Peer State Parking Prioritization Framework

Truck parking expansion is prioritized based on different factors and varies from state to state. The potential prioritization criteria includes the capacity at the parking locations identified, the significance of the corridor, the traffic demand along the area, project readiness, truck crash history, environmental impact reduction, project bundling and integration, stakeholder input, and site-specific cost-benefit analysis. State truck parking plans were examined for Texas, California, Nevada, and Missouri. The parking expansion prioritization framework for each state is detailed in the following sections.

2020 Texas Statewide Truck Parking Plan, Texas DOT

The truck parking expansion prioritization framework was detailed in Texas Department of Transportation's 2020 Statewide Truck Parking Plan[1]. This plan did not include a detailed cost-benefit analysis for their prioritization framework. The plan focused on three categories for their parking expansion prioritization: capacity, safety, and freight significance (**Figure 1**).

Figure 1. Texas Statewide Truck Parking Plan Prioritization Framework

Capacity was used to describe the truck parking shortage across the state and hold a 25% weight in the prioritization. The truck inventory is relative to the length of each corridor and the number of trucks on each corridor. The truck parking utilization data was collected during an 8-week period with truck GPS data and each truck had to be parked at least 15 minutes for the truck to count for each area in the capacity category. The safety category held 50% weight for the prioritization framework and was represented by crashes involving parked trucks. The number and injury severity of crashes were considered across Texas, with fatal crashes weighing 5 times greater than non-fatal crashes. Fatigue-related and parked-truck crashes incident reports were identified from crash reports and areas were identified that coincided with parking deficiency locations. The safety data was normalized by the roadway segment length. The freight significance category held the remaining 25% weight for the prioritization framework and represented the freight segments to be prioritized. All roads in Texas were scored based on average annual daily traffic (AADT), market access, and supply chain criteria. The market access criteria included the proximity to markets, border crossings or ports. The supply chain criteria included the tonnage moved in target industries such as manufacturing and energy production.

[1] Truck Parking Study (txdot.gov)

2022 California Statewide Truck Parking Study, California DOT

The California Department of Transportation used parking expansion prioritization framework for the 2022 California Statewide Truck Parking Study[2]. The study prioritized the truck parking expansion on a point-allocation system and had three factors: demand factor, crash factor, and stakeholder factor **(Figure 2).**

The demand factor held 60% weight for the prioritization and was described as the demand and supply data being used as an indicator of parking at designated and undesignated locations. The peak hour demand was determined using American Transportation Research Institute (ATRI) truck GPS data. The demand was compared to the designated space supply, to which the shortage was normalized by the roadway segment length to get the number of truck parking spaces per mile. The crash factor held a weight of 30% for the prioritization framework and had fatal crashes rated higher than other injury types. Points were assigned to crashes involving parked trucks. The crash points for each roadway segment were totaled and divided by the number of miles to get the crashes per mile. The stakeholder factor was weighted at 10% and included a combination of stakeholder comments and California Highway Patrol (CHP) citations for undesignated parking. A single point was allocated to each public comment and CHP citation, and the result was divided by the length of the roadway segment. An equity and environmental analysis was also mentioned to calculate the pollution burden in disadvantages communities the undesignated parking presents.

Figure 2. California Statewide Truck Parking Study Prioritization Framework

2019 Nevada Truck Parking Implementation Plan, Nevada DOT

The truck parking expansion prioritization framework in Nevada was determined in the 2019 Nevada Truck Parking Implementation Plan[3]. The plan's prioritization criteria was modeled after the 2018 One Nevada Plan[4]. The parking implementation plan ranks the prioritization on a point-based system under categories of improving emergency parking, safety, economy, connecting communities, fostering sustainability, preservation, and project readiness **(Figure 3)**. ATRI GPS data was also collected for parking utilization data in periods longer than four hours with expansion factors used for the parking deficiency counts.

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[2] https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/freight-planning/plan-accordion/catrkpkgstdy-finalreport-a11y.pdf

[3] draft report (nv.gov)

[4] 637193659345900000 (nv.gov)

The Nevada Truck Parking Implementation Plan considers the ability to integrate work with adjacent projects for project bundling benefits. The plan also used a points-based system and divided the benefit score by the cost per parking space, which was valued at $10,000. The plan assessed the truck parking inventory through other state parking studies and considered only the 2017 Nevada State Freight Plan[5] critical freight corridors.

