cannot access adequate truck parking	**Driver parks early, before drive time is fully used**	Drive time lost, reducing economic efficiency
	Driver reaches 11-hour maximum on-duty driving time, and parks in an undesignated location	Potential citation adds to business cost
		Increased safety risk for truck drivers and other roadway users
		Infrastructure deterioration on roadways and ramps
		Noise and emissions from idling trucks
		Conflict with nearby residential and retail areas
	Driver exceeds 11-hour maximum on-duty driving time, searching for designated truck parking	Potential citation adds to business cost
		Increased safety risk for truck drivers and other roadway users
		Increased vehicle miles traveled, noise, and emissions from additional driving spent looking for parking

Truck drivers have consistently identified truck parking as one of their top concerns over the past decade.[1]

In 2021, truck drivers ranked truck parking as a top issue[2] in the trucking industry.[3] Challenges finding truck parking impact driver quality of life, with 85 percent of drivers citing truck parking as the top cause of stress at work.[4]

The 2019 Jason's Law Truck Parking update found that 75 percent of truck drivers reported problems finding safe parking one or more times a week, while only 5 percent of respondents rarely or never have problems finding safe truck parking.[5] Truck drivers in Washington state cite similar difficulties finding truck parking, especially for short-term and overnight parking. Among respondents that participated in the 2016 Washington State Truck Parking Study survey, 60 percent indicated taking an hour or longer to find overnight truck parking.[6]

Washington state truck parking assessment

As part of the 2022 Washington State Freight System Plan, the Washington State Department of Transportation (WSDOT) has undertaken a state truck parking assessment to inventory the current supply of truck parking and identify locations of undesignated truck parking statewide.

Undesignated truck parking refers to trucks parked in unmarked locations and serves as an observable indicator of inadequate truck parking.

The truck parking assessment also seeks to fulfill requirements under the Bipartisan Infrastructure Law (BIL), which requires state freight plans to include a truck parking facilities assessment that evaluates:[7]

(1) The capability of the State, together with the private sector in the State, to provide adequate parking facilities and rest facilities for commercial motor vehicles engaged in interstate transportation;

(2) the volume of commercial motor vehicle traffic in the State; and

(3) whether there exist any areas within the State with a shortage of adequate commercial motor vehicle parking facilities, including an analysis (economic or otherwise, as the State determines to be appropriate) of the underlying causes of such a shortage.

Figure 2 details how the Washington state truck parking assessment meets these BIL truck parking assessment requirements.

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[1] Critical Issues in the Trucking Industry – 2021, ATRI, October 2021. https://truckingresearch.org/wp-content/uploads/2021/10/ATRI-Top-Industry-Issues-2021.pdf

[2] Truck parking was tied with driver compensation as the top-ranking trucking industry issue.

[3] Critical Issues in the Trucking Industry – 2021, ATRI, October 2021. https://truckingresearch.org/wp-content/uploads/2021/10/ATRI-Top-Industry-Issues-2021.pdf

[4] Truck Parking Report, Trucker Path, July 2018, http://files.truckerpath.com/web/trucker-path-parking-white-paper-2018.pdf

[5] Jason's Law Commercial Motor Vehicle Parking Survey and Comparative Assessment, FHWA, December 2020. https://ops.fhwa.dot.gov/freight/infrastructure/truck_parking/workinggroups/2020/mtg/jasons_law_results.pdf

[6] Washington State Truck Parking Study, WSDOT, December 2016.

[7] 49 U.S. Code § 70202

Figure 2: BIL requirements and Washington state truck parking assessment

BIL Requirements	Washington State Truck Parking Assessment
The capability of the State, together with the private sector in the State, to provide adequate parking facilities and rest facilities for commercial motor vehicles engaged in interstate transportation;	**Truck Parking Inventory (Chapter 2):** The truck parking inventory represents the supply of truck parking facilities provided by both the State and the private sector in Washington state. **Undesignated Truck Parking Analysis (Chapter 3):** Undesignated truck parking serves as an observable indicator of unmet truck parking demand. The presence of undesignated truck parking signals inadequate public and private truck parking facilities for trucks traveling in the state.
The volume of commercial motor vehicle traffic in the State;	**Truck Traffic Analysis (Chapter 3):** Vehicle miles traveled (VMT) and average truck counts provide the volume of CMV traffic in the state.
Whether there exist any areas within the State with a shortage of adequate commercial motor vehicle parking facilities, including an analysis (economic or otherwise, as the State determines to be appropriate) of the underlying causes of such a shortage.	**Undesignated Truck Parking Analysis (Chapter 3):** Using truck GPS data, the assessment identifies locations in the state where trucks park in undesignated areas, thereby identifying where within Washington state there is a shortage of adequate truck parking facilities. Location and stop of duration information from truck GPS data also informs the identification of underlying causes of undesignated truck parking, as either related to short-term parking (e.g., staging, last-mile delivery) or long-term parking (e.g., off-duty HOS requirement). **Truck Traffic Analysis (Chapter 3):** Undesignated truck parking has been overlaid with truck volumes and freight generators to understand the shortage of adequate truck parking facilities, relative to high truck activity in the state. **Review of Identified Needs and Issues (Chapter 2):** A review of ongoing and completed truck parking efforts in Washington provides context and further insight into the causes of undesignated truck parking in the state.

Beyond federal requirements, Washington state has engaged in several truck parking efforts over the past two decades to advance truck parking in the state, including three truck parking studies led by WSDOT in 2005, 2008, and 2016, among others. This assessment does not seek to serve as a comprehensive truck parking study; rather, it builds on the state's prior truck parking studies and efforts to provide WSDOT with a data-driven understanding of the existing truck parking supply and undesignated truck parking conditions in Washington state.

Key findings from the Washington Truck Parking Assessment include the following:

- **112 formal truck parking locations provide nearly 3,400 designated truck parking spaces.** This includes 52 public truck parking locations (safety rest areas and weigh stations) that offer approximately 700 spaces and 60 private truck parking locations that offer nearly 2,700 spaces.
- **Many studies and publications have documented truck parking needs and issues in the state.** Findings are consistent across these efforts, with truck drivers citing difficulties finding truck parking the state, especially for short-term staging and for overnight parking.
- **Undesignated truck parking is concentrated in urban areas and along key corridors, notably in the Puget Sound region, along I-5, I-90, and I-82, and near state borders.** Along and near the state's key freight corridors, trucks park at undesignated locations at rest areas, along the roadway and on/off ramp shoulders, and on nearby last-mile roads. In urban areas, undesignated parking typically occurs on last-mile roads near freight generators. Drivers also park in undesignated locations near safety rest areas and weigh stations in the Puget Sound region.
- **This assessment uses a data-driven approach to validate and underscore the locations within the state that experience the most pressing truck parking issues.** WSDOT has an opportunity to use the findings of this assessment, in combination with other completed, ongoing, and future truck parking efforts, to better understand truck parking issues and focus truck parking activities in the state.

2. Truck parking inventory

Key chapter takeaway

Drivers stop at designated truck parking locations, provided by both the public and private sectors, to meet HOS, staging, and basic amenity needs. In Washington state, 112 formal truck parking locations provide nearly 3,400 designated truck parking spaces. This includes 52 public truck parking locations (safety rest areas and weigh stations) that offer approximately 700 spaces and 60 private truck parking locations that offer nearly 2,700 spaces. Truck parking locations in the state are typically found along or near Interstates – notably Interstate (I-) 5, I-90, and I-82 – due to these routes' high freight volumes.

About the truck parking inventory

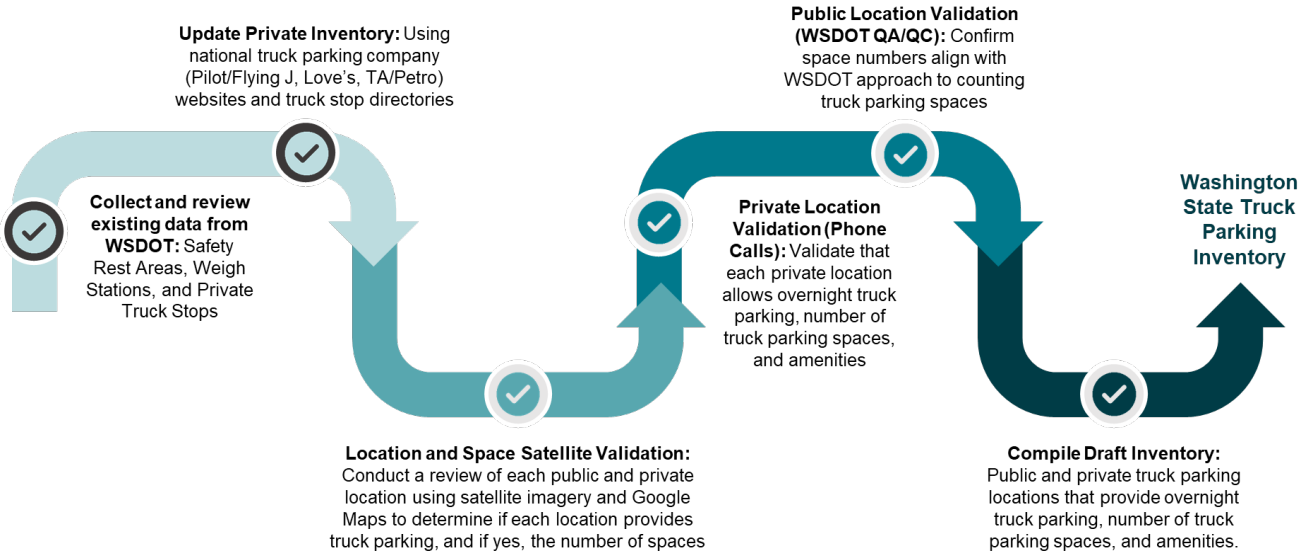
The truck parking inventory represents the supply of truck parking facilities provided by both the public and private sectors in Washington state. A comprehensive, up-to-date inventory also lays the groundwork for future studies and conversations related to truck parking.

Methodology

Truck drivers use a variety of designated truck parking spaces, such as truck stops and rest areas, to get the rest required by law and meet their personal and operational needs. In addition to designated truck parking spaces, trucks also park at other less formal truck parking locations, such as restaurants, parking lots at retail businesses, and vacant lots. However, truck parking at these locations is subject to change, as truck parking is not the primary function of these businesses. This assessment focuses on identifying formal truck parking locations, which include public rest areas, public weigh stations, and private truck stops.

Figure 3 outlines the approach used to update the state's truck parking inventory, including a full list and count of spaces at public and private truck parking locations in the state. The inventory also includes a listing of amenities (restrooms, fuel, food, vending machines, and/or showers) available at each truck parking location.

Figure 3: Truck parking inventory update process

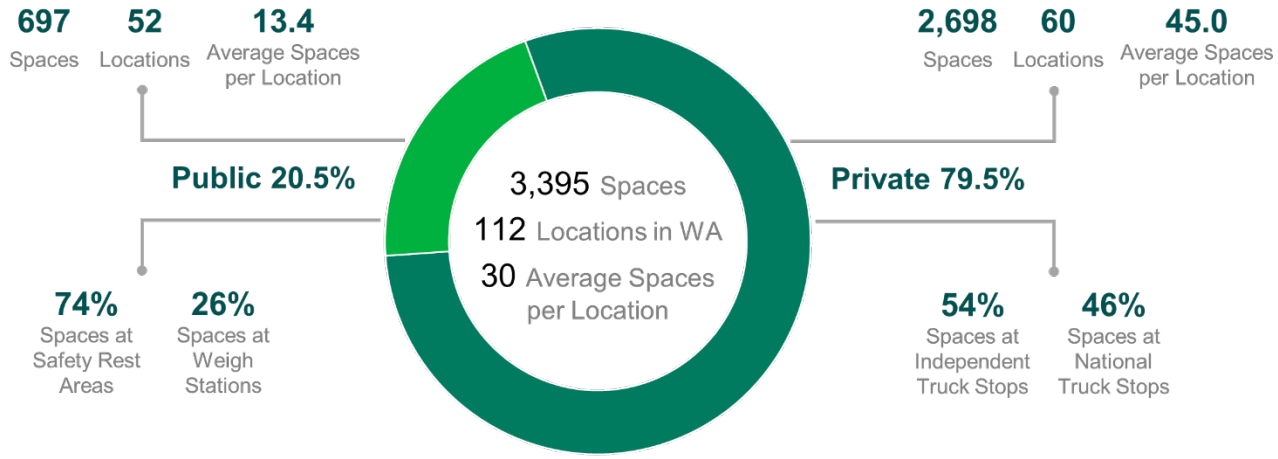


Washington state truck parking inventory

Washington state is home to 112 truck parking locations that provide a total of 3,395 truck parking spaces.

There are 52 public truck parking locations (rest areas and weigh stations)[8] in Washington state, making up 46.4 percent of the state's truck parking locations. The 60 private truck stops in the state make up the remaining 53.6 percent of truck parking locations. Private truck stops also provide a greater share of spaces in the state, with nearly 3.9 private truck parking spaces for every one public truck parking space. In total, there are nearly 2,700 spaces (79.5 percent) at private truck stops and nearly 700 spaces (20.5 percent) at public truck parking locations. Figure 4 details the state's truck parking inventory.

Figure 4: Truck parking spaces in Washington state

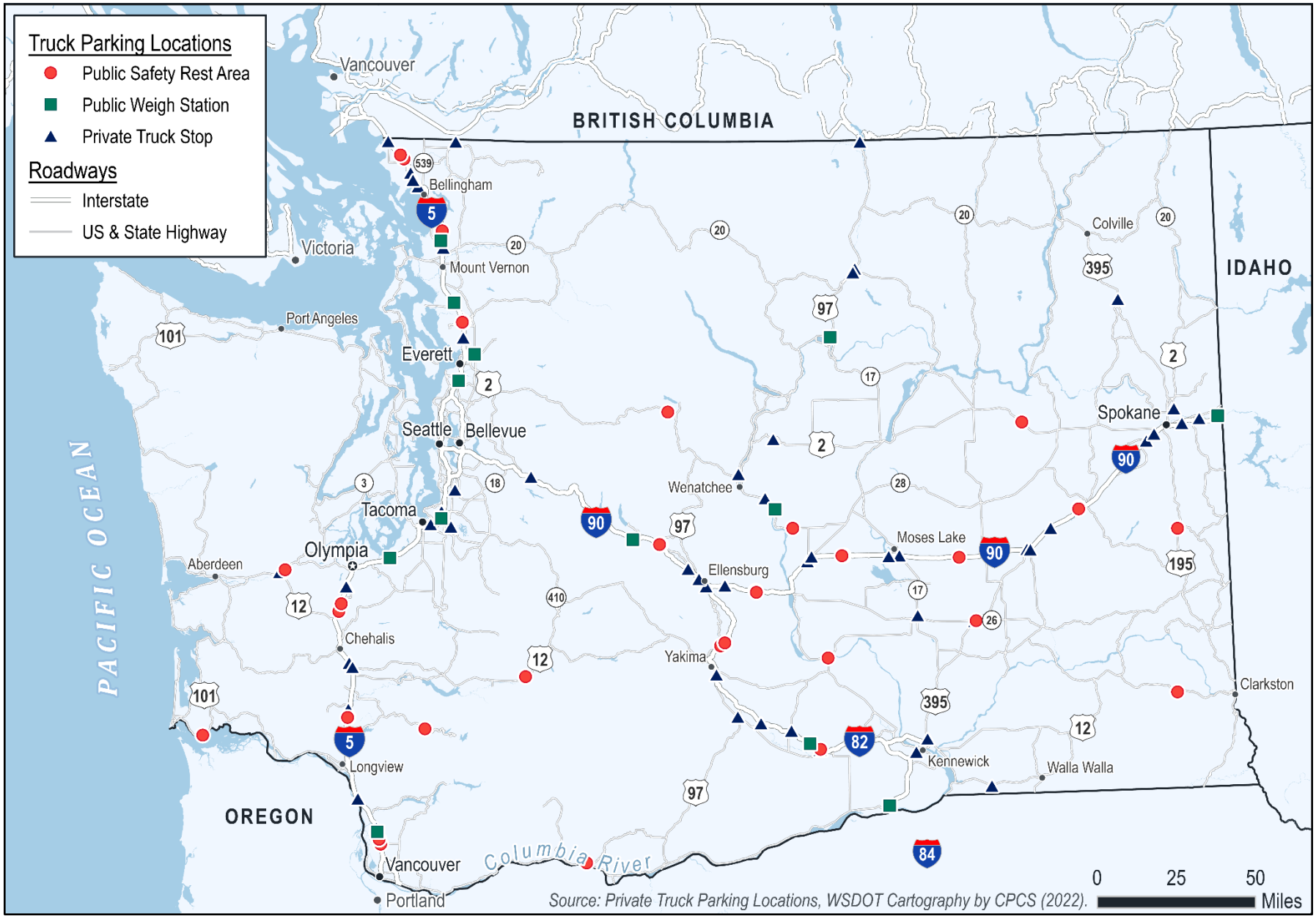


Source: WSDOT, Private Truck Parking Locations.

Figure 5 provides a statewide view of truck parking locations in Washington state, classified by type (public safety rest area, public weigh station, or private truck stop). As shown, truck parking locations are typically found along or near Interstates – namely I-5, I-90, and I-82 – due to their high truck volumes. **Reference Chapter A** provides additional maps with detail about each truck parking facility's location, number of truck parking spaces, and amenities (restrooms, portable toilets, fuel, food, vending machines, and/or showers) provided.

[8] Washington State Patrol (WSP) troopers and commercial vehicle enforcement officers staff weigh stations, but facility management is a joint operation between the WSP and WSDOT.

Figure 5: Public & private truck parking in Washington state



3. Review of identified truck parking needs and issues

Key chapter takeaway

Many efforts have been completed in recent years to understand truck parking needs and issues in Washington state, including the WSDOT Washington State Truck Parking Study (2016), WSDOT and FHWA Truck Parking Workshop (2021), Washington JTC Truck Parking Action Plan (2021), Washington State Enforcement Survey (2019), and WSDOT I-5 Fort Lewis Weigh Station Study. Findings are consistent across these efforts, with truck drivers citing difficulties finding truck parking in Washington state, especially for short-term staging and for overnight parking. Within the state, locations (e.g., urban areas, state borders, mountain passes, ports) and corridors (I-5, I-405, I-90) with high freight traffic experience the worst truck parking issues. Current truck parking capacity has become increasingly strained as the demand for truck transportation increases faster than the supply of safe and adequate truck parking, while a variety of additional factors contribute to the growing imbalance between truck parking supply and demand and create challenges for the implementation of truck parking strategies.

About the review of identified truck parking needs and issues

A review of completed truck parking efforts in Washington state provides information on documented truck parking needs and issues in the state. This will provide additional context to the causes and impacts of the following undesignated truck parking analysis (see Chapter 4).

Washington truck parking study

In December 2016, WSDOT published the Washington State Truck Parking Study to better understand and address truck parking issues across the state.[9] As part of this effort, WSDOT identified key truck parking issues in the state, based on extensive stakeholder outreach and engagement, as well as data collection (Figure 6).

Figure 6: Washington State Truck Parking Study outreach

Online survey, which received 1,118 responses, 84 percent of which were from truck drivers.

Five roundtable discussions held in the cities of Tukwila, Tacoma, North Bend, Vancouver, and Seattle, attended by truck drivers, trucking company representatives, and port and government officials, among others.

One-on-one interviews with truck drivers, including a ride-along with a driver between Federal Way and Bellingham.

Conversations with regional WSDOT offices to better understand how truck parking needs differ statewide.

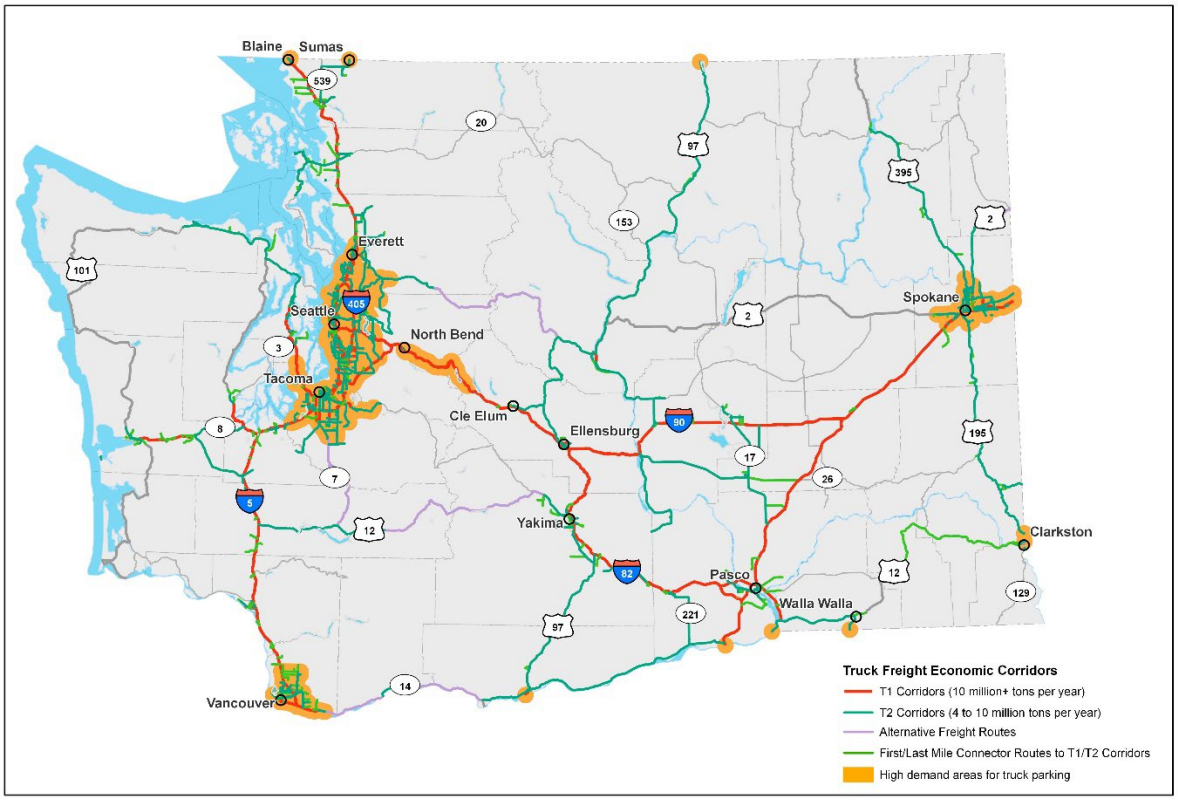
Source: WSDOT, Washington State Truck Parking Study, December 2016.

