SPR RESEARCH PROGRAM
SECOND-STAGE PROBLEM STATEMENT
FY 2016

ODOT Research Unit
555 13th St NE
Salem, Or 97301-6867

Phone (503) 986-2700
Fax (503) 986-2844

I. PROBLEM NUMBER AND TITLE

16-060 Truck Parking: An Emerging Safety Hazard to Highway Users

II. RESEARCH PROBLEM STATEMENT

It is nationally recognized that commercial motor vehicle operators often cannot find adequate and safe parking for rest purposes. This is especially true for Oregon, where high-use corridor rest areas are experiencing a heavy demand for commercial vehicle parking, one that exceeds capacity. These rest areas are intended for short-term safety breaks, yet they are increasingly used for long-term parking—private truck stops are also experiencing capacity shortfalls. The economic recovery and driver hour-of-service regulations have recently contributed to the rising demand. Use of these facilities is particularly high during the winter months when hazardous road conditions restrict or bring traffic to a standstill. Recent studies performed by Pahukula and Hernandez (2014) and Islam and Hernandez (2013) have shown factors related to weather and fatigue increase the injury severity level potential of commercial motor vehicle involved crashes.

Because of the commercial vehicle parking shortages and limits on stays in public rest areas (Oregon Administrative Rule 734-030-0010 allows a vehicle to remain in a rest area for up to 12 hours in a 24-hour period), commercial motor vehicle operators may be contributing to unsafe situations by driving without a needed short break and/or by parking on roadway access ramps, shoulders, at highway interchanges and on facilities running through cities and towns. Oregon law, ORS 811.550 prohibits parking on a throughway, yet enforcement of illegal truck parking has been low priority for Oregon State Police and other Oregon law enforcement officers. This problem is expected to become an increasing hazard as freight movement by truck is forecast to increase about 70% (tonnage) by year 2035. Related studies have simply addressed the issue of commercial vehicle parking availability at rest areas by identifying capacity needs in an ad-hoc manner with no mechanism to assess the effectiveness of any new capacity investment. There is a clear need for a methodology that addresses the issue of insufficient commercial vehicle parking capacity and that also assess the effectiveness and safety impacts of any rest area capacity enhancements. Currently, there is an active ODOT solicitation of interest for a trucking parking facility at Biggs Junction (I-84 at US 97) that seeks creative and innovative ideas to address the problem through a proposed public/private partnership mechanism. Although this effort is focused at a specific site, ODOT would benefit greatly by identifying all potential locations across the State. The Oregon Freight Plan (OFP), the Oregon Freight Advisory committee, the Federal Highway Administration (FHWA) and the Federal Motor Carrier Safety Administration (FMCSA) have all identified the shortage of truck parking as a major issue that needs to be addressed.

III. RESEARCH OBJECTIVES

The shortage of truck parking has been identified as an issue across the state of Oregon as indicated by the recent solicitation of interest by ODOT for a Biggs Junction truck parking facility public/private partnership opportunity. In addition, patterns observed along the Central Oregon Freight Corridor, primarily composed of I-84 and US 97, were recently described at a special joint meeting of the Oregon Freight Advisory Committee and the Central Oregon Area Commission on Transportation. This research would focus on these corridors in order to contain project scope, but the methodology could be applied to other Oregon Freight Corridors. Therefore, to adequately assess commercial vehicle parking needs and analyze safety on high-use corridors in the State, the research objectives are intended to determine:

- what other states are doing to address the truck parking shortage and related safety implications
- what data are available to measure the extent of the problem (e.g., identifying truck parking supply and demand)
- opinions of commercial motor vehicle operators with regards to parking shortages and parking location decisions
- future demand for truck parking based on freight forecasts prepared in the OFP to identify priority locations for adding truck parking capacity
- safety risks (benefit) of capacity enhancements

IV. WORK TASKS, COST ESTIMATE AND DURATION

Task 1. *Collect, review and analyze current literature [**months 1-2**]*. The overall objective of this task is to review the most recent projects and literature of successful paradigms and lessons learned by other state agencies and other research

activities with regards to commercial motor vehicle parking. In addition, review and synthesize information on the various safety policies and initiatives undertaken by local, state, and national governments. This will provide the research team with a list of policies and initiatives that can be studied for possible recommendation.

