

NATIONAL ECONOMIC PARTNERSHIPS GRANT
I-15 FREIGHT MOBILITY ENHANCEMENT PLAN

STRATEGY DEVELOPMENT AND IMPLEMENTATION FRAMEWORK

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CALIFORNIA | NEVADA

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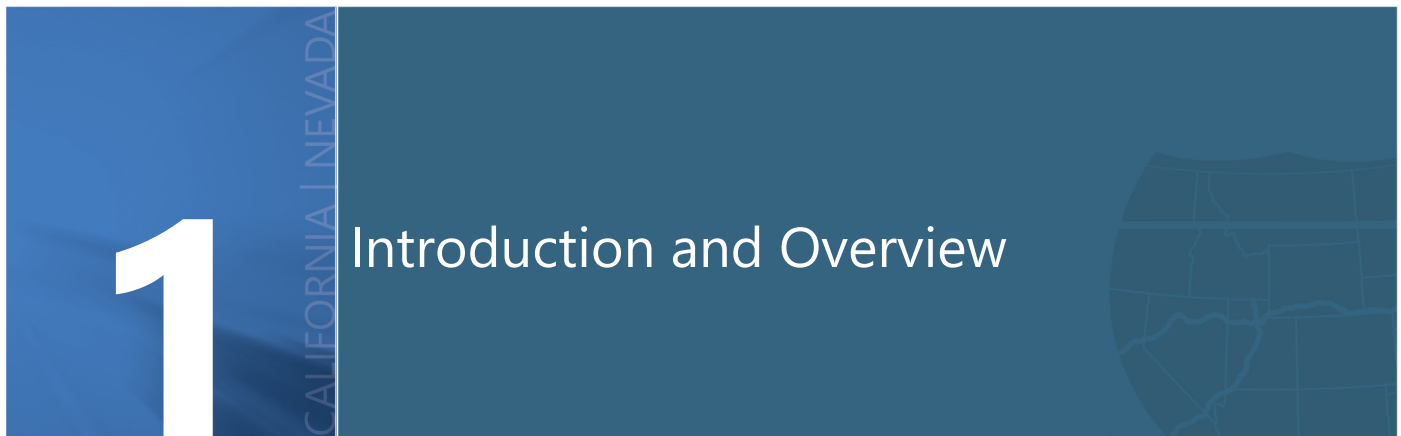
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Acronyms

CA	California
Caltrans	California Department of Transportation
CCTV	Closed-Circuit Television
DMP	Dynamic Mobility Project
DOT	Department of Transportation
FHWA	Federal Highway Administration
HOS	Hours of Service
MEP	Mobility Enhancement Plan
MoDOT	Missouri Department of Transportation
MPO	Metropolitan Planning Organization
NATSO	National Association of Truck Stop Operators
NB	Northbound
NDOT	Nevada Department of Transportation
NV	Nevada
O&M	Operations and Maintenance
ROW	Right-of-Way
SANDAG	San Diego Association of Governments
SB	Southbound
TPAS	Truck Parking Availability System



1.1 Study Background

The California Department of Transportation (Caltrans) and the Nevada Department of Transportation (NDOT) were awarded a National Economic Partnerships grant by the Federal Highway Administration (FHWA) in June 2019 to develop an I-15 Freight Mobility Enhancement Plan (I-15 MEP). The National Economic Partnerships initiative promotes efficiency and regional cooperation by identifying best transportation planning practices that can be implemented across jurisdictional boundaries. The program is specifically focused on cooperation at the megaregion level.

Megaregions are characterized as agglomerations of urban centers and their surrounding areas, connected by existing environmental, economic, cultural, and infrastructure relationships. Transportation provides the critical link between metropolitan areas within and between megaregions.

Planning challenges such as air quality, freight mobility, and road safety do not stop at State and MPO boundaries, where planning often does. Planning at the megaregional scale provides an approach to address new emerging challenges, allowing key stakeholders to seize advantages across jurisdictional boundaries; share best practices; promote the collection, sharing, and use of data and information; and address projects or services that enhance the mobility of people and goods across a broad area.

Only four projects were selected nationwide as part of the National Economic Partnerships initiative to deliver innovative approaches to megaregional and multi-jurisdictional coordination. Of these four, the I-15 MEP is one of two that is led solely by state DOTs, taking initiative for actions and coordinating with a diverse base of actionable stakeholders.