[9] Washington State Truck Parking Study, WSDOT, December 2016.

Locations of concern

Drivers have difficulty finding short-term and overnight parking, with 60 percent of respondents to the WSDOT survey reporting it takes an hour or longer to find overnight parking. Stakeholder outreach informed the identification of key corridors and locations in Washington state with the most serious truck parking concerns (Figure 7).

Figure 7: High demand areas for truck parking (2016 Washington State Truck Parking Study)



Source: Washington State Truck Parking Study, WSDOT, December 2016, p. 51. Based on outreach and engagement efforts.

The 2016 Washington State Truck Parking Study found that the top three corridors with unmet truck parking demand were I-5, I-405, and I-90.

The three corridors with the greatest truck parking shortage in 2016 were I-5, I-405, and I-90, followed by I-82 and SR 167. These corridors serve major urban centers (I-5, I-405, I-90, SR 167), including Seattle/Tacoma, Spokane, and Vancouver, and/or serve international or state borders (I-5, I-90, I-82).

Stakeholders reported many safety rest areas, including those located along these corridors, are at or over capacity, with trucks parking along rest area on/off ramp shoulders (Figure 8) and at car or recreational vehicle (RV) parking areas. Safety rest areas with reported capacity issues include Smokey Point and Bow Hill on I-5, Winchester on I-90, Prosser on I-82, and Indian John on I-90, as well as safety rest areas near Snoqualmie Pass during winter months when the pass closes.

Figure 8: Truck parked on exit ramp at safety rest area

Source: Source: WSDOT, Washington State Truck Parking Study, December 2016, p. 48.

WSDOT also identified three areas of the state with truck parking needs.

Truck parking issues were the most prevalent in urban areas, at border crossings, and at mountain passes.

Metropolitan and urban areas: Truck parking is a major concern in urban centers, notably the Puget Sound region, including Seattle/Tacoma, as well as Spokane and Vancouver, where truck parking is a frequent concern. Cities with a high concentration of freight-reliant industries, such as those along SR 167, experience significant truck traffic and intensified truck parking issues. Meanwhile, highly developed areas, such as downtown Seattle, pose challenges to truck parking and delivery, as trucks have limited parking options in urban areas for pick-up and drop-off. Congestion in urban areas further impacts truck travel times and makes trip planning more difficult for drivers.

Border crossings: Border towns along major corridors, including Blaine (on I-5 at the Canada border), Vancouver (on I-5 at the Oregon border), and Spokane (on I-90 at the Idaho border), have unmet truck parking demand. Truck parking demand is high as drivers cross state borders, and border delays impact travel times. Additionally, due to differences in the legal number of trailers between Washington state and neighboring states, cities located on state borders often experience high demand for trailer parking and see high rates of trailers left in unofficial locations.

Mountain passes: Outreach participants frequently pointed to Snoqualmie Pass and the surrounding areas on I-90 as problem locations for unofficial truck parking. Snoqualmie Pass on I-90 is the state's primary east-west corridor, crossing the Cascade Mountain range. During winter and weather-related closures on Snoqualmie Pass, official truck parking locations in the area fill up quickly, and trucks often park in undesignated areas, such as corridor shoulders, on/off ramps, and city streets as they wait for the pass to reopen. North Bend and Ellensburg – located west and east of Snoqualmie Pass, respectively – were identified as two locations that experience high truck parking demand during these closures.

Ports: Freight activities around ports also generate high levels of truck traffic, including those for both short-haul (drayage between ports and local warehousing districts) and long-haul or regional movements. Truck drivers require space at ports to queue while waiting to pick up and drop off loads, and if the number of trucks in a queue exceeds capacity, queuing can extend out to access roads. Trucks may also need space to stage when

waiting for the port to open, as well as to satisfy HOS requirements. Without adequate parking and queueing space for these trucks, drivers may park on nearby industrial streets or in residential areas. Washington state is home to several major ports, many of which experience these truck parking challenges. For instance, trucks reportedly park in and travel through residential areas near the Port of Vancouver.

Truck parking issues

Truck parking issues in Washington state grow in intensity as truck transportation demand increases, without being met with adequate increases in parking supply.

Feedback from stakeholders, as well as data collected from a range of resources, informed the identification of issues related to truck parking in Washington state. Stakeholders cited concerns about undesignated parking and identified the corridors and areas described in the prior section as locations with extensive undesignated parking problems.

WSDOT's outreach efforts revealed a mismatch between driver parking preference and use. While drivers prefer to park in designated locations, such as private truck stops, public rest areas, and shipper/receiver locations, they often end up parking in undesignated areas, including highway on/off-ramps, roadsides, abandoned lots, and temporary parking lots (e.g., Walmart, casino).

Causes of inadequate parking

Business decisions: Private organization operations impact truck parking. For example, stakeholders noted shippers and receivers have strict and narrow appointment windows, making it necessary, but difficult, for drivers to plan their travel. This is further challenged by unplanned travel delays, such as urban area congestion and pass closures. Parking is often not available at shipper/receiver locations for drivers that arrive outside of their appointment window.

Willingness to pay: Some private truck stops require drivers to pay to park. Stakeholders noted they prefer free parking options, but they do find value in paying reasonable prices for safe and legal truck parking. However, other stakeholders share that many truck drivers do not have sufficient income for parking fees. Among WSDOT survey respondents, 42 percent were willing to pay a fee, while 58 percent were not.

Infrastructure constraints: Outreach participants stated infrastructure, including on the roadway and at truck parking facilities, are not always designated to safely accommodate all trucks. Oversize trucks in particular struggle to find parking facilities that can accommodate larger truck sizes. Drivers shared concerns about small, designated spaces and limited turning space at truck parking facilities and expressed an interest in restriping and widening parking spaces. Stakeholders also report that many safety rest areas are over capacity, with undesignated truck parking occurring on rest area on/off ramps, corridor shoulders, and in RV and passenger vehicle spaces. Trucks parked in undesignated areas within rest areas have led to irrigation line damage. However, the reverse also occurs, with RVs, trailers, and cars parking in truck parking areas at times (Figure 9).

Figure 9: Recreational vehicles parked in truck parking

Source: WSDOT, Washington State Truck Parking Study, December 2016, p. 48.

Information needs for drivers: Stakeholders noted a need to improve communication with drivers about truck parking options. Truck drivers are often responsible for finding their own truck parking. Undesignated truck parking often occurs when truck drivers have irregular schedules and routes, leaving them without the knowledge of when and where to look for legal truck parking.

Communication needs for the public: Communicating information about the importance of and needs associated with truck parking to the general public is also important for addressing truck parking issues.

Impacts of inadequate truck parking

The following issues occur due to a lack of adequate and safe truck parking, where adequate truck parking includes not only sufficient truck parking capacity but also the provision of basic amenities and technologies to mitigate potential

Driver safety: Challenges in finding adequate truck parking impact the personal safety of truck drivers. Among WSDOT survey respondents, 59 percent reported they were frequently (four to seven nights per week) concerned with safety while parked in Washington state.

The story of Jason's Law

In 2012, Congress enacted Jason's Law in response to the murder of Jason Rivenburg, a truck driver who arrived at his delivery destination early but was unable to park on-site. Jason parked at a nearby abandoned gas station to wait for his appointment – where he was robbed and killed while resting in his truck.

Highway safety: When drivers are unable to find truck parking, they may park in undesignated areas, such as on corridor and on/off ramp shoulders, which poses a risk to other highway users. When crashes do occur involving a truck parked on a ramp or roadside, they are more likely to result in a fatality.[10] Alternatively, drivers may continue to drive while fatigued when unable to find parking. Fatigue is a contributing factor in 16 percent of truck collisions and 8 percent of fatal truck collisions, according to FMCSA.[11] Among WSDOT survey respondents, 60 percent reported that they frequently (three to five days per week) or regularly (six to seven days per week) drive fatigued due to a shortage of truck parking.

[10] NCHRP Guide for Reducing Collisions Involving Heavy Trucks 2004 (page V-7)
[11] Smart Park: Real-Time Truck Parking INformation. Presented at Talking Freight Seminar, Federal Highway Administration, USDOT, Quon Kwan, 2006. https://www.fhwa.dot.gov/planning/freight_planning/talking_freight/06talking.cfm

Air quality: Stakeholders cited concerns about the impact of truck parking on air quality. Trucks often idle while parked to provide drivers with basic heat, air conditioning, and electricity needs. However, the emissions that result from truck idling lead to community concerns about the air quality impacts associated with truck parking. Idle reduction technologies, such as auxiliary power units (APUs) and truck electrified parking (TEP), offer the potential to reduce truck idling and its associated emissions.

Oil & hazardous material spills: Stakeholders also noted concern about the potential for oil and other hazardous material spills, which have the potential to contaminate surrounding land and waterways, due to truck parking.

Noise: Many communities have concerns about noise from trucks, contributing to the resistance of new or expanded truck parking areas. However, Washington state law sets noise emission standards for the operation of motor vehicles on public highways, with enforcement managed at the local level through ordinances. Idle reduction technologies can also help by reducing the noise of idling trucks.

Litter and waste: Restrooms and trash cans are essential amenities for any truck parking location. Undesignated and other unofficial truck parking locations lack these basic amenities, leading to litter and waste pollution. This issue impacts WSDOT maintenance workers when undesignated truck parking occurs on state right of way and state-owned facilities, as well as communities where undesignated truck parking occurs.

Institutional challenges

The following issues pose challenges to the implementation of strategies and actions to improve truck parking.

Diverse responsibilities: Many public and private sector entities contribute to the demand for truck parking and provide spaces for truck parking. As a result, the roles and responsibilities of these different parties, as it relates to truck parking, are often unclear. Outreach participants provided various opinions and perspectives on this topic but agreed on the importance of a statewide approach and stakeholder collaboration.

Policy misalignment: Truck parking policies often vary between states and localities, making it challenging for drivers to understand available truck parking options. Additionally, local ordinances that ban truck parking in one area may result in negative side effects for neighboring localities

WSDOT and FHWA truck parking workshop

WSDOT and the USDOT Federal Highway Administration (FHWA) hosted a series of four virtual workshop sessions in June 2021 focused on the statewide truck parking shortage.[12] Attendees invited include those listed in Figure 10.

Figure 10: Stakeholder groups invited

- Metropolitan planning organizations (MPOs)
- Regional planning organizations (RTPOs)
- Cities
- Counties
- Ports
- Railroads
- Truck drivers
- Joint Transportation Committee (JTC) staff
- Private truck parking providers
- Tribes
- Washington State Patrol
- Select WSDOT staff
- FHWA
- FMCSA
- Washington State Department of Commerce
- Environmental justice, and community groups
- Washington State Freight Mobility Strategic Investment Board (FMSIB)
- University transportation centers
- Departments of transportation in neighboring states
- Other

Source: 2021 Washington State Truck Parking Workshop, WSDOT, June 2021

Among its goals, the workshop sought to identify primary truck parking challenges specific to Washington state. Truck parking issues discussed during the workshop include, but are not limited to, the following:

- Compared to other states, Washington state ranks low in truck parking availability, especially for private truck parking capacity.
- Truck parking capacity is most constrained where demand is highest – in urban areas, mountain passes, border crossings, and near ports and industrial areas.
- Most of the safety rest areas in Washington state are decades old. Budgets are strained to keep up with maintenance and cleaning needs.
- Many existing zoning/building codes, municipal parking standards, transportation plans, and impact analyses have not fully accommodated truck parking considerations. Examples include patchwork truck parking policies across localities and the development of facilities without staging or delivery areas. As a result, trucks often park in undesignated areas.

Stakeholders also identified challenges to implementing truck parking solutions, including, but not limited to the following:

- At safety rest areas, expanding capacity can be difficult due to resource limitations, design requirements, lack of data, and lack of a shovel-ready project list.
- High real estate cost is one of the biggest hurdles to expanding truck parking capacity. Commercial land is at a premium statewide, and truck parking providers face competition with more profitable industries.
- Surplus land owned by WSDOT that could be used for truck parking must go through a competitive sale process, and truck parking cannot be prioritized under current state policy.
- Community opposition is another large hurdle for expanding truck parking capacity.

[12] 2021 Washington State Truck Parking Workshop, WSDOT, June 2021. https://wsdot.wa.gov/sites/default/files/2021-12/Synopsis-2021-WA-Truck-Parking-Workshop.pdf

JTC truck parking action plan

The Washington State JTC sponsored the development of the Truck Parking Action Plan. As part of this process, a survey was conducted to collect input on truck parking issues and strategies. This included requesting stakeholders map areas of truck parking concern in Washington state through an online survey open from September 16 to October 4, 2021.

Overall, 136 participants visited the survey website (including participants who visited the site more than once), providing 3,168 data points and 48 comments. The survey asked participants to identify at least three locations where there were truck parking issues. Participants classified each location into one of six issue types, listed below, and provided location-specific comments.[13]

- Lack of staging/short rest parking
- Lack of 10-hour rest parking
- Lack of parking for 34-hour rest
- Undesignated truck parking
- Safety
- Lack of features/amenities

Figure 11 below illustrates the location of each truck parking marker or comment provided by survey participants. This information is also available through an interactive Google Map.

The majority of survey participants identified lack of parking as a truck parking issue, with needs for both 10-hour breaks and for logistics staging. Survey participants identified a lack of truck parking in and near urban areas, at passes, and at state borders.

Figure 11: Lack of truck parking in Washington state (2021 Washington JTC Action Plan Survey)

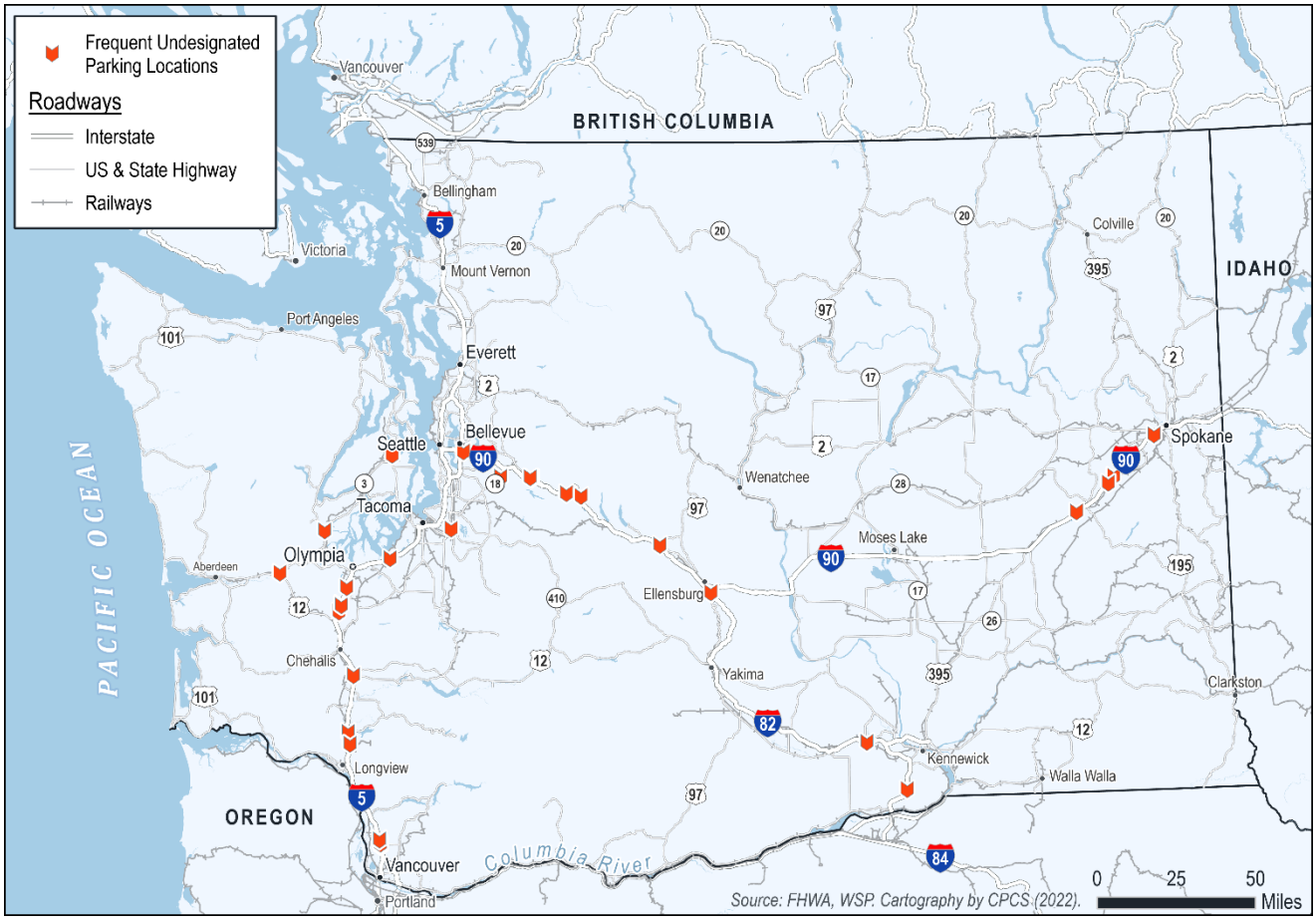
Source: Truck Parking Action Plan Supplement, p. 1-2, Washington JTC.

[13] Truck Parking Action Plan Supplement, p. 1-2, Washington JTC, December 2021. https://leg.wa.gov/JTC/Documents/Studies/Truck%20Parking/Final_ActionPlanSupplement_2021.pdf

Washington State Enforcement Survey

As part of Jason's Law, FHWA distributed a survey to states in 2019, asking for input from state enforcement on locations of frequent undesignated truck parking.[14] Figure 12 maps locations of frequent undesignated parking, based on information and descriptions provided by state enforcement in 2019. As shown, frequent undesignated truck parking is typically found by enforcement on key freight corridors, including along mountain passes and near borders.

Figure 12: Locations of frequent undesignated parking (2019 Washington State Enforcement Survey)



[14] The survey asked state enforcement to identify locations of frequent illegal truck parking (roadway, shoulders, ramps, etc.), also referred to as undesignated truck parking.

I-5 Fort Lewis Weigh Station Study

WSDOT completed a study of the I-5 Fort Lewis Weigh Station in 2021. The Fort Lewis Weigh Station, which was built in 1969 and served as the second-highest used weigh station statewide in 2020, was identified by WSDOT as in need of updating. Through the study, WSDOT identified needs and issues of the facility, informed by stakeholder input. Fifteen existing issues at the weigh station related to truck parking included the following:[15]

Study Purpose and Goals

Purpose: Identify current and future operational needs of the facility and the needs of the study being a safe, effective, and efficiently functioning facility that provides services, a larger truck parking area, and accommodates customer needs.

Goal: Understand the issues and determine the necessary improvements for the weigh station.

- The 12 parking stalls for staff and trucks at the weigh station are not enough to accommodate the number of trucks traveling the I-5 corridor
- Weigh station signage is confusing
- The weigh station has two portable toilets located in the parking area, and no handwashing station is available

Summary of identified needs and issues

Several recent studies have identified a range of truck parking needs and issues in Washington state. Truck drivers cite difficulties finding truck parking in the state, especially for short-term staging and for overnight parking to fulfill federal 10-hour break requirements. Truck parking issues are most prevalent in locations with high freight activity – in urban areas, at state borders and border crossings, and at mountain passes. Top corridors in the state with unmet truck parking demand are I-5, I-405, and I-90. Truck parking is also needed near and at ports, which also generate high levels of truck traffic in Washington state.

Washington state's existing truck parking capacity is strained. The demand for truck parking has increased with the growing demand for truck transportation. However, the state's supply of safe and adequate truck parking has not increased at the same rate. A variety of factors – including business decisions, willingness to pay for parking, infrastructure constraints, information needs for drivers, and communication needs for the public – lead to the imbalance between truck parking supply and demand in the state, resulting in adverse safety and environmental impacts.

Additionally, the implementation of truck parking strategies is challenged by diverse but shared responsibilities between public and private sector entities, policy misalignment, lack of truck parking consideration in planning, limited funding and resources, a need for shovel-ready project lists and supporting data, high real estate competition and costs, and community opposition, among other hurdles.

[15] Interstate 5 Fort Lewis Weigh Station Study, WSDOT, June 2021. https://wsdot.wa.gov/sites/default/files/2021-09/I-5-fort-lewis-weigh-station-study.pdf

4. Truck parking conditions analysis

Key chapter takeaway

An analysis of truck parking conditions identified 42 truck parking clusters in Washington state, signaling locations in the state that experience the highest concentrations of undesignated truck parking. Most of the state's undesignated truck parking clusters are located within urban areas and along key corridors, including those near state borders. Within Washington state, undesignated truck parking issues are the most pressing in the Puget Sound Region, as well as along the corridors of I-5, I-90, and I-82.

Truck drivers park in undesignated locations when they need to fulfill federally mandated HOS requirements, stage for pick-up/delivery, or access basic amenities, but cannot find safe and adequate designated truck parking. As a result, undesignated stops occur within and near safety rest areas and weigh stations, along corridor and on/off ramp shoulders, on last-mile roads near freight facilities, and near truck stops. Examining the location and duration of undesignated stops provides insight into the underlying causes of undesignated parking. Drivers stopped in undesignated locations in urban areas and on last-mile roads for short periods of time indicate a need for staging near freight facilities. Meanwhile, undesignated parking occurrences that exceed 7 hours in duration – often along key freight corridors and near safety rest areas – indicate drivers stopped to fulfill their federally-mandated 10-hour HOS breaks.