Figure 9.1 Project Prioritization; Scoring Criteria

Improves Emergency Parking (0-6 points)	• Improves a "County" gap in parking (0-3 points). • Improves a "Site" gap in parking (0-3 points).
Safety (0-3 points)	• Reduces distance between sites with authorized truck parking. The bigger the gap reduced (based on drive time), the higher the score.
Economy (0-3 points)	• Based on AADTT past the site.
Connect Communities (0-3 points)	• Landscaping and aesthetics.
Foster Sustainability (0-3 points)	• Environmental sustainability (0-1 point) • Fiscal sustainability (0-2 points)
Preservation (0-3 points)	• Based on amount of new construction. Reuse of existing facility scores best, big new construction worst.
Project Readiness (0-3 points)	• Within NDOT ROW. • Can be obligated within 2 years. • Not inconsistent with other plans.

Figure 3. Nevada Truck Parking Implementation Plan Prioritization Framework

2023 Truck Parking Investments for Missouri, Missouri DOT

The truck parking expansion prioritization framework in Missouri was determined in the 2023 Truck Parking Investments for Missouri[6]. The document includes two factors for parking expansion prioritization: demand and safety (referred to as the "collision factor"). Undesignated truck parking demand was used to determine a gap in truck parking spaces per mile. The collision factor was based on the crash injury severity for incidents to result in a collision factor per mile. The prioritization uses

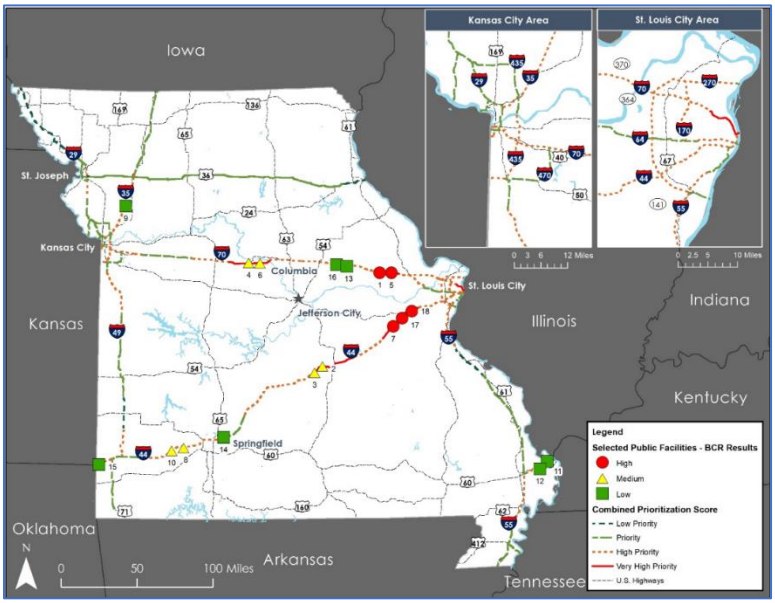

Figure 4. Missouri DOT Truck Parking Prioritization and Cost-Benefit Results

[5] dot.nv.gov/home/showpublisheddocument/8628/636379527648130000
[6] Truck Parking Investments for Missouri (modot.org)

a point system to rank each location based on their impacts for each demand factor and collision factor. The combined prioritization score accounts for a 70% weight on the truck demand factor and 30% on the collision factor. The final results are scored points 1 to 4, with rankings of low priority, priority, high priority, and very high priority (**Figure 4**).

The Missouri document also includes a benefit-cost ratio (BCR) which was based on the benefit-cost methodology as recommended by the USDOT in the 2023 Benefit-Cost Analysis Guidance for Discretionary Grant Programs[7]. The analysis includes considerations of project costs, demand and safety, vehicle operating costs, state of good repair, congestion costs, noise pollution, Truck Vehicle Miles Traveled (VMT) savings, and Truck Vehicle Hours Traveled (VHT) savings. A points-ranking system is used with the expansion effectiveness structure: "High" if the BCR is greater than 3.0, "Medium" if the BCR is greater than or equal to 1.0 but less than 3.0, and "Low" if the BCR is less than 1.0.

[7] Benefit Cost Analysis Guidance 2023 Update.pdf (transportation.gov)