The I-15 MEP builds on the Nevada State Freight Plan 2017 and the California Freight Mobility Plan 2014, and complements the ongoing work associated with current truck parking efforts in both Nevada and California, including the Nevada Statewide Truck Parking Study currently being implemented and the recently initiated California Statewide Truck Parking Study. The I-15 MEP concentrating on specific issues related to urban truck parking that impact the entire region.

1.2 Study Area

The study area for the I-15 MEP is located in Southern California and Southern Nevada roughly 10 to 30 miles on either side of the I-15 corridor within the metropolitan areas in the following counties: San Diego, CA, Riverside, CA, San Bernardino, CA, and Clark, NV. The study area is shown in Figure 1-1.

1.3 Strategy Development Overview

Previous tasks have identified several important needs and priorities for truck parking along the I-15 corridor, with particular emphasis in urban areas in close proximity to logistics centers and industrial hubs. A range of strategies will be needed to address the unique truck parking needs of different communities along the I-15 corridor. Many of these strategies will require active participation of state, regional and local agencies, and the private sector including trucking associations, the trucking community, and technology providers and contractors.

Recommendations have been organized into the following categories:

Supportive Policies: For future truck parking initiatives to be successful, there will likely be a range of enabling policies that will need to be implemented or current policies and processes that will need to be modified. Policies can help to provide the framework whereby land uses can be modified to allow for truck parking in areas with a high demand, as well as shape future requirements for allocating the necessary parking areas for trucks. Nine supportive policies are recommended and described in the following sections. Each policy recommendation includes a description of the intent of the policy or process, a discussion on roles and responsibilities of lead and partner agencies, and implementation considerations.

Infrastructure Strategies: In many instances, expanding truck parking capacity will require building new facilities or providing for additional truck parking at existing facilities. Four infrastructure-related strategies are described that address both scenarios. While these infrastructure strategies represent significant cost investments, they are also the most effective in providing dedicated and designated areas for trucks to park. Each of the infrastructure strategies is described in detail and include discussions on implementation needs and considerations as well as cost considerations. Detailed cost estimates are not able to be developed at this stage, but important cost elements are identified to illustrate the complexity of these strategies. Supportive policies that would be needed (or be desired) to help to enable these infrastructure strategies are also identified, along with roles and responsibilities of different agencies to implement the strategy.

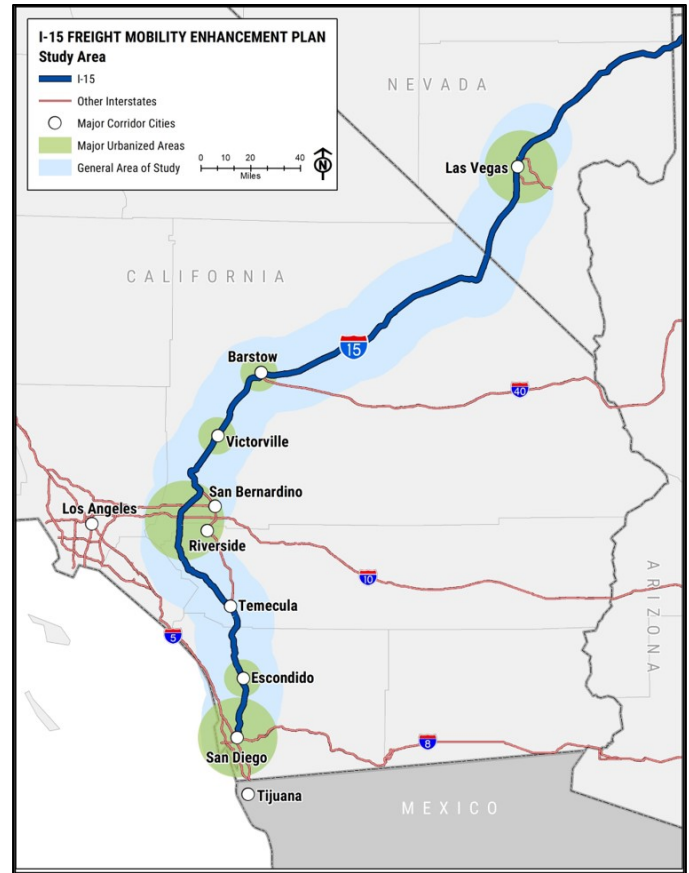


Figure 1-1: I-15 Freight MEP Study Area

Technology Strategies: The I-15 Freight Mobility Enhancement Plan has included a focused assessment of how technology can be used to support truck parking needs and initiatives along the corridor. Feedback from the Technology Exploration task has helped to inform several opportunities for integrating technology into the range of potential truck parking strategies. There are several technology-focused recommendations that will help to provide real-time information about truck parking locations, as well as innovative business models that leverage private-sector systems to connect drivers with available truck parking.