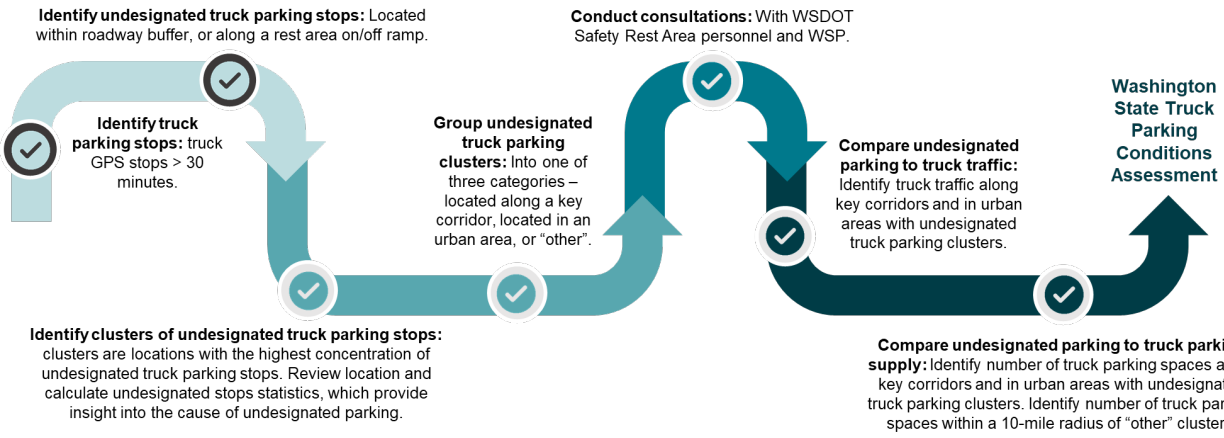
About the truck parking conditions analysis

Undesignated truck parking serves an observable indicator of unmet truck parking demand. The presence of undesignated truck parking, as identified through an undesignated truck parking analysis using truck Global Positioning System (GPS) data, signals inadequate public and private truck parking facilities for trucks traveling in Washington state. Location and stop duration information, provided by truck GPS data, further provides information about the underlying causes of the shortage of truck parking, as related to staging or HOS needs. Additionally, comparing truck volume and freight generator locations to undesignated truck parking provides insight into the shortage of adequate truck parking facilities, relative to truck activity in the state.

Methodology

Figure 13 outlines the steps used to assess truck parking conditions in Washington state. The primary data set used to assess statewide truck parking conditions was INRIX GPS data, which provides a *sample* of truck activity across four month-long periods in 2021 (February, May, August, and November). This GPS data was processed to identify the location and duration that trucks stopped statewide.

Figure 13: Truck parking conditions analysis process



The following steps outline the process used to translate the truck GPS waypoints into clusters and the overall assessment of truck parking conditions in Washington state:

1. **Identify truck parking stops:** Process truck GPS waypoints into truck stops using the INRIX definition for non-moving waypoints (less than 200 meters of travel over 10 minutes, ~0.75 miles per hour). A truck stop event was identified once the truck was stopped for at least 30 minutes. The selection of 30 minutes as a threshold was informed by the HOS requirements.

2. **Identify undesignated truck parking stops:** Create a buffer around roadways in the state to identify the stops that are occurring along roadway shoulders. The entry and exit points, as well as the areas where trucks are not allowed to park within safety rest areas and weigh stations, were also identified and used to classify undesignated truck parking.

3. **Identify clusters of undesignated truck parking stops:** Calculate the density of undesignated truck parking based on the proximity of stops to one another to measure the concentration of undesignated truck parking stops. Areas with a high density are referred to as "clusters." The location of each cluster was reviewed to validate and understand the causes of undesignated truck parking. Statistics, such as the duration that trucks stopped within the cluster, were also calculated to provide insight into the underlying cause of undesignated parking at the location.

4. **Group undesignated truck parking clusters:** Assess the location and proximity of undesignated truck parking clusters, and classify cluster groups that are located along a key corridor or within an urban area. Clusters not located near other clusters are classified as "other."

5. **Conduct consultations:** Review the clusters of undesignated truck parking with WSDOT State Rest Area personnel and Washington State Patrol (WSP) to validate results and gain further insight into the causes of undesignated truck parking at the state's top undesignated truck parking clusters.

6. **Compare undesignated parking to truck traffic:** Evaluate truck traffic using truck VMT and truck counts along key corridors and in urban areas, and compare and provide context to undesignated truck parking clusters

7. **Compare undesignated parking to truck parking supply:** Evaluate existing truck parking by identifying the number of public and private truck parking spaces along key corridors, in urban areas, and within a 10-mile radius of other clusters.

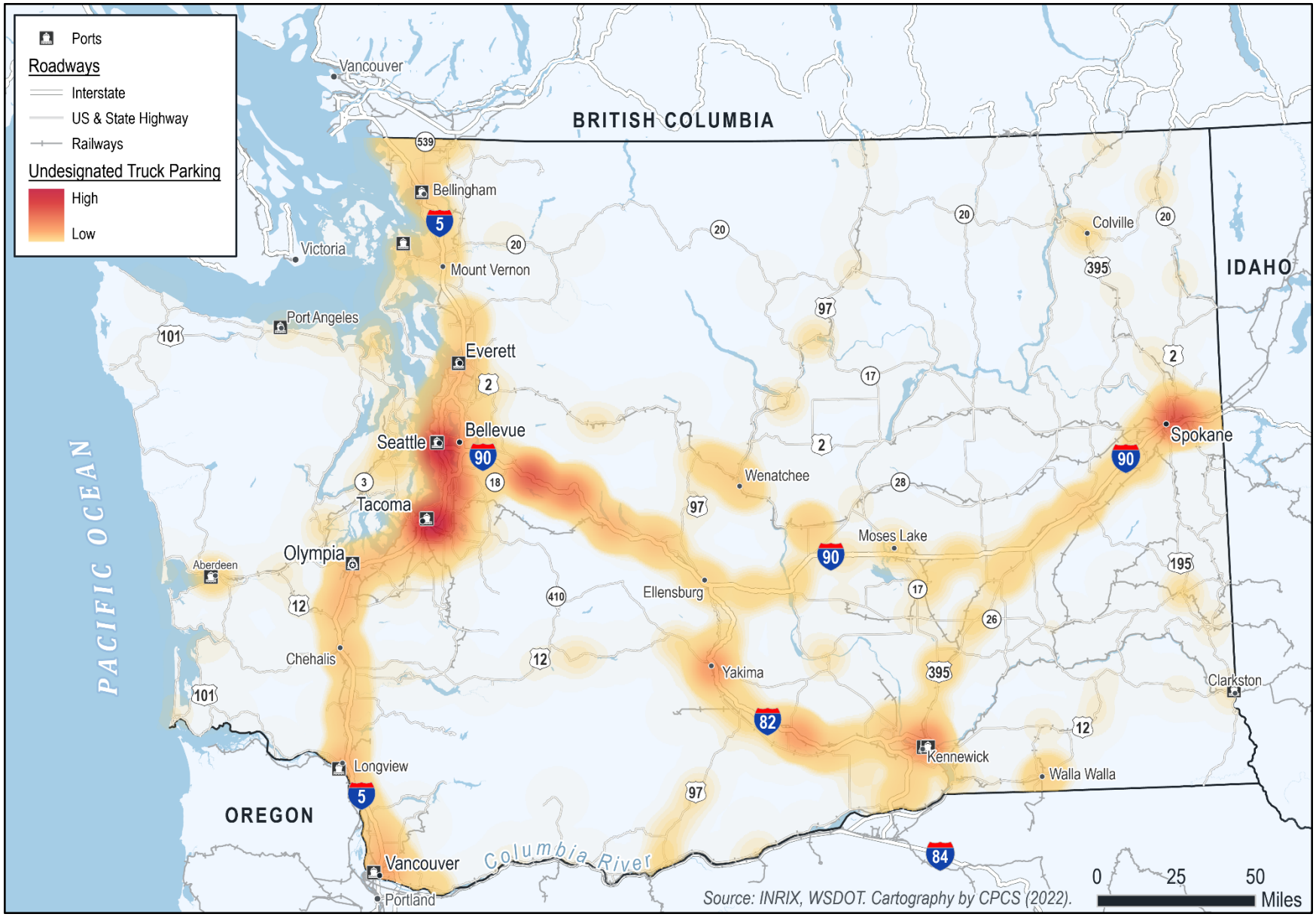
The remainder of this Chapter details the findings of the truck parking conditions analysis.

Undesignated truck parking in Washington state

Figure 14 displays the density of undesignated truck parking occurring across Washington state, with locations experiencing the highest concentrations of undesignated truck parking shown in orange and red. The results of this undesignated parking analysis highlight areas with truck parking issues that are consistent with the findings of recent truck parking reports and stakeholder outreach efforts, including survey results from the recently completed Washington JTC Truck Parking Action Plan, conducted in Washington state (see Chapter 4).

The analysis of undesignated truck parking for this study found that undesignated truck parking in Washington state is highest in urban areas and along key corridors, notably in the Puget Sound region, along I-5, I-90, and I-82, and near state borders.

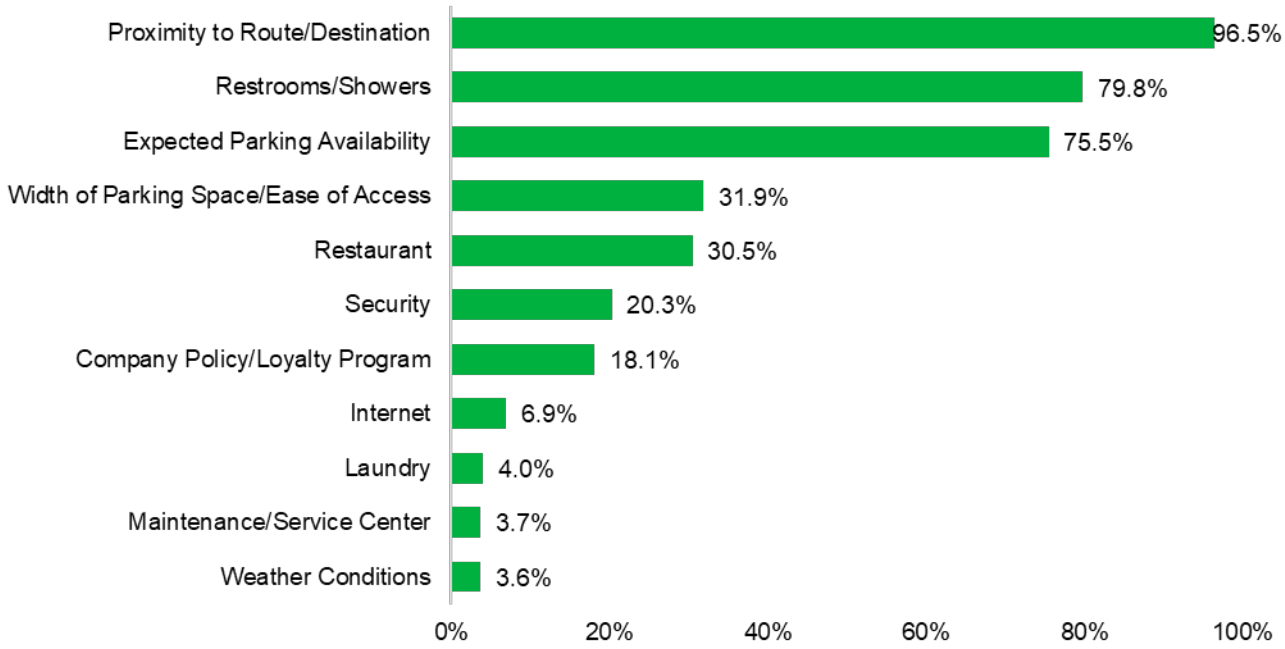
Figure 14: Undesignated truck parking



Factors influencing truck parking

Truck drivers evaluate several factors when deciding where to park. A 2016 American Transportation Research Institute (ATRI) study found that proximity to route and destination, access to restrooms and showers, and the expected availability of parking are the top three factors that influence when and where drivers choose to park for their 10-hour HOS break (Figure 15).

Figure 15: Factors influencing where drivers stop for 10-hour required HOS breaks



Source: Managing Critical Truck Parking Case Study – Real World Insights from Truck Parking Diaries, ATRI, December 2016. https://truckingresearch.org/wp-content/uploads/2016/12/ATRI-Truck-Parking-Case-Study-Insights-12-2016.pdf.
Participants were asked to select the five most important factors that influence their stop location choice when they stop for their 10-hour break.

As shown in the 2017 ATRI study, the proximity of truck parking to route or destination is a top factor when drivers decide where to park. As a result, truck parking demand is often high on key freight corridors and near major freight generators, which serve as the origin or destination of truck trips. Truck parking near key corridors provides truck drivers with an efficient and convenient location to stop. Meanwhile, truck parking near freight generators provides drivers with space to stage as they wait for their pick-up/drop-off appointments. However, if truck parking supply along trip routes and at origins/destinations is inadequate, drivers may park in undesignated areas. Given high truck traffic volumes along key freight corridors and near freight generators, undesignated parking is often found at these locations.

In Washington state, high concentrations of undesignated truck parking occur on corridors with high truck volumes, compared to those corridors with lower truck volumes, as illustrated in Figure 16. Undesignated truck parking also occurs near freight clusters in Washington state, as shown in Figure 17. High concentrations of undesignated truck parking are not only found along key corridors and in urban areas, but also at other locations, such as ports, which have a high concentration of freight facilities.

Figure 16: Undesignated truck parking, compared to truck volume

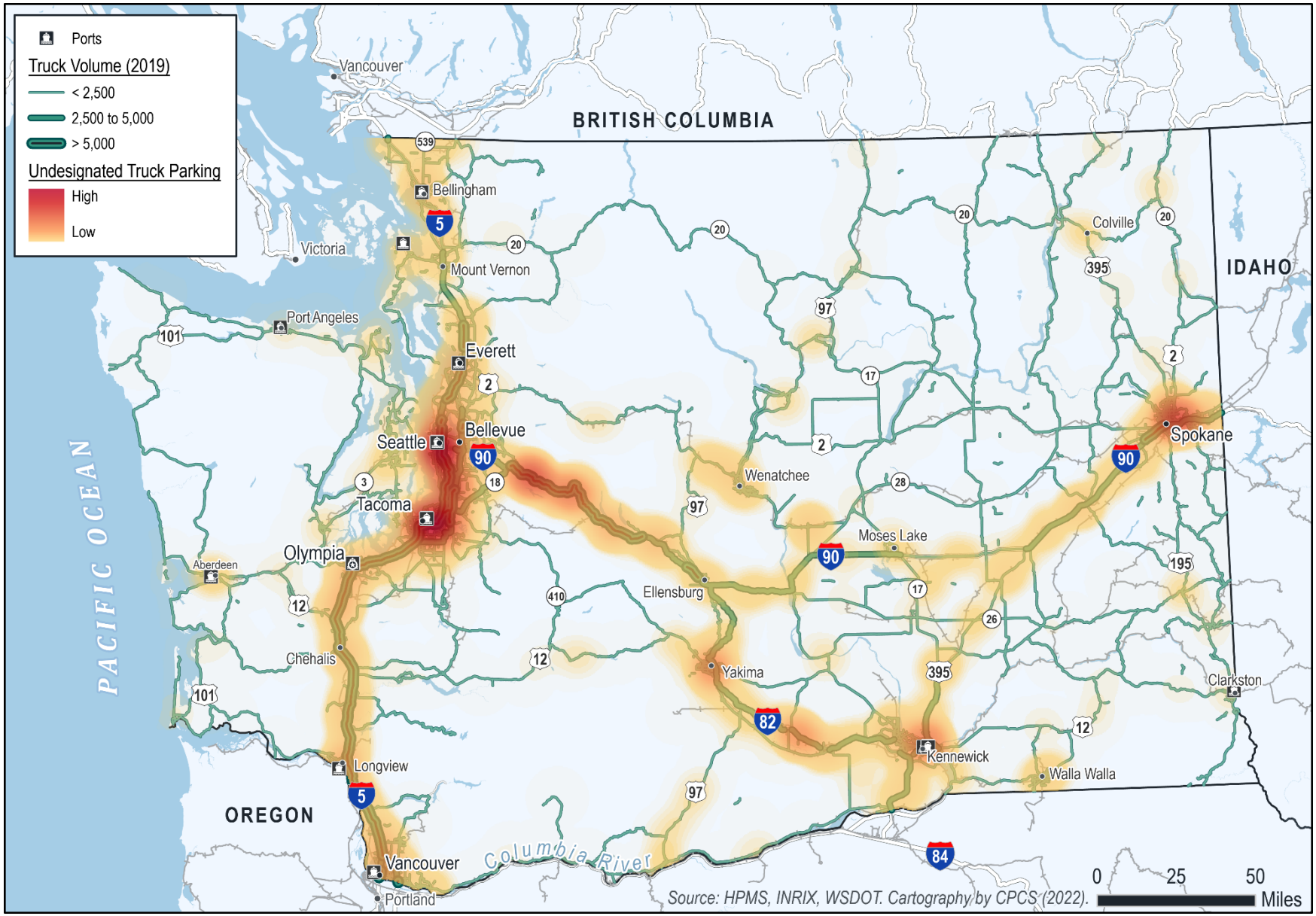
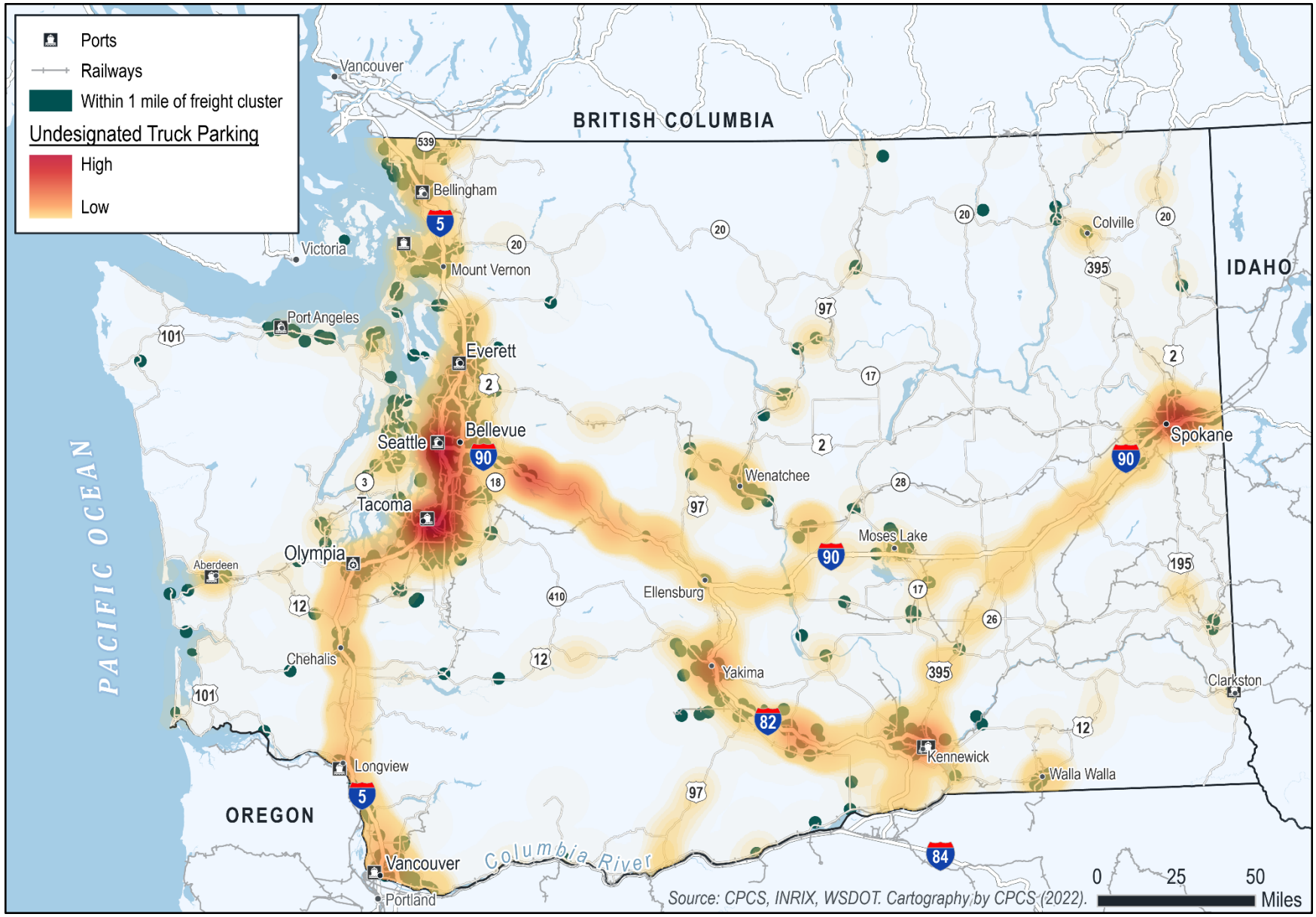


Figure 17: Undesignated truck parking, compared to freight clusters



Types of undesignated truck parking

Trucks need to park to fulfill HOS breaks or to stage as they wait for shipper/receiver appointments. However, when drivers are unable to find safe and adequate truck parking, they may park in undesignated locations. The following section provides an overview of the specific locations where undesignated truck parking often occurs, as well as examples of undesignated truck parking at these locations in Washington state.

Safety rest area or weigh station: Occurs when trucks park along the shoulders of safety rest area or weigh station on/off ramps and nearby corridors as well as when trucks park in undesignated areas (e.g., passenger vehicle spaces, RV spaces, grassy areas, other areas not marked for truck parking) within safety rest areas or weigh stations. Figure 18 displays undesignated truck parking occurring along I-5 and on/off ramp shoulders at the Scatter Creek Rest Area as well as in passenger vehicle spaces and near RV dump lanes within the rest area.