Task 2. *Perform agency surveys to determine current practices [**months 3-4**]*. In this task, the research team will develop and administer a stated preference survey instrument to public transportation planning agencies (e.g., other state DOTs) to determine and assess agency efforts with regard to commercial motor vehicle parking.

Task 3. *Perform commercial motor vehicle operator surveys [**months 5-8**]*. These sets of surveys will seek information regarding how and why drivers choose their parking locations and identify driver behavioral response to parking shortages. The designed surveys will be reviewed by the project monitoring committee. Any received comments and/or recommendations will be fully addressed and incorporated before the survey is conducted including the route locations preliminarily identified (US 97 and I-84) to conduct these surveys.

Task 4. *Collect and analyze data [**months 1-8**]*. This task will seek to collect and inventory current data related to truck parking supply and demand (will include field data collection), truck traffic, historical crash data analysis (will include a hot spot analysis to uncover hazard clusters), and synthesize and analyze the information collected from Task 1 through Task 3 to identify best practices and practice yet to be deployed. The analysis will consist of the standard descriptive statistics (e.g., means, standard deviations, etc.). For specific sites, detailed police reports will be requested to better understand the circumstances of crashes around rest areas and to uncover any factors that may be contributing to the specific incident. The goal of the statistical analysis is to calculate statistics that will reveal characteristics of the data and identify the key variables for the safety risk analysis in Task 6.

Task 5. *Conduct truck parking demand analysis [**months 9-12**]*. The goal of this task is to forecast future demand for truck parking based on the freight forecast prepared in the OFP, including a list of recommended priority locations for adding truck parking capacity designed to mitigate hazardous conditions.

Task 6. *Perform safety risk (benefit) analysis [**months 12-16**]*. Utilizing the results from Task 4 and 5, the objective of this task is to assess the safety risks (benefit) of truck parking enhancements. In addition to known assessment measures (e.g., capacity utilization, etc.) in this study we will also utilize the "Crash Harm" metric. Crash harm is defined in Knipling (2009) as, "A quantitative measure of the combined human and material loss from traffic crashes based on economic valuation. Using crash "harm" as a metric permits objective comparisons across different vehicle types, crash types, crash severity levels, and ways of assessing risk.

Task 7. *Disseminate results [**months 17-18**]*. Prepare a research report that describes and presents the findings of the research, and provides recommendations to ODOT for implementation in practice and whether further research is needed. The total duration of the project is anticipated to be 18 months at a budget of approximately $168,000.

V. IMPLEMENTATION

The results of this research will be immediately available for implementation. Central Oregon Freight Corridor highway enhancement activity planned by ODOT Region 4, central Oregon counties and cities and the Central Oregon Area Commission on Transportation can use the results of this research to make informed decisions when looking for opportunities to improve highway performance and safety. This information will help decision makers prioritize projects, bundle projects that meet multiple needs more efficiently and provide high returns on investment for safety projects.

VI. POTENTIAL BENEFITS

The results of this research will result in projects that reduce exposure to hazards caused by unsafe truck parking. This includes conflicts on the highway between high-speed cars and parked or slow accelerating trucks, sign blockage, and hazards caused by heavy trucks parked on city streets. Providing parking to heavy trucks also benefits the drivers. Adequate parking will decrease incidence of drivers violating hours-of-service rules and reducing risk associated with driver fatigue. There are reasons drivers choose to park illegally. Often truck stops are full or drivers are reluctant to spend part of their per diem on overnight parking fees. Some companies prohibit drivers from stopping at trucks stops, especially locations known for crime, bars, nightclubs and casinos. A former Oregon truck driver told ODOT he had chosen to avoid truck stops whenever possible because he was tired of being solicited for drugs or prostitution, tired of having his truck broken into, having things stolen off of his truck, or having his truck backed into or blocked in.

VII. SUBMITTED BY

Stage 1 Submitter	***Stage 2 Submitter***	***ODOT champions***
Becky Knudson ODOT Planning Section rebecca.a.knudson@ odot.state.or.us	Salvador Hernandez Oregon State University 541-737-1757 sal.hernandez@oregonstate.edu	Gregg Dalponte Motor Carrier Administrator and Bob Bryant R4 Manager; Gregg.L.DALPONTE@odot.state.or.us Robert.W.BRYANT@odot.state.or.us