Supportive Programs: In addition to specific strategy implementations, there are several programs that are recommended to help foster increased and ongoing agency collaboration for truck parking initiatives on I-15. These programs are intended to improve coordination and communication among agencies about best practices, innovative approaches, improve consistency of truck parking initiatives, and provide tools and resources to support truck parking planning.

1.4 Summary of Recommendations

Recommendations across each of the four categories are summarized in Table 1-1 on the following page. Details of each strategy are included in the subsequent sections following the table. The following bullets provide context for the table and descriptions:

- **Cost:** Each recommendation includes a relative cost, shown as a range from \$ to \$\$\$\$\$. While specific cost estimates have not been developed at this stage, there is an indication of relative costs based on various considerations. Strategies in the Infrastructure category represent some of the higher cost elements due to construction or expansion of parking facilities. Technology recommendations will often offer lower cost solutions or opportunities to partner with the private sector which reduces the cost burden on agencies. There is a low cost shown for many policies and programs; this acknowledges that there might be some cost to agencies for items such as analysis or research that might need to be conducted to help inform a policy or prepare guidance. Recommendations that are solely agency process changes are shown as zero cost.
- **Effectiveness:** Infrastructure and technology strategies include indicators for effectiveness. Overall effectiveness refers to how well the strategy aligns with the priorities outlined in the Needs and Goals technical memorandum: expand truck parking capacity, provide reliable parking options, provide secure parking options, provide amenities to drivers, and garner community support for truck parking.
- **Cost effectiveness** is a simple estimate based on the relative cost and effectiveness score.
- **Ease** refers to ease of implementation. Some strategies and recommendations are relatively straightforward, while others are more complex requiring several steps to design and construct, or will require more effort to foster partnerships. This column uses a scale of 1 to 3, with 1 being straightforward and 3 requiring multiple steps or approvals.
- **Timeframe:** The timeframe column indicates short- (0-2 years), mid- (3-5 years) and long-term (6-10 years) timeframes. Recommendations that will require planning, design and construction will likely be in the longer time frame, while other strategies can be completed in a much shorter time duration.
- **Applicable Location** refers to whether the strategy is best suited for urban areas, “fringe” areas outside of the urbanized core area or those that are most likely implemented in rural areas of I-15. Several strategies are applicable to all three areas.