In Washington state, stakeholders reports and data show that trucks park not only along safety rest area on/off ramps, but also in undesignated locations within the rest areas, such as:

- **In passenger vehicle and RV parking areas**, despite signs that direct passenger/RV and truck traffic in different directions and signs that read no truck parking.[16]
- **Next to RV dump facilities** within the rest area. Parking next to RV dump facilities is particularly problematic because the heavy weight of trucks can break pipes under the road.
- **Grassy areas** not suited for truck parking.

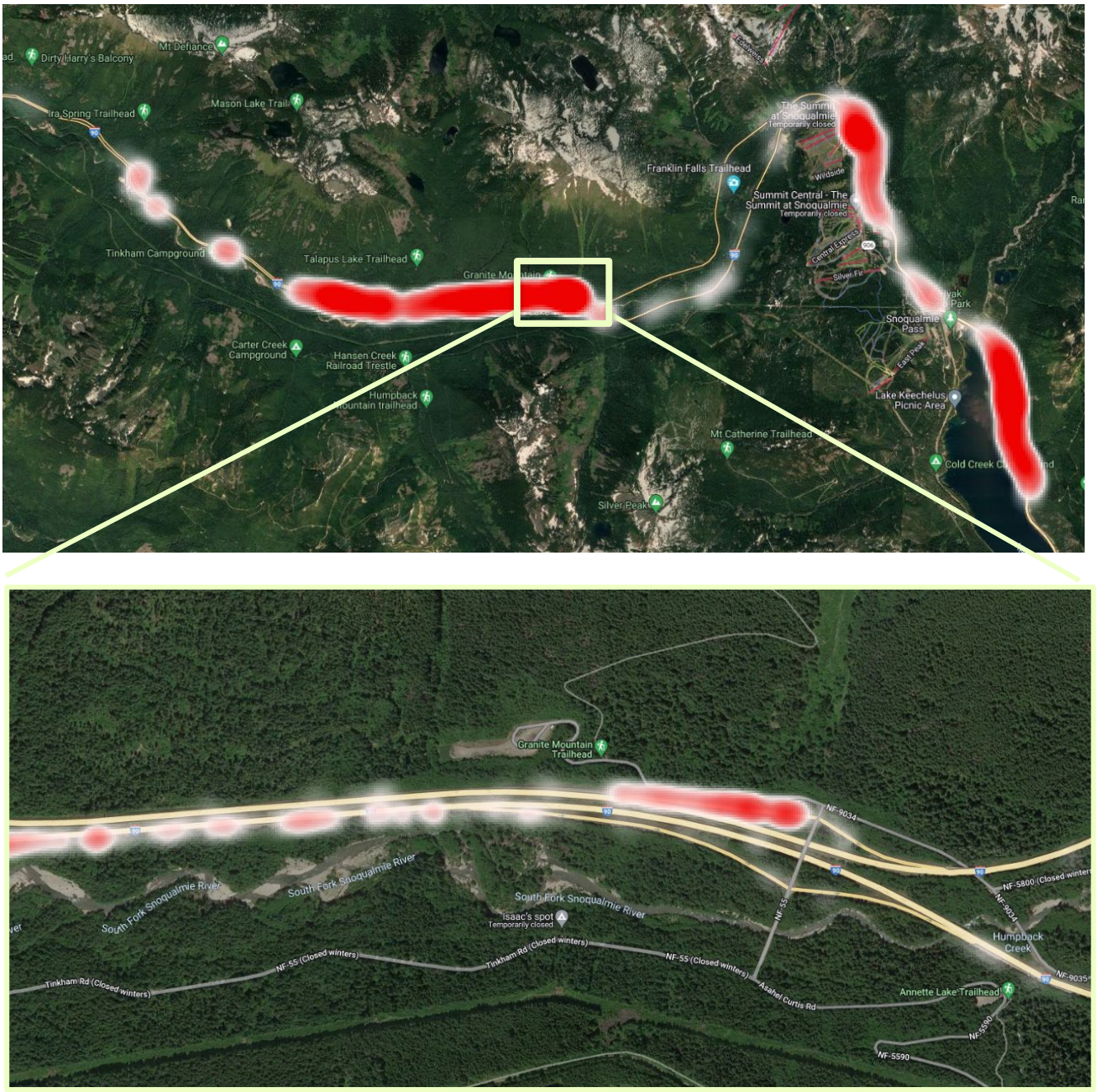
Figure 18: Undesignated truck parking at Scatter Creek Rest Area on I-5

Source: CPCS analysis of INRIX, 2021. | WSDOT | Satellite image: Google Maps, Imagery © 2022 Maxar Technologies, U.S. Geological Survey, USDA/FPAC/GEO, Map data © 2022

[16] Note that the reverse also occurs, with RVs, trailers, and cars also parking in designated truck parking areas at times, as documented in Chapter 3.

Corridor and on/off ramp shoulders: Occurs when trucks park along roadway shoulders or on/off ramps. Undesignated parking along busy corridors and on/off ramp shoulders, in particular, poses safety hazards for drivers and roadway users. When trucks park on shoulders, they become large, fixed objects that could be hit and block sight lines for other roadway users. Additionally, trucks re-entering the traffic stream from the shoulder have a short distance to reach roadway speeds, resulting in a high-speed differential relative to the traffic stream, which poses a safety risk. Figure 19 displays undesignated truck parking occurring along I-90 and using on/off ramp shoulders near the Summit at Snoqualmie.

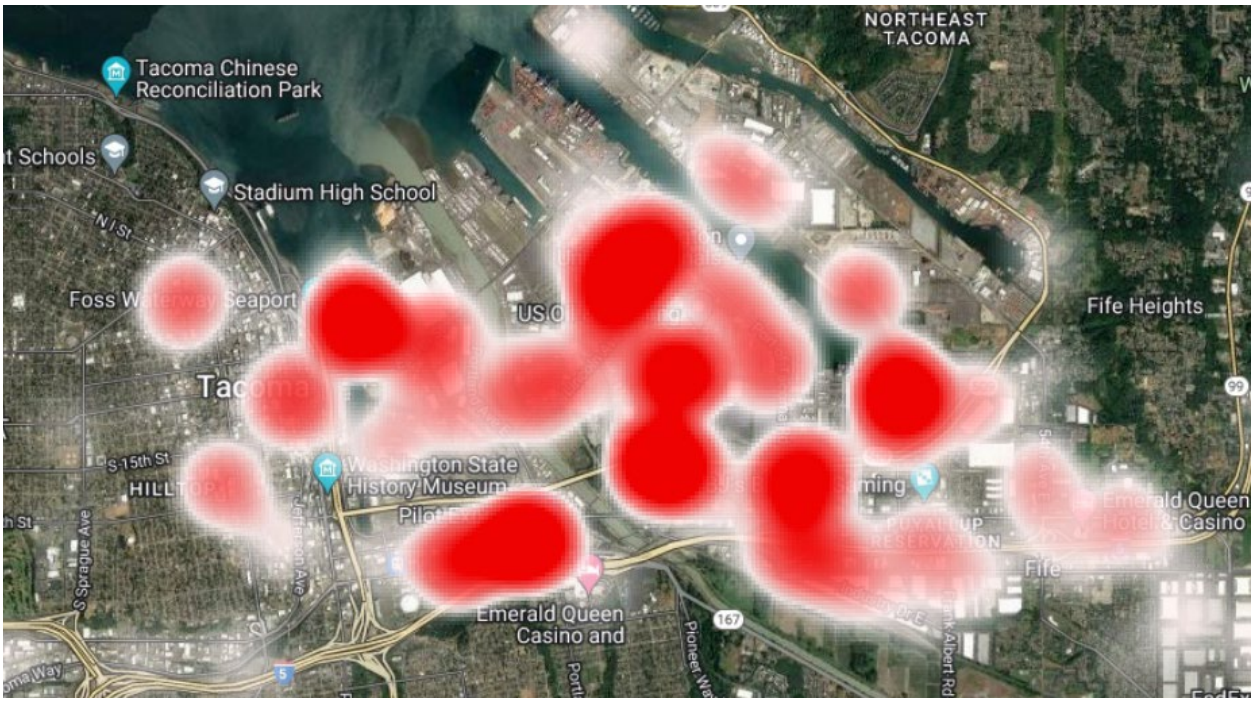
Figure 19: Undesignated truck parking on corridor and on/off ramp shoulders along I-90



Source: CPCS analysis of INRIX, 2021. | WSDOT. | Satellite image: Google Maps, Imagery © 2022 Maxar Technologies, U.S. Geological Survey, USDA/FPAC/GEO, Map data © 2022.

Last-mile: Occurs when trucks park along local roads, in both industrial and non-industrial areas, at and near last-mile facilities. Often, undesignated parking on last-mile roads occurs as trucks wait for pick-up or drop-off. This leads to safety and quality of life concerns for areas near last-mile facilities, as undesignated truck parking on local roads can impede traffic and block roadways. However, undesignated parking on last-mile roads often poses less of a safety hazard compared to undesignated parking on high-traffic shoulders due to lower speeds and traffic volumes on last-mile roads. Figure 20 displays undesignated truck parking occurring at and near the Port of Tacoma, which is a major freight generator in Washington state. Figure 21 further provides a street view of undesignated truck parking on last-mile roads.

Figure 20: Undesignated truck parking near Port of Tacoma last-mile facilities



Source: CPCS analysis of INRIX, 2021. | WSDOT. | Satellite image: Google Maps, Imagery © 2022 Maxar Technologies, U.S. Geological Survey, USDA/FPAC/GEO, Map data © 2022.

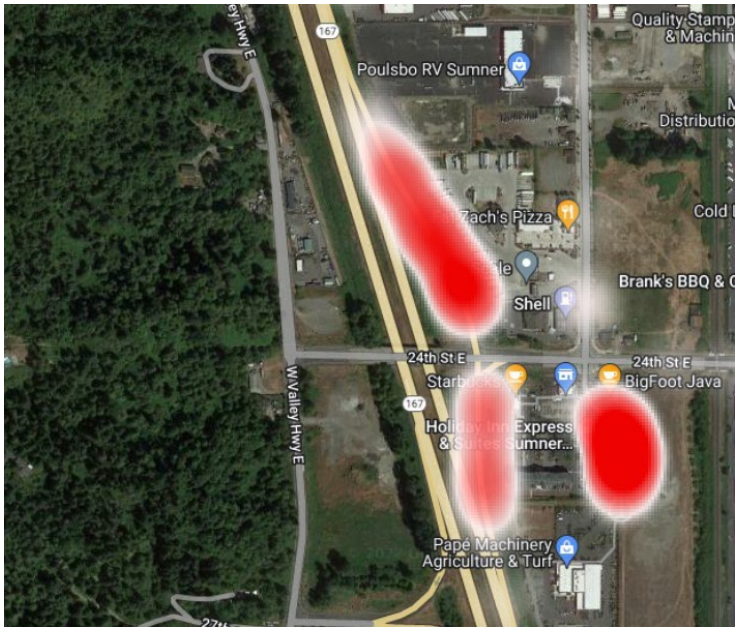
Figure 21: Undesignated truck parking near last-mile facilities

Satellite image: Google Maps Street View, © 2022 Google, Image capture: Feb 2022.

Near truck stop: Occurs when trucks park along roadway shoulders at and near private truck parking stops. The roads where truck stops are located typically have lower speeds and traffic volumes. As a result, the safety concerns associated with undesignated parking near truck stops are similar to those of undesignated parking on last-mile roads. Figure 22 shows undesignated truck parking occurring near a private truck stop located at the Shell. In this case, the truck stop is also located near last-mile facilities, which may further be attracting traffic to the location.

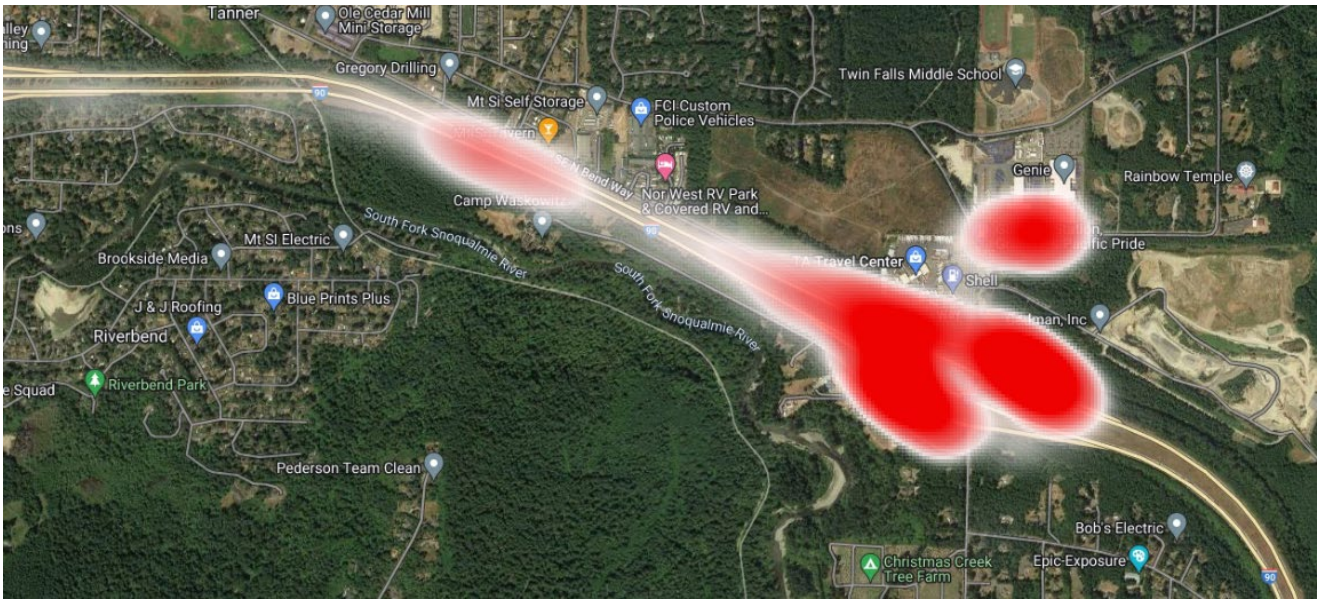
Mix of undesignated truck parking: Many of the specific locations where undesignated truck parking occurs are located within proximity to one another. For example, undesignated truck parking occurs along I-90 and on/off ramp shoulders as well as on roads off I-90 near a truck stop and last-mile facilities (Figure 23).

Figure 22: Undesignated truck parking near truck stop



Source: CPCS analysis of INRIX, 2021. | WSDOT. | Satellite image: Google Maps, Imagery © 2022 Maxar Technologies, U.S. Geological Survey, USDA/FPAC/GEO, Map data © 2022.

Figure 23: Undesignated truck parking on corridor and on/off ramp shoulders, near last-mile facilities, and near truck stop at I-90 exit 34



Source: CPCS analysis of INRIX, 2021. | WSDOT. | Satellite image: Google Maps, Imagery © 2022 Maxar Technologies, U.S. Geological Survey, USDA/FPAC/GEO, Map data © 2022.

Underlying causes of undesignated truck parking

Information about the specific location of undesignated parking, combined with information about the duration of the stop, can provide insight into whether trucks were parked to fulfill HOS requirements or to stage for a pick-up/drop-off appointment. Figure 24 displays the indicators used to identify the underlying causes of truck parking, each of which is explained in further detail in this section.

Figure 24: Indicators used to identify the underlying causes of undesignated truck parking

	Long HOS Break	Short HOS Break	Staging
Stop Duration	Over 7 hours	30 minutes to a few hours	Often a few hours
Location	Any, but often a location with amenities	Any	Near origin/designation

Long HOS break: When a truck parks in an undesignated location for more than 7 hours, the truck driver is likely taking all or a portion of their required 10-hour HOS break, which requires drivers to spend 10 hours off duty. The 10-hour HOS break can be taken as 10 consecutive hours off duty or using the sleeper berth provision may split the 10-hour break into two periods that total 10 hours provided that one period that is at least 2 hours long and the other period is at least seven consecutive hours and spent in the sleeper berth. While parking for long HOS breaks may occur at any location, drivers often plan to take these breaks at locations that provide basic amenities (restroom facilities and food), such as rest areas or truck stops. For instance, truck drivers park in undesignated areas, including double-stacking trucks, at SeaTac Rest Area and Weigh Station to fulfill long HOS breaks. As shown in Figure 26, over half of undesignated stops at this location exceed 7 hours. However, drivers may also park in other locations that are not located near amenities to fulfill their long HOS break. For instance, 71 percent of undesignated stops along Homestead Valley Road off I-90 exceeded 7 hours.

Figure 25: Duration of undesignated stops at Seatac Rest Area and Weigh Station

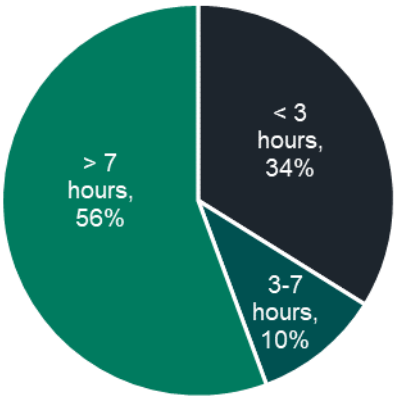
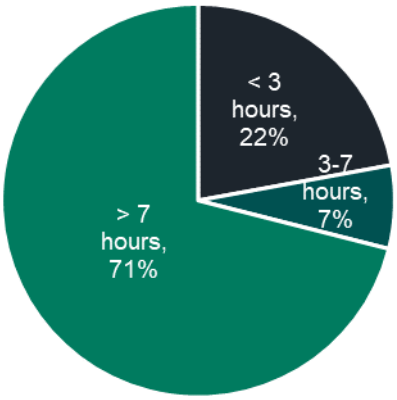


Figure 26: Duration of undesignated stops along Homestead Valley Road off I-90



Source: CPCS analysis of INRIX, 2021.

Short HOS Break: Drivers must also fulfill shorter (30-minute driving break after 8 consecutive driving hours, or 2-hour long off-duty period as part of the 10-hour break) HOS break requirements. The duration of these stops is shorter, ranging from 30 minutes to a few hours and may occur at any location, making it difficult to distinguish from staging.

Staging: When a truck parks in an undesignated location near a freight generator, a driver is likely staging for a shipper/receiver appointment. While drivers may stage for any length of time, depending on their trip and appointment times, the duration of stop often does not exceed a few hours. This is exemplified on last-mile roads on Harbor Island in Seattle, where a large share of undesignated stops remains below 3 hours, as shown in Figure 27. However, drivers may also simultaneously stage for an early morning appointment and fulfill their long HOS stop requirement overnight. For instance, while the majority of undesignated stops on last-mile roads at and near the Port of Longview remain below 3 hours, nearly a third of stops exceed 8 hours, as displayed in Figure 28.

Figure 27: Duration of undesignated stops on Harbor Island in Seattle

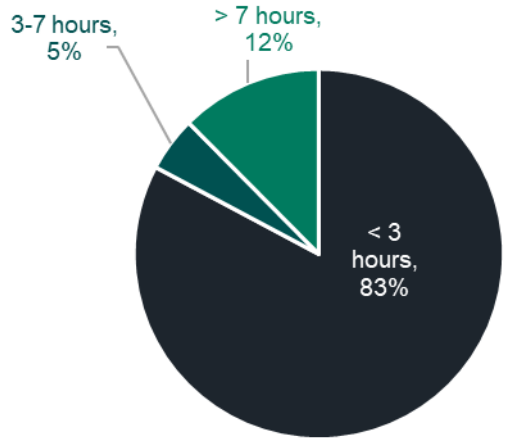
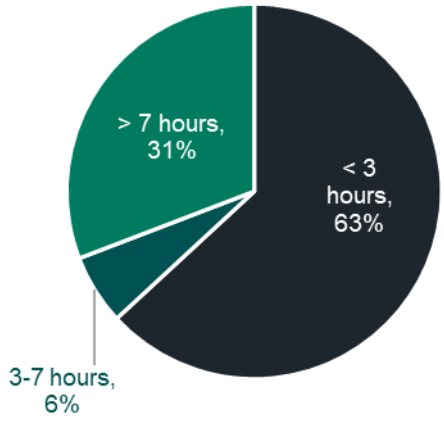


Figure 28: Duration of undesignated stops at the Port of Longview



Source: CPCS analysis of INRIX, 2021.

Undesignated truck parking clusters

Undesignated truck parking clusters refer to locations with the highest concentrations of truck parking. In Washington state, undesignated truck parking clusters are primarily, but not exclusively, found along key corridors and in urban areas. Figure 29 provides a summary of the undesignated truck parking clusters in Washington state.

Figure 29: Undesignated truck parking clusters

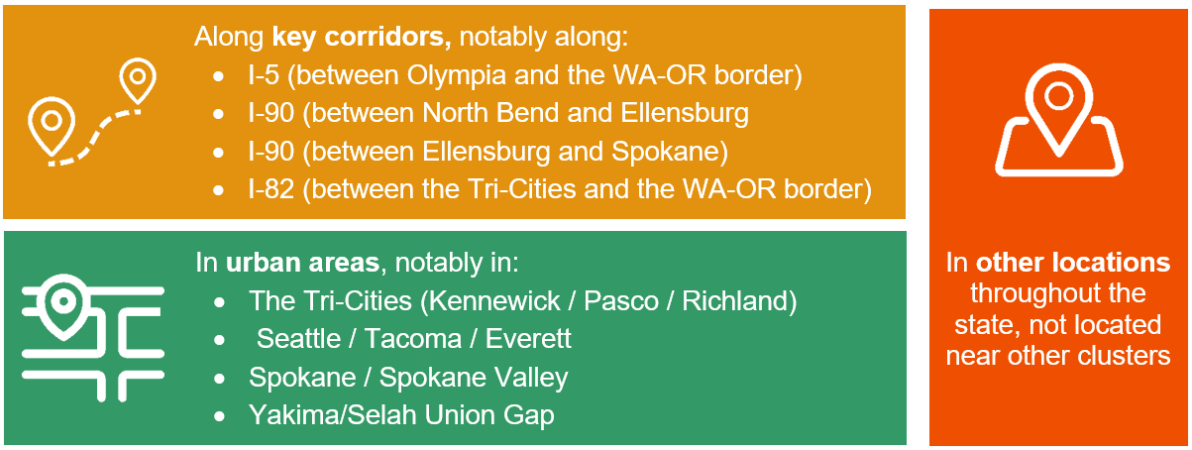
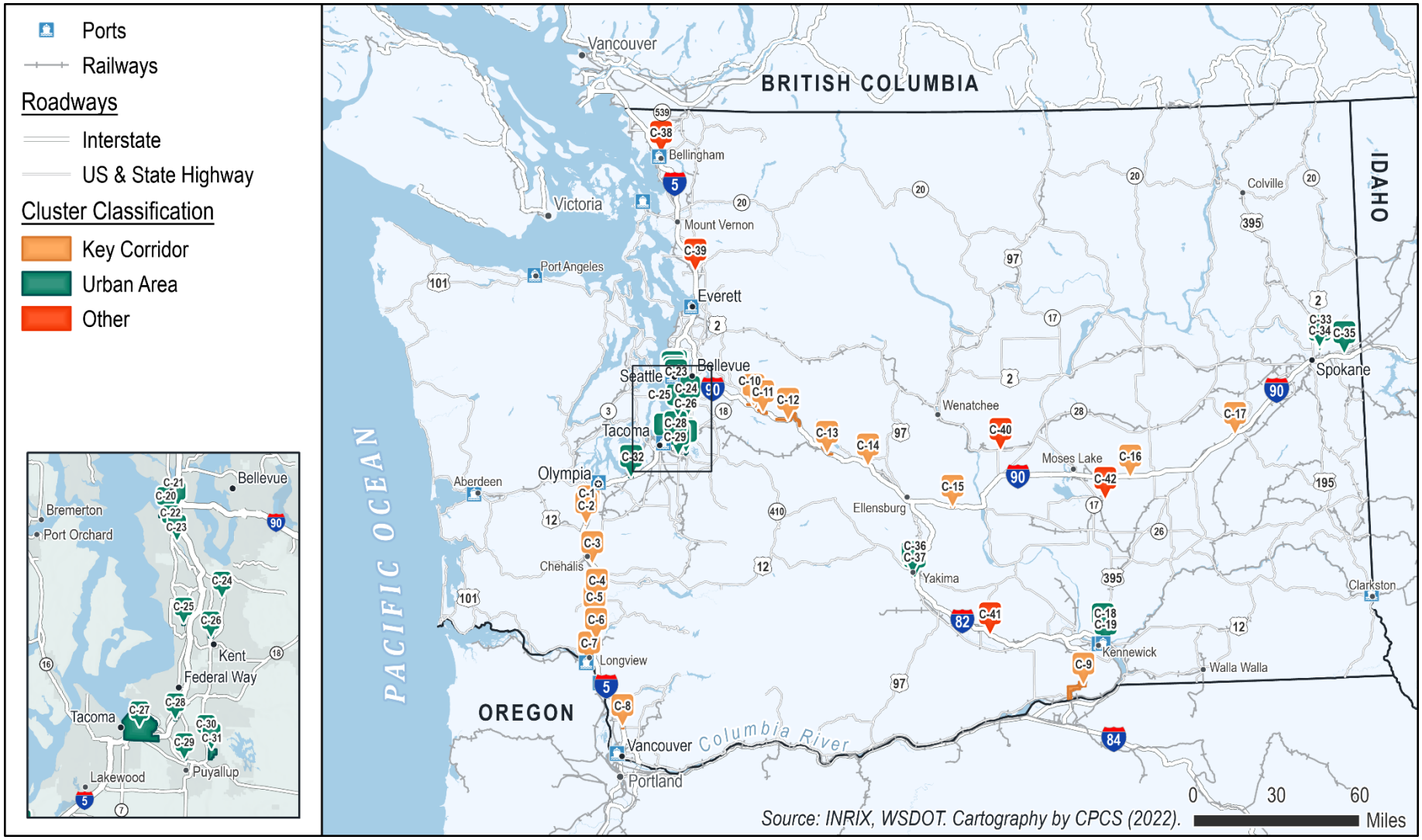


Figure 30 displays the truck parking clusters in Washington state and **Reference Chapter C** provides a complete listing of undesignated truck parking clusters and statistics.

Figure 30: Undesignated truck parking clusters



Along key corridors in Washington state

Trucks park in a variety of locations along and near key freight corridors, including undesignated locations at rest areas, along the roadway and on/off ramp shoulders, and on nearby last-mile roads.

In line with the issue areas identified as part of Washington state's previous truck parking efforts, the key corridors that experience high concentrations of undesignated truck parking include those at mountain passes and state and international border crossings. In particular, undesignated truck parking occurs along I-5, I-82, and I-90.

As shown in Figure 31, I-90 between North Bend and Ellensburg experiences the highest levels of undesignated truck parking. Compared to other key corridors reviewed, this western section of the I-90 corridor through Snoqualmie Pass has lower truck volumes, but a significantly higher number of undesignated truck stops during the sample period. I-90 between North Bend and Ellensburg also has fewer truck parking spaces compared to the I-5 section and the eastern I-90 section. The remainder of this section reviews each of the clusters along key corridors.

Figure 31: Truck parking conditions along key corridors

Clusters Located Along the Corridor	Length	Number of Undesignated Stops in Sample[17]	Truck Parking Spaces	Combination truck count per mile[18]	Combination truck VMT[19]
I-5 (between Olympia and WA-OR border)					
• C-1 (Maytown Rest Area) • C-2 (Scatter Creek Safety Rest Area) • C-3 (last-mile) • C-4 (corridor and on/off ramp shoulders) • C-5 (Toutle River Safety Rest Area) • C-6 (on/off ramp shoulders) • C-7 (last-mile) • C-8 (Fort Gee Safety Rest Areas)	105 miles	1,473	609	4,220	888,720
I-82 (between Kennewick and WA-OR border)					
• C-9 (corridor and on/off ramp shoulders)	20 miles	207	10	1,650	65,240
I-90 (between North Bend and Ellensburg)					
• C-10 (corridor and on/off ramp shoulders, near truck stop, last-mile) • C-11 (corridor shoulders) • C-12 (corridor and on/off ramp shoulders) • C-13 (corridor and on/off ramp shoulders) • C-14 (Indian John Hill Rest Areas)	76 miles	2,855	416	2,680	406,100
I-90 (between Ellensburg and Spokane)					
• C-15 (Ryegrass Safety Rest Areas) • C-16 (Schrag Rest Areas) • C-17 (Sprague Lake Rest Areas)	193 miles	700	556	1,620	627,310

Source: CPCS analysis of INRIX, 2021. | Private Truck Parking Locations, WSDOT, Highway Performance Monitoring System (HPMS).

[17] Represents number of undesignated stops, based on CPCS analysis of the INRIX truck GPS data, which includes a *sample* of total truck activity during four month-long periods in 2021 (February, May, August, November). Note that this data does not represent the full extent of truck activity during these periods, but rather serves as a measure of comparison; comparing truck activity statewide enables the identification of locations within the state where undesignated stops are concentrated.

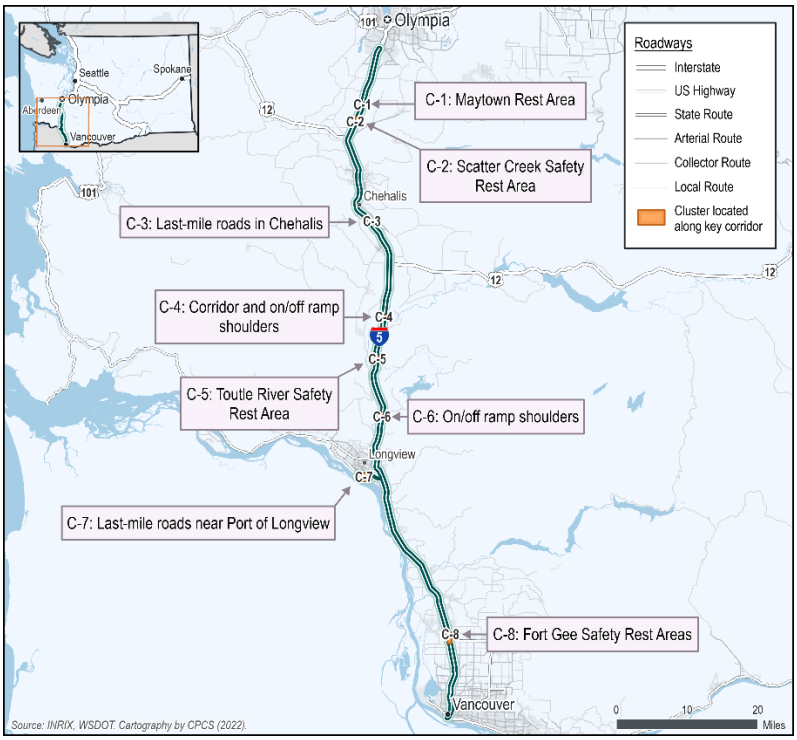
[18] Truck count per mile calculated by dividing vehicle miles traveled (VMT) by road mileage (two way) with truck traffic. Therefore, truck counts are represented for one direction of roadway.

[19] VMT (vehicle miles traveled) calculated by multiplying annual average daily traffic (AADT) for combination trucks by the reported road length (miles).

I-5 (between Olympia and WA-OR border)

Undesignated truck parking occurs along I-5 between Olympia and the state's Oregon border, including along corridor and on/off ramp shoulders. However, locations that experience the highest concentrations of truck parking along and near the corridor are located at safety rest areas along the interstate, as well as near last-mile facilities located off the interstate.

Figure 32: Undesignated truck parking clusters on I-5 between Olympia and WA-OR border (map)



The duration of undesignated stops at clusters along the corridor varies. Undesignated truck parking at safety rest areas includes trucks stopped for both long HOS requirements and trucks stopped for shorter periods – either to fulfill their shorter HOS requirement or to stage for their pick-up/drop-off appointments. Many freight generators are located along I-5, including in Vancouver, Longview, Kalama, Chehalis, and Olympia, in addition to those located farther north in Seattle and Tacoma. In Chehalis and near the Port of Longview, trucks stage on last-mile roads closer to their origin/destination, often during morning hours. Near the Port of Longview, the majority of these stops remain below 3 hours; some drivers also simultaneously stage while fulfilling their long HOS requirements in undesignated locations along these last-mile roads. Meanwhile, in Chehalis, drivers stop in undesignated areas near freight facilities to stage for longer periods of time.

Figure 33: Undesignated truck parking clusters on I-5 between Olympia and WA-OR border (table)

Cluster ID	Description	Total count	Total duration (hours)	Median stop duration (hours)	Average stop duration (hours)	% stops < 3 hours	% stops 3-7 hours	% stops > 7 hours
C-1	• *Rest Area:* At Maytown Rest Area SB on I-5	129	402	1.3	3.1	74%	8%	18%
C-2	• *Rest Area:* At Scatter Creek Safety Rest Area NB on I-5	122	454	1.0	3.7	64%	11%	25%
C-3	• *Last-mile:* Near last-mile facilities in Chehalis off I-5	79	292	3.1	3.7	48%	43%	9%
C-4	• *Corridor and On/Off Ramp Shoulders:* Along I-5 at Exit 60.	55	68	0.7	1.2	91%	7%	2%
C-5	• *Rest Area:* At Toutle River Safety Rest Areas NB and SB on I-5	92	315	1.0	3.4	68%	8%	24%
C-6	• *On/Off Ramp Shoulders:* Along I-5 at Exit 46.	53	71	0.6	1.4	91%	4%	6%
C-7	• *Last-mile:* Near last-mile facilities at the Port of Longview off I-5	198	878	1.9	4.4	63%	6%	31%
C-8	• *Rest Area:* At Fort Gee Safety Rest Areas NB and SB on I-5	129	655	4.3	5.1	49%	12%	39%

Source: CPCS analysis of INRIX, 2021.

I-82 (between Kennewick and WA-OR border)

Undesignated truck parking occurs on corridor shoulders and at interstate on/off ramps at several locations along I-82 between Kennewick and the Washington/Oregon border. While the largest share of undesignated stops is below 3 hours as truck drivers take short HOS breaks or stage for nearby facilities, nearly one-fourth of stops along this corridor exceed 7 hours, signaling drivers need a place to park to fulfill their long HOS requirements.

Figure 34: Undesignated truck parking clusters on I-82 between Kennewick and WA-OR border (map)

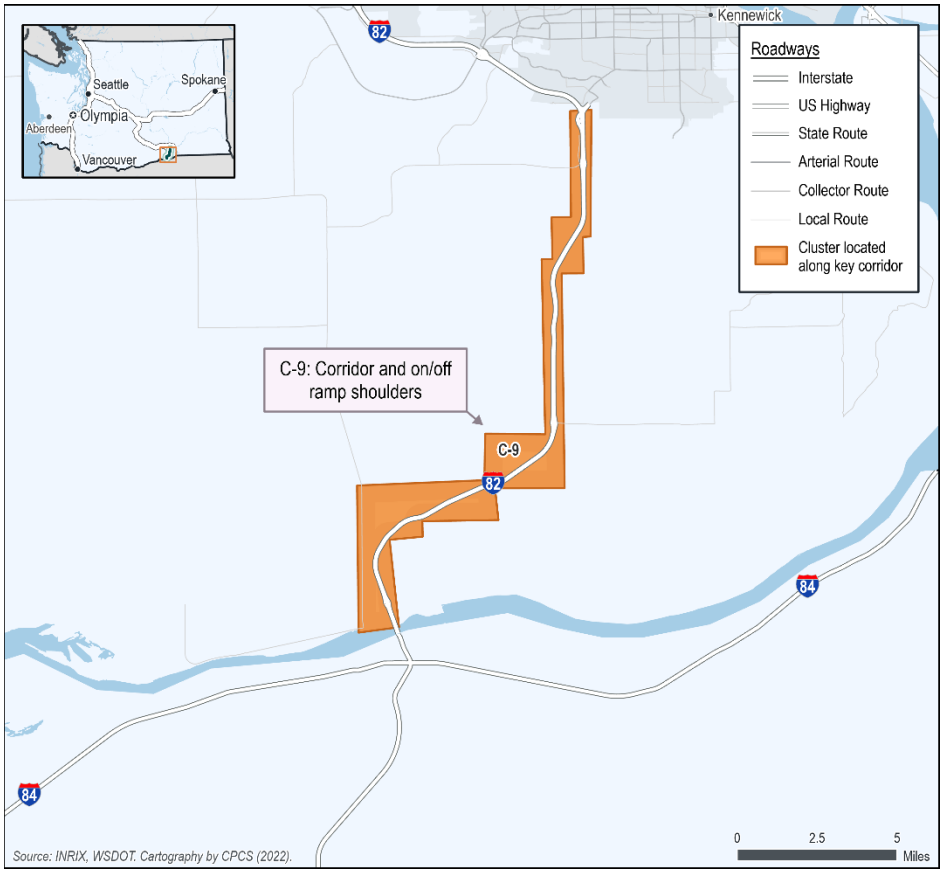


Figure 35: Undesignated truck parking clusters on I-82 between Kennewick and WA-OR border (table)

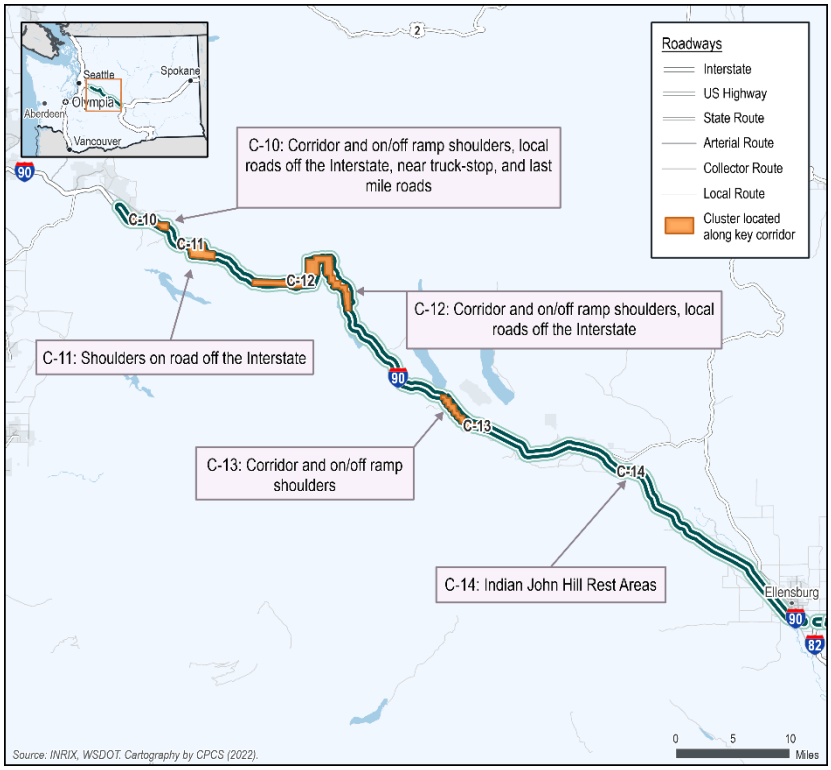
Cluster ID	Description	Total count	Total duration (hours)	Median stop duration (hours)	Average stop duration (hours)	% stops < 3 hours	% stops 3-7 hours	% stops > 7 hours
C-9	• *Corridor and On/Off Ramp Shoulders*: At several locations along I-82 south of the Tri-Cities area, to the Plymouth at the state's southern border	207	773	1.2	3.7	63%	14%	23%

Source: CPCS analysis of INRIX, 2021.

I-90 (between North Bend and Ellensburg)

High concentrations of undesignated truck parking occur along I-90 between North Bend and Ellensburg, on corridors and on/off ramp shoulders, as well as near truck parking locations, last-mile facilities, and connecting roads off I-90. Undesignated stops along this corridor, also referred to as Snoqualmie Pass, are highest during winter months due to winter weather delays and closures. Among the four-month sample of undesignated stops along this corridor, nearly 44 percent occurred during the February collection period.

Figure 36: Undesignated truck parking clusters on I-90 between North Bend and Ellensburg (map)



Of the concentrations of undesignated parking occurring along corridor and on/off ramp shoulders, the majority of stops last less than 3 hours and occur during winter months. However, along SE Homestead Valley Road off I-90, over 70 percent of undesignated stops exceed 8 hours as drivers fulfill their long HOS breaks year-round.

One of the state's largest concentrations of undesignated parking occurs at and leading up to Exit 34. In addition to undesignated parking along corridor and on/off ramp shoulders, a truck stop and last-mile facilities located off the Interstate draw trucks onto local roads. The duration of undesignated stops in this cluster varies, reflecting the mix of reasons for the undesignated parking. Drivers may park near Exit 34 to fulfill their long HOS break if they cannot find available truck parking at the truck stop and/or stage for nearby last-mile deliveries.

Figure 37: Undesignated truck parking clusters on I-90 between North Bend and Ellensburg (table)

Cluster ID	Description	Total count	Total duration (hours)	Median stop duration (hours)	Average stop duration (hours)	% stops < 3 hours	% stops 3-7 hours	% stops > 7 hours
C-10	• *Corridor and On/Off Ramp Shoulders:* Along I-90 between Exit 32 and 34. • *Near Truck Stop:* TA Travel Center in North Bend off I-90 Exit 34 • *Last-mile:* Near last-mile facilities in North Bend off I-90 Exit 34	957	6,213	4.7	6.5	43%	11%	46%
C-11	• *Corridor Shoulders:* Along SE Homestead Valley Rd., off I-90 Exit 38	190	1,688	10.5	8.9	22%	7%	71%

Cluster ID	Description	Total count	Total duration (hours)	Median stop duration (hours)	Average stop duration (hours)	% stops < 3 hours	% stops 3-7 hours	% stops > 7 hours
C-12	• *Corridor and On/Off Ramp Shoulders:* Along I-90 from Exit 45, past Exit 54 to milepost 57, as well as along SR 906 off I-90 at the Summit at Snoqualmie	884	2,123	0.9	2.4	82%	5%	12%
C-13	• *Corridor and On/Off Ramp Shoulders:* Along I-90 from Exit 70 to Exit 74	305	624	0.9	2.1	82%	12%	6%
C-14	• *Rest Area:* At Indian John Hill Rest Areas EB and WB on I-90	142	699	2.5	4.9	51%	13%	36%

Source: CPCS analysis of INRIX, 2021.

I-90 (between Ellensburg and Spokane)

Along I-90 between Ellensburg and Spokane, undesignated truck parking occurs along the roadway and on/off ramp shoulders throughout the corridor. However, the highest concentrations of undesignated truck parking are found at safety rest areas, with trucks parked along rest area on/off ramps as well as in undesignated places within the rest area. Trucks park in undesignated areas at safety rest areas for a variety of reasons, as reflected in the mix of stop durations. Some drivers may park in undesignated areas to fulfill short HOS breaks or stage for nearby last-mile facilities, such as in Moses Lake, Spokane, or Wenatchee (stop duration lasts no more than a few hours), as well as to fulfill long HOS breaks (stop duration over 8 hours).