Table 1-1: I-5 Freight Mobility Enhancement Plan Recommendations

Category	ID	Strategy	Cost	Implementation				Applicable Location				
				Effectiveness	Cost Effectiveness	Lead	Partners	Ease	Time Frame	Urban	Fringe	Rural
Supportive Policy	PO-1	Encourage and support parking expansion at existing commercial truck stops and development of new commercial truck stops	\$\$			DOT, Local Agency	Private Property Owner	2	Mid	●	●	●
	PO-2	Require shippers and receivers to provide on-site truck parking or contribute to a common staging lot	\$			Local Agency	MPO, DOT	2	Mid	●		
	PO-3	Allow (where applicable) commercial and industrial property owners to provide truck parking on unused portions of property	\$			Local Agency	MPO, DOT	1	Short	●		
	PO-4	Allow truck parking in auto-designated areas at public facilities during off-hours (SRRAs, safety pull-offs, scenic vistas, commuter lots, bus depots, maintenance lots)	\$			Local Agency, MPO, or DOT		2	Mid	●	●	●
	PO-5	Allow emergency truck parking at large private parking facilities when not in use (mall, sports venue, fairground)	\$			Private Property Owner	Local Agency, MPO, DOT	2	Mid	●	●	●
	PO-6	Integrate truck parking into roadway project development process	0			Local Agency, MPO, DOT		1	Short	●	●	●
	PO-7	Consider truck parking needs prior to purchase or sale of right of way	0			Local Agency, DOT	MPO	1	Short	●	●	●
	PO-8	Reassess public facility closures in high demand areas	\$			DOT	Local Agency, MPO	1	Short	●	●	●
	PO-9	Include minimum amenities at publicly owned truck parking facilities: toilets, paved/striped parking, lighting, water, safe from traffic hazards	\$			Local Agency, DOT	MPO	2	Short	●	●	●
	PO-10	Increase enforcement of unauthorized parking, especially in areas with available truck parking spaces	\$\$			Local Agency, DPS	MPO, DOT	2	Short	●	●	●
Infrastructure	I-1	Expand and upgrade truck parking at public facilities within I-15 ROW (SRRAs, safety pull-offs, etc.)	\$\$			DOT	MPO, FHWA	2	Mid		●	●
	I-2	Build new dedicated truck parking facilities within I-15 ROW	\$\$\$			DOT	MPO, FHWA	3	Long		●	●
	I-3	Add truck parking at existing or new commercial vehicle weigh stations	\$\$			DPS	DOT, MPO	2	Long		●	●
	I-4	Build dedicated truck parking facilities in/near major logistics center	\$\$\$\$			Local Agency and/or Private Business	DOT, MPO, Logistic Center Developer or Property Owner	3	Mid	●		
Technology	T-1	Develop a Truck Parking Availability System (TPAS) along the I-15 Corridor	\$\$			DOT	MPO, Technology Provider, Private Truck Stops	2	Mid	●	●	●
	T-2	Install static signs indicating upcoming locations for truck parking (pre-TPAS)	\$			DOT		1	Short	●	●	●
	T-3	Deploy Smart Urban Parking Zones in/near major logistics center	\$			Local Agency	Technology Provider, DOT, MPO	1	Short	●		
	T-4	Truck Parking Marketplace mobile application	\$			Technology Provider	Local Agency, MPO, DOT	1	Short	●		
	T-5	Integrate I-15 truck parking locations with I-15 MCOM and regional 511/traveler information systems	\$\$			DOT, MPO	Local Agency, MPO, DOT	2	Mid	●	●	●
Supportive Program	PR-1	Create an awareness campaign on the importance of truck parking	\$\$			DOT	Local Agency, MPO	2	Short	●		
	PR-2	Create guidance to help municipalities include truck parking demand as part of Traffic Impact Analyses for new developments	\$\$			DOT	Local Agency, MPO	2	Short	●		
	PR-3	Develop performance assessment and reporting strategy to highlight freight mobility benefits, economic benefits, safety benefits	\$\$			DOT, MPO	Local Agency, MPO	2	Short	●	●	●
	PR-4	Establish forum for ongoing Agency collaboration and coordination	\$			DOT	MPO, Local Agency	1	Short	●	●	●



The following are recommendations for development of new policies to support the NDOT I-15 Mobility Enhancement Plan.

2.1 Supportive Policy PO-1

Encourage and support private sector truck parking expansion at existing commercial truck stops and the development of new commercial truck stops.

Commercial truck stops provide 88 percent of the number of truck parking spaces across the country, and are the preferred parking location for the vast majority of truck drivers as they typically provide fuel, food, showers, and other services and amenities drivers need. Many truck stop operators have indicated that the greatest obstacles to expanding or building new facilities are costly permitting requirements, such as access and off-site improvements, and public opposition. The public sector could assist private truck stops expand or develop new facilities with any of the following actions:

- Relax permitting requirements
- Pay for and implement any required or needed off-site improvements
- Waive development fees and permits
- Provide tax incentives such as reduced property tax for a period of time
- Help garner public support and assuage any opposition

2.1.1 Responsibility

State and local permitting agencies would be responsible for providing most of the needed support. State Departments of Transportation (DOTs) could assist with funding (if needed) and facilitate open communication and collaboration between truck stop operators, Metropolitan Planning Organizations (MPO)s, local government, the National Association of Truck Stop Owners (NATSO) and state trucking associations to jointly work together.

2.1.2 Cost Considerations

Important cost considerations for this policy include the development of off-site public infrastructure such as traffic signals, acceleration/deceleration lanes, reconstruction of on- and off-ramps, etc. Others include public education about safety and the importance of truck drivers obtaining their required and needed rest along

with the trade-offs of illegal truck parking. An awareness campaign to professionals in the planning and engineering fields for their need to understand the impacts of prolonged permitting processes and required off-site improvements that often accompany development approvals.