Figure 38: Undesignated truck parking clusters on I-90 between Ellensburg and Spokane (map)

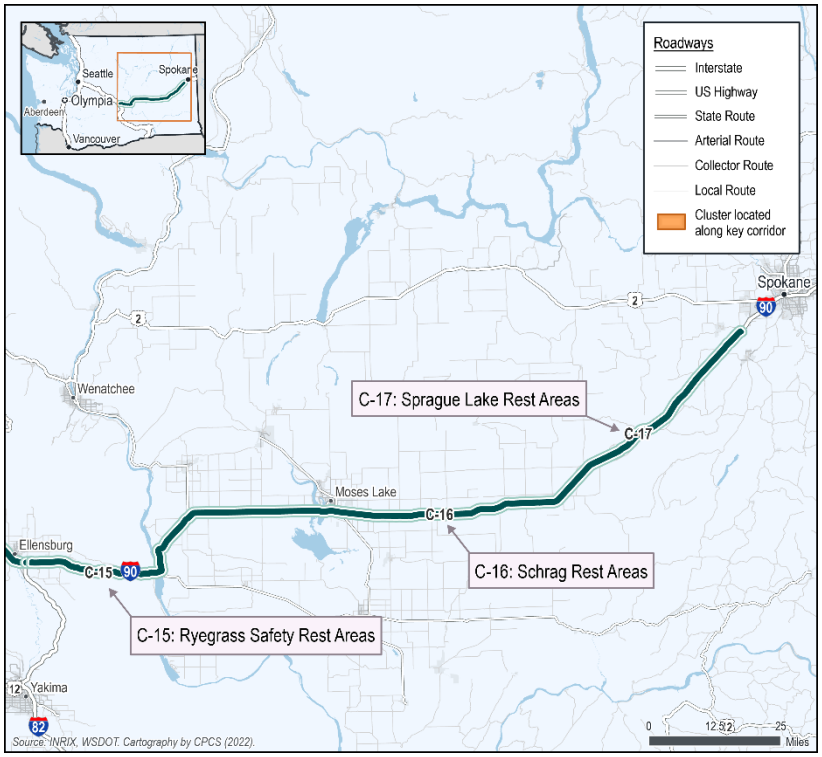


Figure 39: Undesignated truck parking clusters on I-90 between Ellensburg and Spokane (table)

Cluster ID	Description	Total count	Total duration (hours)	Median stop duration (hours)	Average stop duration (hours)	% stops < 3 hours	% stops 3-7 hours	% stops > 7 hours
C-15	• *Rest Area:* At Ryegrass Safety Rest Areas EB and WB on I-90	65	302	2.7	4.6	52%	12%	35%
C-16	• *Rest Area:* At Schrag Rest Areas EB and WB on I-90	44	152	1.1	3.5	73%	5%	23%
C-17	• *Rest Area:* At Sprague Lake Rest Areas EB and WB on I-90	124	684	3.7	5.5	47%	10%	43%

Source: CPCS analysis of INRIX, 2021.

Within urban areas in Washington state

Truck parking concerns in urban areas have similarly been documented in previous Washington state truck parking efforts. Truck parking, for the purpose of fulfilling HOS breaks or staging needs, in dense urban areas is often sporadic and difficult to differentiate from deliveries due to limited space for trucks to park in concentrated numbers.

Undesignated truck parking occurs in the Seattle, Tri-Cities, Spokane, and Yakima urban areas.

As detailed in Figure 40, undesignated truck parking stops that exceed 30 minutes in the state's urban areas are most often concentrated on last-mile roads near freight generators. As a result, the duration of undesignated stops in these urban areas is typically less than a few hours long. Where undesignated truck parking exceeds 7 hours near freight facilities, drivers may be simultaneously staging while fulfilling their long HOS break. In addition to undesignated truck parking on last-mile roads, trucks in the Seattle/Tacoma/Everett urban area also park in undesignated locations near safety rest areas and weigh stations.

Among urban areas in Washington state, the Seattle/Tacoma/Everett urban area experiences the highest concentrations of undesignated truck parking. Compared to other urban areas within which clusters of undesignated truck parking occur, Seattle/Tacoma/Everett also has the highest levels of truck traffic, as measured by combination truck count per mile and combination truck VMT on roadways through the urban area.

Figure 40: Truck parking conditions in urban areas

Clusters located along the corridor	Number of undesignated stops in sample[20]	Truck parking spaces	Combination truck count per mile[21]	Combination truck VMT[22]
Kennewick / Pasco / Richland				
• C-18 (near truck stop, last-mile) • C-19 (last-mile)	1,123	108	640	143,490
Seattle / Tacoma / Everett				
• C-20 (last-mile) • C-21 (last-mile) • C-22 (last-mile) • C-23 (last-mile) • C-24 (last-mile) • C-25 (last-mile) • C-26 (last-mile) • C-27 (last-mile) • C-28 (SeaTac Rest Area and Weigh Station) • C-29 (last-mile) • C-30 (near truck stop, last-mile) • C-31 (last-mile) • C-32 (Ft. Lewis Weigh Station)	8,184	301	680	1,392,670

[20] Represents number of undesignated stops, based on CPCS analysis of the INRIX truck GPS data, which includes a sample of total truck activity during four month-long periods in 2021 (February, May, August, November). Note that this data does not represent the full extent of truck activity during these periods, but rather serves as a measure of comparison; comparing truck activity statewide enables the identification of locations within the state where undesignated stops are concentrated.

[21] Truck count per mile calculated by dividing vehicle miles traveled (VMT) by road mileage (two way) with truck traffic. Therefore, truck counts are represented for one direction of roadway.

[22] VMT (vehicle miles traveled) calculated by multiplying annual average daily traffic (AADT) for combination trucks by the reported road length (miles).

Clusters located along the corridor	Number of undesignated stops in sample[20]	Truck parking spaces	Combination truck count per mile[21]	Combination truck VMT[22]
Spokane / Spokane Valley				
• C-33 (last-mile) • C-34 (last-mile) • C-35 (last-mile)	1,789	291	390	176,650
Yakima / Selah / Union Gap				
• C-36 (last-mile) • C-37 (last-mile)	605	154	410	61,670

Source: CPCS analysis of INRIX, 2021. | Private Truck Parking Locations, WSDOT, HPMS.

Kennewick / Pasco / Richland

The highest concentrations of undesignated truck parking in the Kennewick / Pasco / Richland urban areas typically occur on last-mile roads near freight generators, with the large majority of stops lasting less than 3 hours as trucks stage for their shipping/receiving appointments. One cluster of undesignated truck parking is located near both freight generators and a truck stop. At this location, some drivers park in undesignated locations for more than 8 hours to fulfill longer HOS breaks – often the result of being unable to find available designated truck parking.

Figure 41: Undesignated truck parking clusters in Kennewick / Pasco / Richland (map)

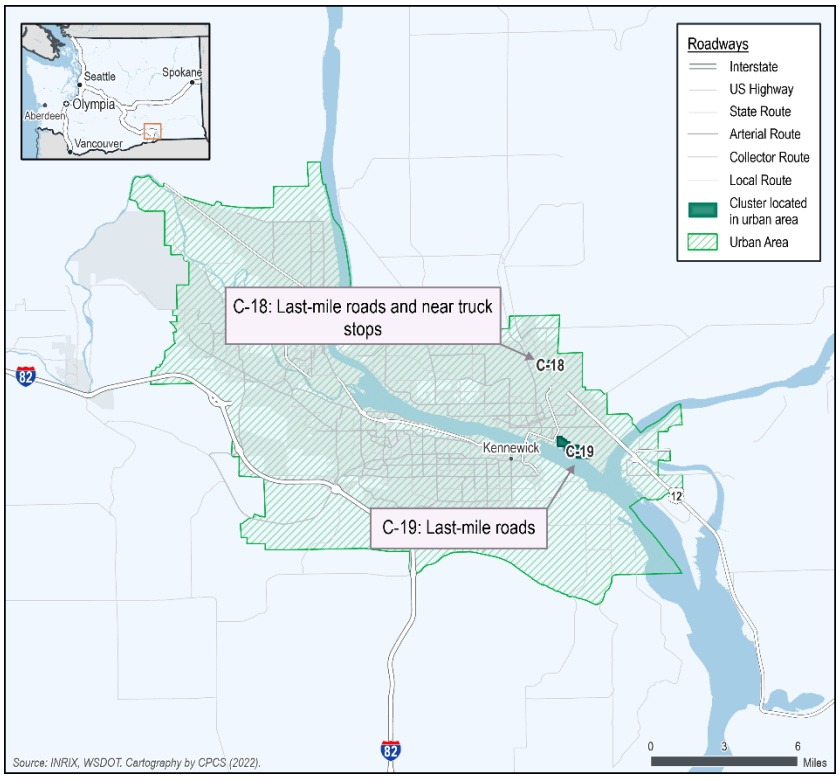


Figure 42: Undesignated truck parking clusters in Kennewick / Pasco / Richland (table)

Cluster ID	Description	Total count	Total duration (hours)	Median stop duration (hours)	Average stop duration (hours)	% stops < 3 hours	% stops 3-7 hours	% stops > 7 hours
C-18	• *Last-mile:* Near last-mile facilities in eastern Pasco off US 395 • *Near Truck Stop:* Broadway/Flying J Travel Plaza #970 and Khalsa King City Truck Stop in Pasco off US 395	215	730	1.4	3.4	77%	7%	17%
C-19	• *Last-mile:* Near last-mile facilities in southeast Pasco along the Columbia River	195	255	0.8	1.3	95%	2%	4%

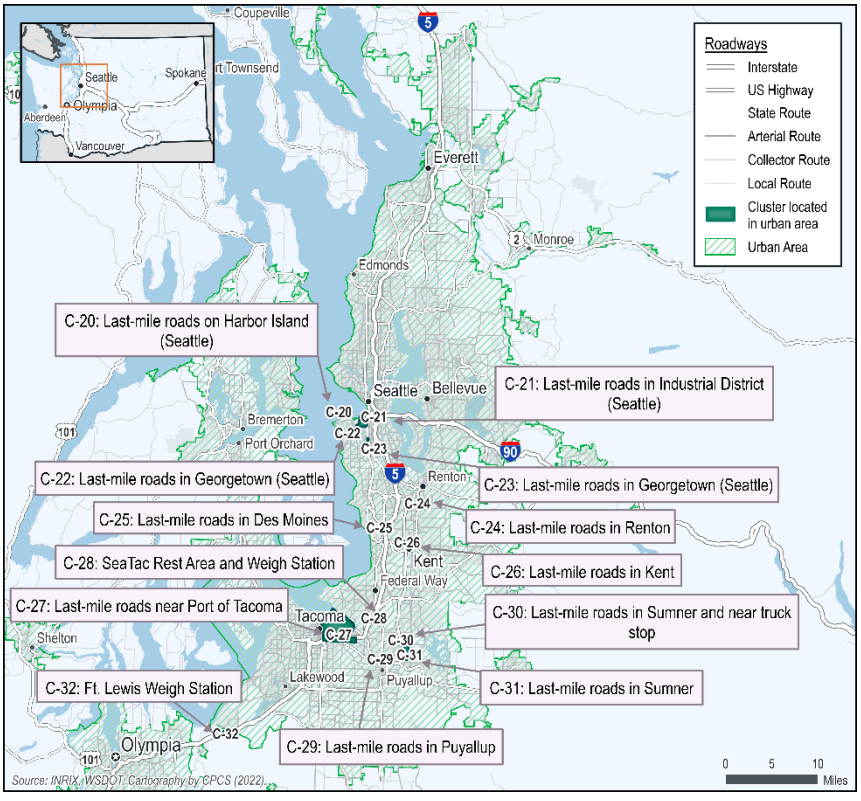
Source: CPCS analysis of INRIX, 2021.

Seattle / Tacoma / Everett

The Seattle / Tacoma / Everett urban area experiences the highest concentrations of undesignated truck parking, compared to urban areas statewide. Ten of the urban area's 13 undesignated truck parking clusters occur along last-mile roads near freight generators, with an additional cluster located near both freight facilities and a truck stop. The typical stop duration of undesignated stops on last-mile roads varies by location.

The majority of undesignated truck parking near freight generators in Seattle – including on Harbor Island, in the Industrial District, and in the Georgetown neighborhood – is below 3 hours as trucks stage for pick-up or delivery. These trends are similar for undesignated truck parking near last-mile facilities in Renton, Des Moines, and northern Puyallup.

Figure 43: Undesignated truck parking clusters in Seattle / Tacoma / Everett (map)



Freight activities at the Port of Tacoma also generate high levels of truck traffic. Undesignated truck parking occurs at and near the port, with a large share of stops remaining below 3 hours as drivers stage. Some undesignated stops near the port also exceed 7 hours, as drivers simultaneously stage and fulfill their longer HOS breaks. Meanwhile, on last-mile roads in Kent and Sumner, over half of undesignated stops exceed 3 hours, reflecting trucks parked for longer periods of staging, as well as drivers parked to fulfill longer HOS breaks.

Undesignated truck parking also occurs near truck parking locations in the Seattle/Tacoma/Everett urban area. At the SeaTac Rest Area and Weigh Station, undesignated truck parking occurs along on/off ramp shoulders as well as in undesignated areas within the rest area. In some cases, trucks

will double-stack and park behind other trucks in designated spaces. Over half of these undesignated stops exceed 7 hours as drivers look to fulfill their long HOS breaks prior to entering the Seattle urban area. Trucks also park on the on-ramp from Fort Lewis Weigh Station to I-5 northbound, typically during overnight hours. Trucks can also be found parked along a wide shoulder on the I-5 southbound off-ramp, across from the weigh station.

Figure 44: Undesignated truck parking clusters in Seattle / Tacoma / Everett (table)

Cluster ID	Description	Total count	Total duration (hours)	Median stop duration (hours)	Average stop duration (hours)	% stops < 3 hours	% stops 3-7 hours	% stops > 7 hours
C-20	• *Last-mile:* Near last-mile facilities on Harbor Island in Seattle, north of the West Seattle Bridge	209	544	1.0	2.6	83%	5%	12%
C-21	• *Last-mile:* Near last-mile facilities in the Industrial District of Seattle, west of I-5 near 164B (NB) and 163B (SB)	59	91	0.8	1.6	93%	2%	5%
C-22	• *Last-mile:* Near last-mile facilities in northwest Georgetown neighborhood of Seattle	73	102	0.8	1.4	93%	3%	4%
C-23	• *Last-mile:* Near last-mile facilities in the southwest Georgetown neighborhood of Seattle	55	141	2.1	2.6	78%	18%	4%
C-24	• *Last-mile:* Near last-mile facilities in Renton	53	101	1.5	1.9	87%	11%	2%
C-25	• *Last-mile:* Near last-mile facilities in Des Moines	88	209	1.9	2.4	74%	24%	2%
C-26	• *Last-mile:* Near last-mile facilities in Kent	106	613	4.1	5.8	43%	24%	33%
C-27	• *Last-mile:* Near last-mile facilities at and near the Port of Tacoma	1,251	5,170	1.4	4.1	67%	10%	24%
C-28	• *Rest Area:* At SeaTac Rest Area and Weigh Station NB on I-5	124	937	8.6	7.6	34%	10%	56%
C-29	• *Last-mile:* Near last-mile facilities in northern Puyallup	125	174	0.8	1.4	88%	11%	1%
C-30	• *Near Truck Stop:* Near Mustard Seed Market & Deli Truck Stop, including along the SR 167 on/off ramp and on local roads • *Last-mile:* Near last-mile facilities in northeast Sumner	128	725	4.5	5.7	41%	23%	36%
C-31	• *Last-mile:* Near last-mile facilities in northeast Sumner	198	1,004	2.6	5.1	53%	19%	28%
C-32	• *Rest Area:* At Ft. Lewis Weigh Station NB on I-5	124	507	1.4	4.1	58%	16%	26%

Source: CPCS analysis of INRIX, 2021.

Spokane / Spokane Valley

In Spokane / Spokane Valley, last-mile roads experience the highest concentrations of truck parking. While the distribution in the duration of undesignated stops varies across the three clusters within this urban area, the largest share of stops across all clusters remains below 3 hours. Near some last-mile facilities, some drivers are parked in undesignated areas for longer durations – staging for longer periods of time and/or simultaneously fulfilling longer HOS breaks.

Figure 45: Undesignated truck parking clusters in Spokane / Spokane Valley (map)

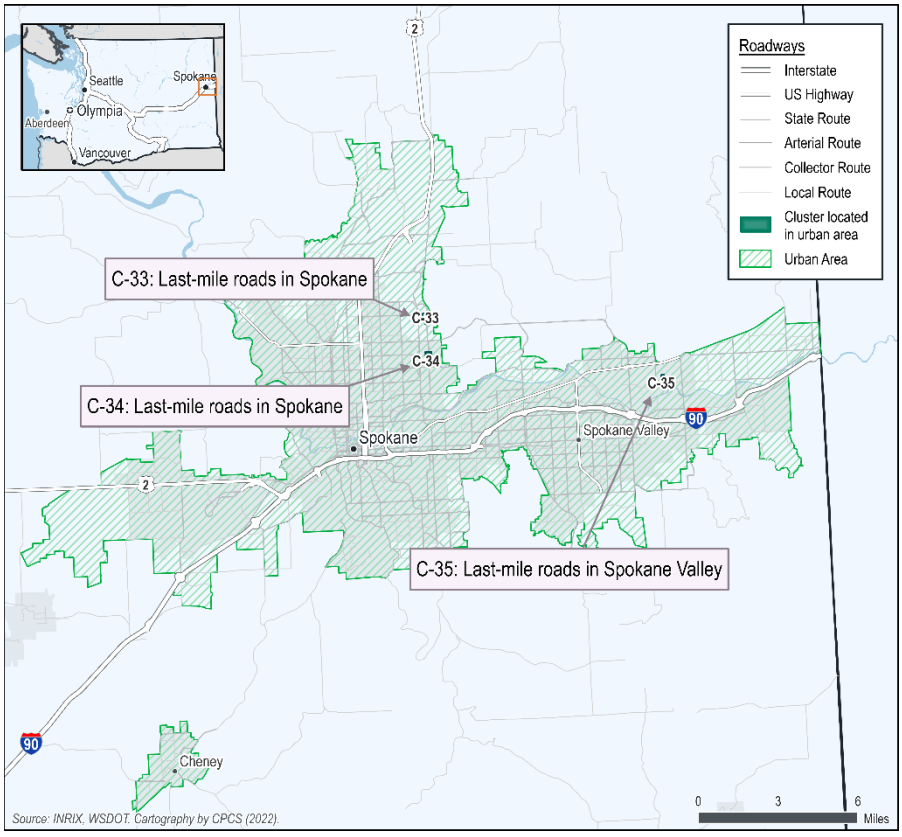


Figure 46: Undesignated truck parking clusters in Spokane / Spokane Valley (table)

Cluster ID	Description	Total count	Total duration (hours)	Median stop duration (hours)	Average stop duration (hours)	% stops < 3 hours	% stops 3-7 hours	% stops > 7 hours
C-33	• *Last-mile:* Near last-mile facilities in the northern Hillyard neighborhood of Spokane	88	306	2.0	3.5	70%	13%	17%
C-34	• *Last-mile:* Near last-mile facility in the central Hillyard neighborhood of Spokane	167	841	2.3	5.0	60%	11%	29%
C-35	• *Last-mile:* Near last-mile facilities in Spokane Valley north of I-90 Exit 291B	109	229	1.8	2.1	86%	12%	2%

Source: CPCS analysis of INRIX, 2021.

Yakima / Selah / Union Gap

Undesignated parking in the Yakima / Selah / Union Gap urban area typically concentrates along last-mile roads around freight generators, with the large majority of undesignated stops remaining below 3 hours as trucks stage for pick-up/drop-off.

Figure 47: Undesignated truck parking clusters in Yakima / Selah / Union Gap (map)

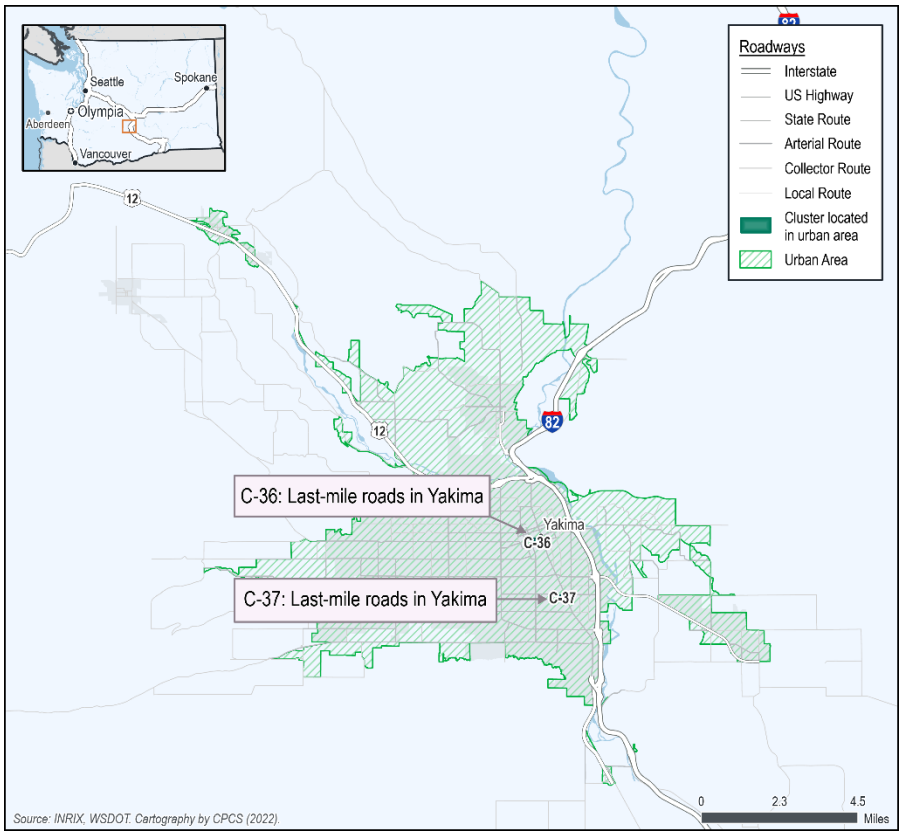


Figure 48: Undesignated truck parking clusters in Yakima / Selah / Union Gap (table)

Cluster ID	Description	Total count	Total duration (hours)	Median stop duration (hours)	Average stop duration (hours)	% stops < 3 hours	% stops 3-7 hours	% stops > 7 hours
C-36	• *Last-mile:* Near last-mile facilities in downtown Yakima, west of I-82 Exit 33	46	53	1.0	1.2	100%	--	--
C-37	• *Last-mile:* Near last-mile facilities in southeast Yakima, west of I-82 Exit 34	104	295	1.5	2.8	82%	7%	12%

Source: CPCS analysis of INRIX, 2021.