2.1.3 Implementation Needs

- Conduct statewide truck parking supply and demand analysis to show locations of truck parking shortages and share information with NATSO
- Establish a relationship with NATSO to promote the concept of needed truck parking in shortage locations
- Perform an education campaign about the importance of safety and truck parking targeted at:
 - General public
 - Professional planners and engineers through state chapters of the American Planning Association, American Public Works Association, American Society of Civil Engineers, etc.
 - Appointed and elected officials
- Establish supportive policies and practices

2.2 Supportive Policy PO-2

Require shippers and receivers to provide on-site truck parking or contribute to a common staging lot.

Zoning ordinances and guidelines should be revised or developed to require shippers and receivers to accommodate parking at their sites. These guidelines should clarify requirements for existing sites versus new developments and provide a path to compliance for established entities. The guidelines should also leverage industry standards for optimized turnaround and driver experience. This policy could face opposition from landowners, shippers and receivers, so there may need to be some incentives built into the policy to mitigate any potential opposition. Considerations would need to be given for existing facilities, and whether or not such a policy could be put in effect retroactively. The guidelines and policy would need to include specific infrastructure requirements (signing/marking, pavement upgrades, security). Truck parking requirements for shippers and receivers should be considered and included in local and regional transportation and land use plans.

2.2.1 Responsibility

Local agencies would lead outreach to landowners, shippers and receivers and would lead development of the policy and associated guidelines. Local agencies would need to work with the freight community to identify areas of highest need, and may need to collaborate on potential incentives for shippers and receivers to participate. There may need to be some considerations for enforcement or at the very least monitoring of compliance if a policy is put into place. Agencies would need to partner with site owners to implement any signage to designate parking areas.

2.2.2 Cost Considerations

A majority of the cost considerations will focus on agency staff time for outreach and engagement as well as development of the policy. Future cost considerations would be any on-site improvements as well as ongoing enforcement.

2.2.3 Implementation Needs

- Revise or develop guidelines for shippers and receivers building new facilities to include updated requirements
- Include data and guidelines for optimized turnaround and driver experience
- Consistent enforcement
- Create program to acknowledge exceptional partners
- Revise zoning ordinances

2.3 Supportive Policy PO-3

Allow commercial and industrial property owners to provide truck parking on unused portions of their properties.

Vacant lots and excess space are often found in industrial zoned areas and these spaces could be converted to truck parking areas. Allowing truck parking by property owners should be encouraged by engaging stakeholders including owners, local agencies, economic development agencies, industrial development agencies, and even chambers of commerce to create strong relationships and look for opportunities to help with truck parking solutions. Guidelines and templates for shared truck parking agreements should be developed for use. Truck parking on commercial and industrial properties should be considered and included in short- and long-range community planning efforts such as local and regional transportation and land use plans. A program to recognize exceptional partners could be developed through or with the economic development agencies, industrial development agencies, and chambers of commerce.

2.3.1 Responsibility

Local agencies would be responsible for working with industrial landowners to develop policy language, guidelines and shared use agreements.

2.3.2 Cost Considerations

A majority of the cost considerations will focus on agency staff time for outreach and engagement as well as development of the policy.

2.3.3 Implementation Needs

- Research feasibility
- Develop guidelines and templates for shared-use agreements
- Create program to acknowledge exceptional partners
- Revise zoning ordinances (if needed)

2.4 Supportive Policy PO-4

Allow truck parking in auto-designated and/or non-traditional areas at public facilities during off-hours.

This policy would create additional truck-parking at public facilities when auto traffic is light. Potential sites to consider include rest areas, safety pull-offs, scenic vistas, commuter lots/park-and-ride lots, bus depots, and agency fleet vehicle maintenance lots. Data analysis of automobile use versus truck parking use at identified locations, by time of day or day of week, could provide insight into areas to remove auto-designation and allocate for truck parking. Site geometry and pavement may need to be assessed to confirm if sites can accommodate trucks. Guidelines and templates for truck parking agreements should be developed and approved for use. Consideration should be given to on-site security needs for the safety of the truck drivers, including their equipment and loads, and to discourage any illicit activities.

2.4.1 Responsibility

Policy development, implementation and enforcement would be led by the agency responsible for the facility. DOTs and MPOs could support the development and analysis efforts to contribute to the policy language. DOTs or transit agencies could partner to provide access to those agencies' parking facilities for potential truck parking options.

2.4.2 Cost Considerations

This policy could be developed at a relatively low cost. Cost items could include support for traffic analysis, parking lot configuration analysis, and the cost of additional signage. There could be additional resource needs from enforcement agencies.