Other

Clusters of undesignated truck parking occur in other locations across the state but are not located near other clusters. Therefore, undesignated truck parking issues at these locations are less severe compared to the corridors and urban areas that experience many clusters of undesignated parking.

In Washington state, single undesignated truck parking clusters occur on last-mile roads near freight generators or near rest areas. **Reference Chapter B** provides an overview of the top five other truck parking clusters in the state, not located near other clusters.

5. Next Steps

Applying Truck Parking Assessment Findings

The Washington State Truck Parking Assessment inventories the state's existing truck parking locations and provides a review of undesignated truck parking occurring statewide. In addition to fulfilling federal requirements, this assessment provides WSDOT with a data-driven overview of truck parking supply and issue areas within Washington state. WSDOT can use the findings of this assessment, in combination with other completed, ongoing, and future truck parking efforts, to better understand truck parking issues in the state. By using a data-driven approach to identify undesignated truck parking, this assessment validates and underscores the locations in Washington state that experience the most pressing truck parking issues, enabling WSDOT to focus truck parking activities at these locations.

Several completed and ongoing studies in Washington state have identified a range of opportunities to advance truck parking. **Reference Chapter D** provides an overview of these opportunities, for consideration by WSDOT and other relevant stakeholders. Washington state is also currently engaged in efforts to improve truck parking, through a Truck Parking Information Management System pilot as well as a safety rest area strategic plan.

Ongoing truck parking efforts in Washington state

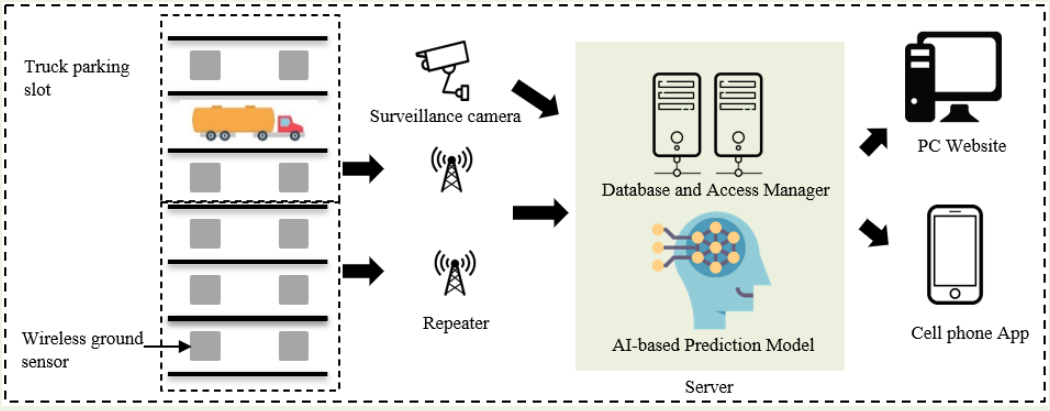
Truck Parking Information Management System pilot

WSDOT Transportation Operations, in collaboration with the University of Washington STAR Lab (UW), began a Truck Parking Information Management System (TPIMS) Pilot project in 2019.

The goal of the truck parking pilot project was to develop a TPIMS that collects parking space occupancy data, performs data analytics to project future availability, and disseminates this information to the public through a website and application.

Figure 49 illustrates the TPIMS developed through the pilot. At two truck parking locations (Fort Lewis/Nisqually Weigh Station and Scatter Creek Rest Area), WSDOT installed in-pavement occupancy sensors. Using data collected at the truck parking locations, UW developed an algorithm to project space availability from 10 minutes to four hours ahead of time, with approximately 12 percent error.

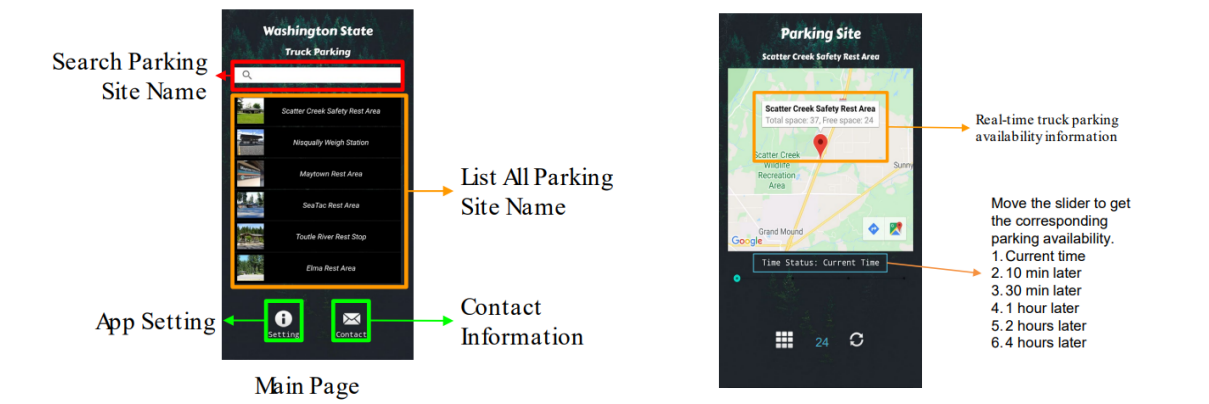
Figure 49: WSDOT and UW pilot TPIMS architecture



Source: WSDOT.

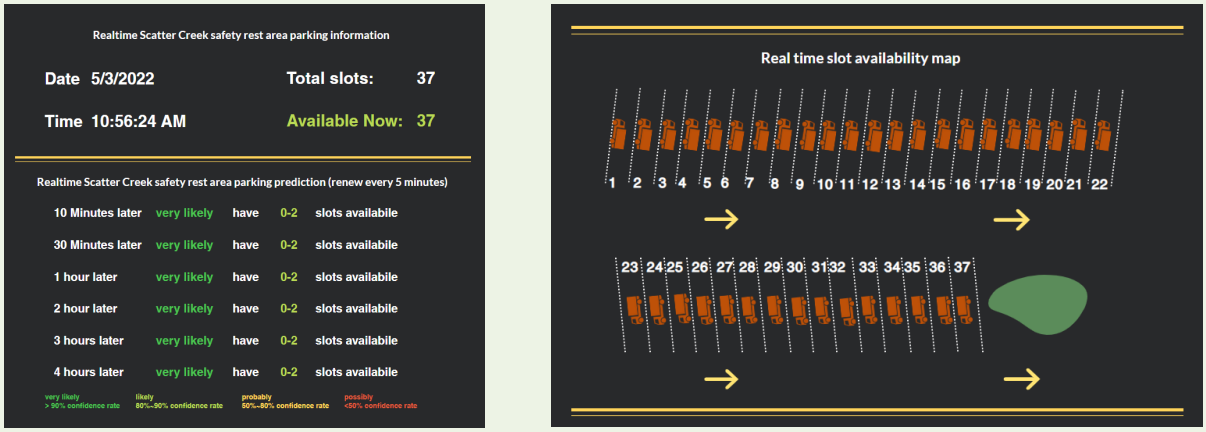
UW also worked on developing an application (Figure 50) and website (Figure 51) to disseminate truck parking availability information.

Figure 50: Mobile application showing truck parking availability



Source: A Cost-Effective Solution for Truck Parking Based on Artificial Intelligence, for Western States Forum, WSDOT, October 2021. http://www.westernstatesforum.org/Documents/2021/Presentations/WSDOT_UW_MurthyYang_Final_TruckParkingPrediction.pdf

Figure 51: Website showing truck parking availability (Scatter Creek Safety Rest Area)



Source: WSDOT Truck Parking Online Information, UW Star Lab. https://uwstarlab.wixsite.com/wsdotparking/nisqually-weigh-station

WSDOT is currently advancing TPIMS in Washington state under an FMCSA grant, with funding extending from August 2021 through September 2025. With this funding, WSDOT is deploying occupancy detection technology to 470 truck parking stalls at 28 existing public truck parking locations (21 safety rest areas and seven weigh station locations) along I-5 and I-90. At each location, WSDOT is installing detection sensors or other technology to monitor parking occupancy status. Meanwhile, UW continues to refine the algorithm to improve the time and accuracy of predicting space availability.

WSDOT seeks to continue discussions with public and private partners to develop a more robust TPIMS that crosses state lines. This includes engaging the private sector in exploring opportunities to disseminate truck parking availability information through existing market applications.

Safety Rest Area Strategic Plan

WSDOT, in collaboration with Washington State University (WSU), is in the process of completing a Safety Rest Area Strategic Plan, focused on the value of each safety rest area from an economic perspective. The plan will identify the economic value of safety rest areas based on cost, as well as truck, automotive, and RV factors. The Safety Rest Area Strategic Plan will be published in 2022.

As Washington state considers its next steps to address truck parking in the state, WSDOT has an opportunity to build on this assessment through additional research that evaluates the utilization of the state's existing truck parking facilities. This will enable WSDOT to most effectively match each truck parking issue area identified in this assessment with the appropriate truck parking solution identified by the Washington JTC Truck Parking Action Plan.

WSDOT will continue to work with its partners to identify and progress next steps to address truck parking in the state. WSDOT is committed to continuing to support existing WSDOT activities that advance truck parking and identify opportunities to improve truck parking conditions in Washington state.

Appendix A. Truck Parking Locations and Services Maps

The figures on the following pages further map truck parking locations for western (Figure 52), northeast (Figure 53), and southeast (Figure 54) Washington state with further details about each truck parking facility, including location information, number of truck parking spaces, and amenities (restrooms, portable toilets, fuel, food, vending machines, and/or showers) provided.

Figure 52: Truck parking locations in western Washington state

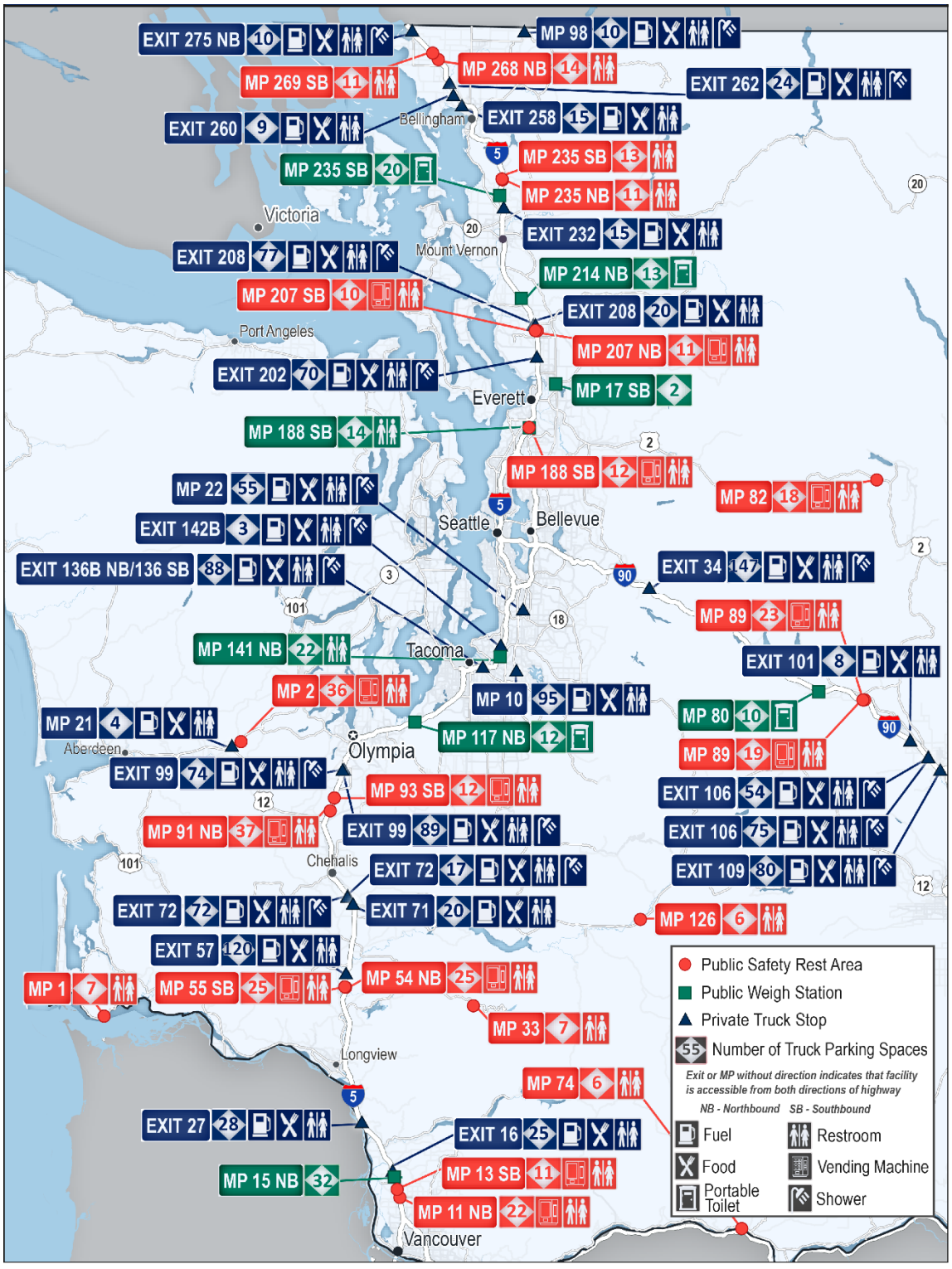


Figure 53: Truck parking location in northeastern Washington state

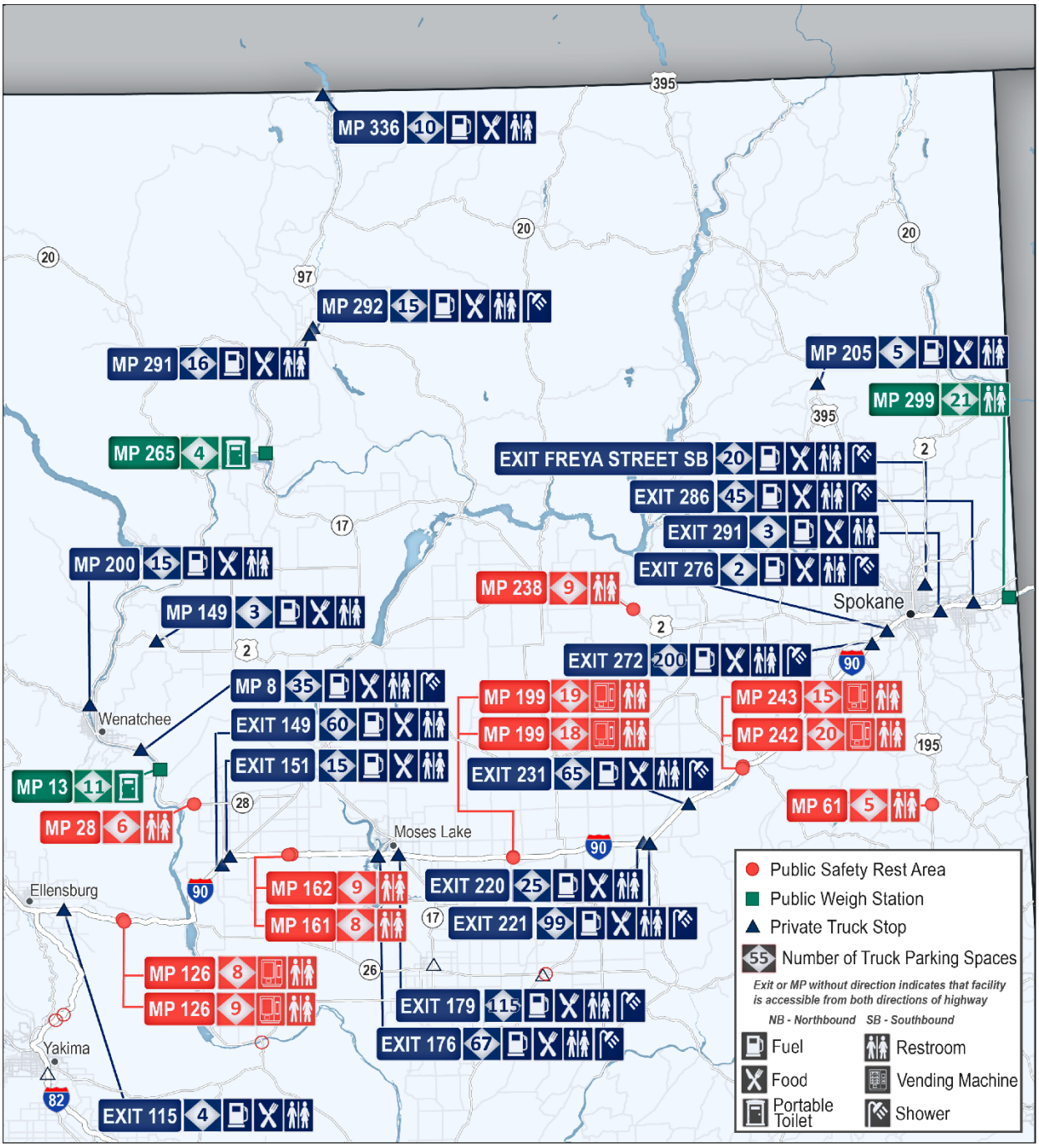
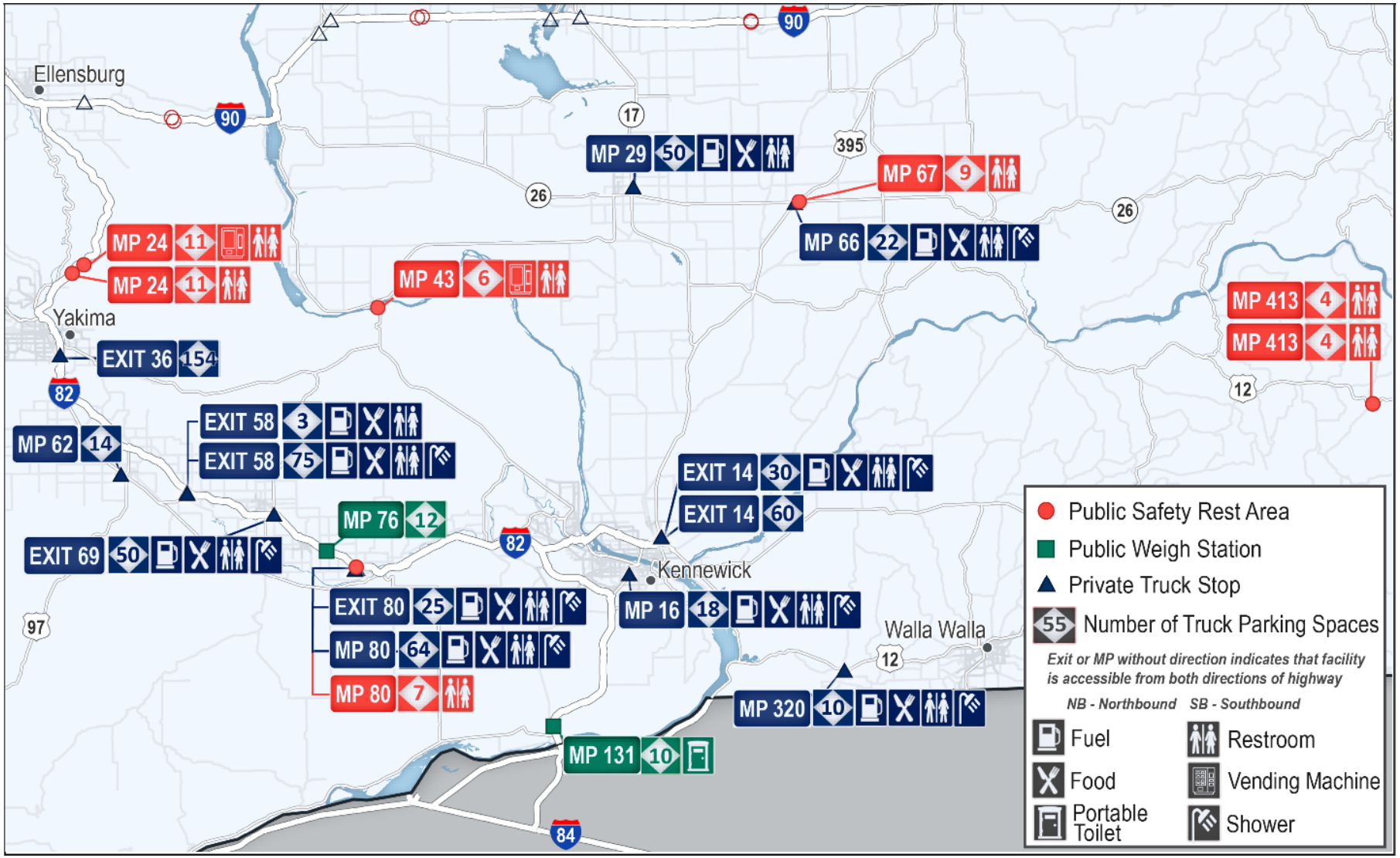


Figure 54: Truck parking location in southeastern Washington state



Appendix B. Other undesignated truck parking clusters

Clusters of undesignated truck parking occur in other locations across the state but are not located near other clusters – often on last-mile roads near freight generators or near rest areas (Figure 55 and Figure 56).

Figure 55: Truck parking conditions near other truck parking clusters

Location Description	Cluster	Number of undesignated stops in sample[23]	Number of truck parking spaces within a 10-mile radius
Last-mile facilities in Bellingham off I-5	• C-38 (last-mile)	68	48
Smokey Point Rest Areas	• C-39 (Smokey Point Rest Areas)	55	201
Last-mile facilities in east Quincy north of SR 28	• C-40 (last-mile)	108	6
Last-mile facility in Grandview off I-82	• C-41 (last-mile)	346	158
Last-mile facilities in Warden	• C-42 (last-mile)	42	0

Source: CPCS analysis of INRIX, 2021. | Private Truck Parking Locations, WSDOT, HPMS.

Figure 56: Other undesignated truck parking clusters

Cluster ID	Description	Total count	Total duration (hours)	Median stop duration (hours)	Average stop duration (hours)	% stops < 3 hours	% stops 3-7 hours	% stops > 7 hours
C-38	• *Last-mile:* Near last-mile facilities in north Bellingham, south of I-5 Exit 256	68	251	2.5	3.7	62%	22%	16%
C-39	• *Rest Area:* At Smokey Point Rest Areas NB and SB on I-5	55	317	4.6	5.8	45%	15%	40%
C-40	• *Last-mile:* Near last-mile facilities in east Quincy, north of SR 28	108	561	2.7	5.2	53%	19%	28%
C-41	• *Last-mile:* Near last-mile facility in Grandview, north of I-82 Exit 73	346	1,507	2.3	4.4	58%	16%	26%
C-42	• *Last-mile:* Near last-mile facilities in Warden	42	106	1.5	2.5	69%	26%	5%

Source: CPCS analysis of INRIX, 2021.

[23] Represents number of undesignated stops, based on CPCS analysis of the INRIX truck GPS data, which includes a sample of total truck activity during four month-long periods in 2021 (February, May, August, November). Note that this data does not represent the full extent of truck activity during these periods, but rather serves as a measure of comparison; comparing truck activity statewide enables the identification of locations within the state where undesignated stops are concentrated.

Appendix C. Undesignated truck parking clusters (full table)

Figure 57: Undesignated truck parking clusters on I-5 between Olympia and WA-OR border (table)

Cluster ID	Description	Total count	Total duration (hours)	Median stop duration (hours)	Average stop duration (hours)	% stops < 3 hours	% stops 3-7 hours	% stops > 7 hours
C-01	• *Rest Area:* At Maytown Rest Area SB on I-5	129	402	1.3	3.1	74%	8%	18%
C-02	• *Rest Area:* At Scatter Creek Safety Rest Area NB on I-5	122	454	1.0	3.7	64%	11%	25%
C-03	• *Last-mile:* Near last-mile facilities in Chehalis off I-5	79	292	3.1	3.7	48%	43%	9%
C-04	• *Corridor and On/Off Ramp Shoulders:* Along I-5 at Exit 60.	55	68	0.7	1.2	91%	7%	2%
C-05	• *Rest Area:* At Toutle River Safety Rest Areas NB and SB on I-5	92	315	1.0	3.4	68%	8%	24%
C-06	• *On/Off Ramp Shoulders:* Along I-5 at Exit 46.	53	71	0.6	1.4	91%	4%	6%
C-07	• *Last-mile:* Near last-mile facilities at the Port of Longview off I-5	198	878	1.9	4.4	63%	6%	31%
C-08	• *Rest Area:* At Fort Gee Safety Rest Areas NB and SB on I-5	129	655	4.3	5.1	49%	12%	39%
C-09	• *Corridor and On/Off Ramp Shoulders*: At several locations along I-82 south of the Tri-Cities area, to the Plymouth at the state's southern border	207	773	1.2	3.7	63%	14%	23%
C-10	• *Corridor and On/Off Ramp Shoulders:* Along I-90 between Exit 32 and 34. • *Near Truck Stop:* TA Travel Center in North Bend off I-90 Exit 34 • *Last-mile:* Near last-mile facilities in North Bend off I-90 Exit 34	957	6,213	4.7	6.5	43%	11%	46%
C-11	• *Corridor Shoulders:* Along SE Homestead Valley Rd., off I-90 Exit 38	190	1,688	10.5	8.9	22%	7%	71%
C-12	• *Corridor and On/Off Ramp Shoulders:* Along I-90 from Exit 45, past Exit 54 to milepost 57, as well as along SR 906 off I-90 at the Summit at Snoqualmie	884	2,123	0.9	2.4	82%	5%	12%
C-13	• *Corridor and On/Off Ramp Shoulders:* Along I-90 from Exit 70 to Exit 74	305	624	0.9	2.1	82%	12%	6%
C-14	• *Rest Area:* At Indian John Hill Rest Areas EB and WB on I-90	142	699	2.5	4.9	51%	13%	36%
C-15	• *Rest Area:* At Ryegrass Safety Rest Areas EB and WB on I-90	65	302	2.7	4.6	52%	12%	35%
C-16	• *Rest Area:* At Schrag Rest Areas EB and WB on I-90	44	152	1.1	3.5	73%	5%	23%
C-17	• *Rest Area:* At Sprague Lake Rest Areas EB and WB on I-90	124	684	3.7	5.5	47%	10%	43%
C-18	• *Last-mile:* Near last-mile facilities in eastern Pasco off US 395 • *Near Truck Stop:* Broadway/Flying J Travel Plaza #970 and Khalsa King City Truck Stop in Pasco off US 395	215	730	1.4	3.4	77%	7%	17%
C-19	• *Last-mile:* Near last-mile facilities in southeast Pasco along the Columbia River	195	255	0.8	1.3	95%	2%	4%
C-20	• *Last-mile:* Near last-mile facilities on Harbor Island in Seattle, north of the West Seattle Bridge	209	544	1.0	2.6	83%	5%	12%
C-21	• *Last-mile:* Near last-mile facilities in the Industrial District of Seattle, west of I-5 near 164B (NB) and 163B (SB)	59	91	0.8	1.6	93%	2%	5%
C-22	• *Last-mile:* Near last-mile facilities in northwest Georgetown neighborhood of Seattle	73	102	0.8	1.4	93%	3%	4%
C-23	• *Last-mile:* Near last-mile facilities in the southwest Georgetown neighborhood of Seattle	55	141	2.1	2.6	78%	18%	4%

Cluster ID	Description	Total count	Total duration (hours)	Median stop duration (hours)	Average stop duration (hours)	% stops < 3 hours	% stops 3-7 hours	% stops > 7 hours
C-24	• *Last-mile:* Near last-mile facilities in Renton	53	101	1.5	1.9	87%	11%	2%
C-25	• *Last-mile:* Near last-mile facilities in Des Moines	88	209	1.9	2.4	74%	24%	2%
C-26	• *Last-mile:* Near last-mile facilities in Kent	106	613	4.1	5.8	43%	24%	33%
C-27	• *Last-mile:* Near last-mile facilities at and near the Port of Tacoma	1,251	5,170	1.4	4.1	67%	10%	24%
C-28	• *Rest Area:* At SeaTac Rest Area and Weigh Station NB on I-5	124	937	8.6	7.6	34%	10%	56%
C-29	• *Last-mile:* Near last-mile facilities in northern Puyallup	125	174	0.8	1.4	88%	11%	1%
C-30	• *Near Truck Stop:* Near Mustard Seed Market & Deli Truck Stop, including along the SR 167 on/off ramp and on local roads • *Last-mile:* Near last-mile facilities in northeast Sumner	128	725	4.5	5.7	41%	23%	36%
C-31	• *Last-mile:* Near last-mile facilities in northeast Sumner	198	1,004	2.6	5.1	53%	19%	28%
C-32	• *Rest Area:* At Ft. Lewis Weigh Station NB on I-5	124	507	1.4	4.1	58%	16%	26%
C-33	• *Last-mile:* Near last-mile facilities in the northern Hillyard neighborhood of Spokane	88	306	2.0	3.5	70%	13%	17%
C-34	• *Last-mile:* Near last-mile facility in the central Hillyard neighborhood of Spokane	167	841	2.3	5.0	60%	11%	29%
C-35	• *Last-mile:* Near last-mile facilities in Spokane Valley north of I-90 Exit 291B	109	229	1.8	2.1	86%	12%	2%
C-36	• *Last-mile:* Near last-mile facilities in downtown Yakima, west of I-82 Exit 33	46	53	1.0	1.2	100%	--	--
C-37	• *Last-mile:* Near last-mile facilities in southeast Yakima, west of I-82 Exit 34	104	295	1.5	2.8	82%	7%	12%
C-38	• *Last-mile:* Near last-mile facilities in north Bellingham, south of I-5 Exit 256	68	251	2.5	3.7	62%	22%	16%
C-39	• *Rest Area:* At Smokey Point Rest Areas NB and SB on I-5	55	317	4.6	5.8	45%	15%	40%
C-40	• *Last-mile:* Near last-mile facilities in east Quincy, north of SR 28	108	561	2.7	5.2	53%	19%	28%
C-41	• *Last-mile:* Near last-mile facility in Grandview, north of I-82 Exit 73	346	1,507	2.3	4.4	58%	16%	26%
C-42	• *Last-mile:* Near last-mile facilities in Warden	42	106	1.5	2.5	69%	26%	5%

Source: CPCS analysis of INRIX, 2021.

Appendix D. Identified truck parking opportunities

Washington JTC Truck Parking Action Plan

The Washington JTC Truck Parking Action Plan, published in December 2021, builds on previous truck parking work in Washington state to identify recommended actions to advance truck parking in the state.

Recommendations identified by previous truck parking efforts in Washington state

While several existing studies in Washington state have included recommendations to advance truck parking, the JTC Truck Parking Action Plan serves as the most recent, comprehensive, and detailed set of actions for addressing truck parking needs in the state. The JTC Truck Parking Action plan reviewed and built on previous studies:

- **Washington State Truck Parking Workshop, June 2021:** As part of the virtual truck parking workshop sessions held by WSDOT and FHWA, stakeholders identified key truck parking solutions, spanning capacity, programmatic, technology, and cross-cutting solutions. Stakeholders also discussed and rated potential actions that Washington and its partners can take, though few solutions were clearly rated above others.
- **Washington State Freight System Plan, 2017:** The 2017 State Freight System Plan identified opportunities to improve truck parking based on the issues and recommendations identified as part of the 2016 Truck Parking Study. Opportunities to improve truck parking identified as part of the Freight System Plan included conducting additional research on truck parking availability systems, improving the WSDOT app to enhance information for the freight industry, improving statewide truck parking maps, assessing truck parking expansion opportunities at safety rest areas, assessing truck parking opportunities at weigh stations and on state land, and updating the Target Zero Plan to include truck parking as a strategy. WSDOT also encouraged transportation partners to assess opportunities detailed in the Truck Parking Study for new and expanded truck parking.
- **Washington State Truck Parking Study, 2016:** The state's most recent comprehensive truck parking study categorizes truck parking opportunities into one of three types: infrastructure (technology solutions and supply expansion), institutional (data/research and coordination/ partnerships), and financial (federal, state, and local funding).

The Action Plan also gathered stakeholder input to inform the identification of recommendations for addressing truck parking needs in the state. Actions to address truck parking needs in the state focus on improving truck parking capacity, information sharing, and collaboration. The following list outlines strategies and actions identified by the Truck Parking Action Plan to improve truck parking in Washington state.[24]

Develop more publicly owned truck parking in high demand areas: The Action Plan recommends constructing two large-scale truck parking facilities and one small staging lot in the areas of greatest truck parking need (urban areas, mountain pass corridors, and near borders). The Action Plan noted more truck parking, either through new facility development or truck parking expansion, could be built on or near the I-5 and I-90 corridors following a site assessment to identify the most feasible sites.

Better utilizing existing parking in urban areas: The Action Plan identifies curbs, retail parking lots, and industrial properties as potential underutilized spaces within urban areas where trucks could park, if appropriate and allowed. To advance this strategy, WSDOT can develop guidance for managing curbside parking, in collaboration with local jurisdictions and private industry, followed by a

[24] Truck Parking Action Plan, Washington JTC, December 2021. https://leg.wa.gov/JTC/Documents/Studies/Truck%20Parking/Final_TruckParkingActionPlan_2021.pdf

pilot project for managing curbside truck parking, advanced by a local jurisdiction. Local jurisdictions may also consider promoting "Airbnb" truck parking to property owners with existing lots already zoned for commercial or industrial use and permitted for truck activity. The Action Plan also recommends WSDOT pilot a Truck Parking Partnership Program at underutilized infrastructure, such as car and/or truck (e.g., large retail, industrial) parking lots during overnight hours when not in use.

Shippers and receivers provide parking and basic amenities: The Action Plan identifies actions to encourage, incentivize, and/or require shippers and receivers to engage in truck parking solutions as some of the most lasting and impactful actions Washington state can take to improve truck parking. Strategies identified include developing guidance for permitting agencies to require on-site truck parking at new developments, providing tax incentives for shippers and receivers to provide on-site truck parking, and requiring new developments for shippers and receivers to provide on-site truck parking. Additionally, the state could mandate restroom access for truck drivers at businesses where they are picking up or delivering.

Develop truck parking information systems: Truck parking information systems provide information to truck drivers about truck parking locations and availability through roadside signs and mobile applications, to enable truck drivers to make informed decisions about where to park. By providing drivers with more information about truck parking, truck parking information systems distribute trucks to parking capacity, reducing the frequency of undesignated parking. Real-time information about truck parking availability further enables truck drivers to decide whether to continue driving to reach available truck parking (but risk running out of HOS time if parking is unavailable) or stop for available truck parking nearby (but lose driving hours). WSDOT is currently deploying TPIMS at select weigh stations and rest areas along I-5 and I-90, in collaboration with the University of Washington, with the support of grant funds from the Federal Motor Carrier Safety Administration (FMCSA). The Action Plan recommends WSDOT develop a concept of operations for the expansion of the initial system to incorporate the remaining rest areas and expand to private truck stops, followed by implementation of the expansion. Integrating communication and truck parking availability information systems was also recommended, which allows drivers to benefit from a single source of information.

Secure federal funding for next-gen truck parking: The Action Plan envisions a next-gen, hub-and-spoke truck parking strategy where a remote parking facility serves as a staging lot, connected via information systems to the truck drivers' customer and to other short-term staging lots nearby. Using this model, drivers would "check-in" with their customers and wait at the remote lot with access to amenities, until their customer is ready to receive them. This strategy requires several actions, including developing a concept of operations for the project and securing public and private support to prepare a federal grant application, and if successful, implement the project.

Better utilizing existing infrastructure along mountain passes: The Action Plan identifies existing infrastructure, such as chain-up/chain-off areas (during non-winter months) and large car parking lots (for temporary overflow during winter road closures), as potential locations for truck parking along mountain passes, upon the completion of feasibility and safety reviews. Next step actions to implement this strategy include exploring the benefits and risks of truck parking at chain-up/chain-off areas and advancing a pilot project for emergency road closure truck parking at large car parking facilities.

Maintain momentum: In order to maintain focus on truck parking, track progress, measure performance, and maintain momentum, the Action Plan recommends WSDOT engage in the following actions:

- Establish and facilitate truck parking implementation workgroup for three years
- Integrate truck parking into all decision-making processes
- Collaborate with neighboring states

- Develop innovative partnership action plan for new or expanded commercial truck stops
- Quantify truck parking demand with data-driven study
- Develop education and information campaign for local jurisdictions

Figure 58 details the full matrix of actions identified by the JTC Action Plan, with information about timing, planning level cost estimate, ease of implementation, and stakeholder roles.

Figure 58: JTC Truck Parking Action Plan matrix

ACTIONS	TIMING	PLANNING LEVEL COST ESTIMATE	EASE OF IMPLEMENTATION	LEGISLATURE ROLE	WSDOT ROLE	LOCAL JURISDICTION ROLE
DEVELOP MORE PUBLICLY-OWNED TRUCK PARKING IN HIGH DEMAND AREAS						
Identify Most Feasible Sites for Truck Parking Facilities	Immediate	$50,000 - $150,000		($)	Lead	Support
Build Truck Parking Facility on/near I-5	Near-term	$3,000,000 - $5,000,000		($)	Lead	Support
Build Truck Parking Spaces on I-90	Near-term	$3,000,000 - $5,000,000		($)	Lead	Support
Build Small Parking Lot for Short-term Staging Only	Near-term	$50,000 - $500,000		($)	Support	Lead ($)
BETTER UTILIZE EXISTING PARKING IN URBAN AREAS						
Develop Guidance for Managing Curbside Truck Parking	Immediate	$25,000 - $75,000		($)	Lead (with Dept of Commerce)	Support
Pilot Project for Managing Curbside Truck Parking	Near-term	$200,000 - $400,000		($)	Support	Lead ($)
Pilot a Truck Parking Partnership Program for Underutilized Infrastructure	Immediate	$500,000 - $1,000,000		Legislative support ($)	Lead	Support
Promote "Airbnb" Truck Parking	Near-term	$0			Support	Lead
SHIPPERS & RECEIVERS PROVIDE PARKING & BASIC AMENITIES						
Develop Guidance for Permitting Agencies to Require On-site Truck Parking at New Developments	Immediate	$25,000 - $75,000		($)	Lead (with Dept of Commerce)	Support
Tax Incentives for Shippers & Receivers to Provide Truck Parking On-site	Immediate	TBD		Establish incentives ($)	Support	Support
Require New Developments for Shippers and Receivers Provide Truck Parking On-site	Immediate	$0		Pass legislation	Support	Support
Mandate Restroom Access for Trucker Drivers	Immediate	$0		Pass legislation	Support	Support
DEVELOP TRUCK PARKING INFORMATION SYSTEMS						
Develop Concept of Operations for Expansion of Truck Parking Availability System	Near-term	$100,000 - $200,000		($)	Lead	
Expand Truck Parking Availability System	Mid-term	$5,000,000 - $8,000,000		($)	Lead	
Integrate Communication and Truck Parking Availability Information Systems	Near-term	$50,000 - $150,000		($)	Lead	
SECURE FEDERAL FUNDING FOR NEXT-GEN TRUCK PARKING						
Prepare Grant Application	Immediate	$100,000 - $150,000		($)	Lead	
State Matching Funds	Mid-term	$1,500,000 - $3,000,000		($)	Lead	
BETTER UTILIZE EXISTING INFRASTRUCTURE ALONG MOUNTAIN PASSES						
Explore Benefits and Risks of Truck Parking at Chain-up/off Areas	Near-term	$15,000 - $50,000		($)	Lead	
Pilot Project for Emergency Road Closure Truck Parking at Facilities with Large Car Parking Area	Near-term	$50,000 - $100,000		($)	Lead	Support

ACTIONS	TIMING	PLANNING LEVEL COST ESTIMATE	EASE OF IMPLEMENTATION	LEGISLATURE ROLE	WSDOT ROLE	LOCAL JURISDICTION ROLE
MAINTAIN MOMENTUM						
Establish and Facilitate Truck Parking Implementation Workgroup for 3 Years	Immediate	$150,000 - $300,000		($)	Lead	Participate
Integrate Truck Parking into all Decision Making Processes	Immediate	$25,000 - $75,000		($)	Lead	
Collaborate with Neighboring States	Immediate	$25,000 - $75,000		($)	Lead	
Develop Innovative Partnership Action Plan for New or Expanded Commercial Truck Stops	Near-term	$25,000 - $75,000		Support ($)	Lead	Support
Quantify Truck Parking Demand with Data-driven Study	Mid-term	$500,000 - $1,000,000		($)	Lead	
Develop Education and Information Campaign for Local Jurisdictions	Near-term	$100,000 - $300,000		($)	Lead	Support

EASE OF IMPLEMENTATION KEY

Less Complex | Moderatly Complex | Very Complex

Source: Truck Parking Action Plan, Washington JTC, December 2021.

Strategic Highway Safety Plan: Target Zero

The 2019 Washington State Strategic Highway Safety Plan, titled Target Zero, represents a vision of zero deaths and serious injuries on the state's roadways by 2030.

Target Zero identified actions to influence traffic safety, including strategies for reducing heavy truck fatalities and serious injuries. Among these strategies:[25]

Heavy truck crashes

Due to the size, weight, and volume, heavy trucks pose a higher risk of crashes that result in death and serious injuries. Between 2015-2017, the number of fatalities involving heavy trucks increased 46 percent and the number of serious injuries involving heavy trucks increased 36 percent, compared to 2012-2014. Among heavy truck-involved crashes, heavy truck drivers cause only 27 percent, as revealed by an internal review of fatal crash reports.

Target Zero recommends identifying and promoting opportunities to prevent fatigued driving by increasing the availability of commercial truck parking.

I-5 Fort Lewis Weigh Station Study

The I-5 Fort Lewis Weigh Station Study, completed by WSDOT in 2021, identified a list of recommendations to improve operations and infrastructure at the weigh station.[26] Stakeholders evaluated alternatives based on whether the alternative met the study's goals, purpose, and need, as well as whether the alternative was a viable option. [27] Then, alternatives were assessed based on

[25] Washington State Strategic Highway Safety Plan, WSDOT, 2019. http://targetzero.com/wp-content/uploads/2020/03/TargetZero2019_Lo-Res.pdf
[26] Interstate 5 Fort Lewis Weigh Station Study, WSDOT, June 2021. https://wsdot.wa.gov/sites/default/files/2021-09/I-5-fort-lewis-weigh-station-study.pdf
[27] Alternatives evaluated by the study team and the study's stakeholder advisory committee.

planning-level cost estimates, a need for additional right of way, and impact on improving the functionality of the facility. The evaluation process resulted in seven promising alternatives.

Figure 59 identifies those recommended alternatives related to truck parking, which include increasing truck parking capacity at the weigh station, as well as improving amenities at the location. Improvement of signage at the weigh station could improve truck parking by providing truck drivers with more clarity on locations and hours of designated truck parking within the weigh station. Additionally, the development of a hazardous materials containment area may address community concerns about the potential for hazardous materials spills at truck parking locations.

Figure 59: Most promising alternatives (related to truck parking)

Alternative	Description	Planning-Level cost estimate
Restroom facility	A small restroom facility and septic system could potentially be constructed in the parking area and would not require additional right of way.	$260,000
Expand truck parking (Short- and long-term needs)	The alternative utilizes existing state right of way if constructed on the undeveloped land adjacent to the Center Drive Interchange. The area can potentially fit 21 truck parking spaces or more if double-sided parking was built.	$3,200,000
Clearer/additional weigh station signage	Some low costs improvements could be made to existing electronic signs to simplify and make the verbiage more consistent with other weigh stations. Concept considers installation of sign bridge to provide more clarity for truck drivers using both weigh-in-motion (WIM) and/or the weigh station.	$538,600
Hazardous materials containment area	The alternative provides for a paved 100 by 200 foot paved and separated area for containment of a chemical leaking vehicle.	$600,000

Source: Interstate 5 Fort Lewis Weigh Station Study, WSDOT, June 2021.

The study identifies communicating study results and identifying opportunities for funding as next steps for WSDOT.