2.4.3 Implementation Needs

- Research feasibility and potential parking options
- Consider security needs
- Develop guidelines and templates for shared-use agreements
- Current informal use of such sites can inform demand areas/partners
- Create truck parking plan(s)
- Develop enforcement recommendations

2.5 Supportive Policy PO-5

Allow emergency truck parking at large private parking facilities such as shopping malls, sports venues, and fairgrounds, when not in use.

Extreme weather conditions, hazardous spills, and other unplanned events can close roads temporarily, creating a demand for temporary truck parking until the road re-opens. Building dedicated truck parking facilities for these infrequent emergency type of events may not be the best use of public resources. Many large parking facilities such as shopping malls, sports venues, and fairgrounds have large parking areas, are easily accessible from the road, and would provide safe emergency parking for trucks if they are allowed to

park there. They are often in areas where demand for truck parking is high and have usage patterns that are consistent and opposite of when truck parking is needed. Emergency considerations would need to be identified, such as hazardous weather, road closure, or other specific parameters. Consideration should be given to on-site security needs for the safety of the truck drivers, including their equipment and loads, and to discourage any illicit activities.

Site geometry and pavement are also likely able to support trucks due to routine deliveries to these types of facilities but researching the feasibility of desired sites may be necessary. Parking lots at commercial/shopping areas could have constraints such as medians or lane dividers that could be challenging for trucks to navigate. Like shared parking agreements commonly used in communities for economic development, guidelines and templates for truck parking agreements should be developed and approved for use. Enabling legislation may be required for this type of public private partnership (P3) and enabling legislation should be confirmed along with any specific guidelines or required circumstances.

2.5.1 Responsibility

This policy would need to be developed in partnership with local agencies and private commercial developers/venues. The landowner willingness to allow truck parking needs to first be established. There could be some cost recovery considerations to incentivize landowners to allow for shared use of their parking facilities during emergencies. Local agencies, DOTs, and enforcement agencies would need to be aware of emergency truck parking options and can help to direct trucks to specific locations, either using tools such as 511 and agency mobile apps, through trucking associations or by direct communication with truck drivers.

2.5.2 Cost Considerations

Minimal cost considerations are anticipated, although private landowners or venue owners may seek some cost recovery for allowing shared use of their space in emergency situations.

2.5.3 Implementation Needs

- Research feasibility
- Consider security needs
- Develop guidelines and templates for shared-use agreements
- Can reference similar policies and agreements like shared parking agreements between private owners and cities for community economic development
- Confirm enabling legislation and any specific guidelines/circumstances
- Current informal use of such sites can inform demand areas/partners
- Signage and outreach strategies

2.6 Supportive Policy PO-6

Integrate truck parking needs into agency roadway project development processes.

Coordination and communication between various agencies and departments is critical to ensuring truck parking needs are identified and considered along with all other roadway needs. Integration of truck parking in the development process will increase efficiency of projects by recognizing and incorporating truck parking

issues, facilities, and needs early in project development and prevent the need for re-design, re-work, delays to the schedule, and increases to the budget.

Guidelines for integrating truck parking into the project development process should be developed and include early involvement of all necessary parties. Guidelines should also be developed for including truck parking in all short- and long-range planning efforts such as local and regional transportation and land use plans. A marketing and education plan to educate the various agencies and departments on the crucial role of trucks and truck parking should be created and implemented, emphasizing that truck parking needs are as important as other roadway needs and should be identified, considered, and addressed as part of the roadway development process.

2.6.1 Responsibility

This strategy would be led by DOTs and local agencies to examine their current project development processes, phases and steps, and identify appropriate points to integrate considerations for truck parking needs. Ideally, these considerations would occur early in the process to avoid needing to modify designs in later stages and be able to capture any additional cost requirements as part of project scoping. Modifying agency processes and policies would need to follow appropriate internal approvals, and will likely require updates to standards, checklists and scoping requirements.

2.6.2 Cost Considerations

Minimal additional cost considerations are anticipated since this policy focuses on internal agency processes.

2.6.3 Implementation Needs

- Develop guidelines for integrating truck parking into the project development process, and provide tools for assessing cost of adding truck parking to traditional capital/roadway improvements
- Develop guidelines for including truck parking in short- and long-range planning efforts (local and regional transportation and land use plans, et al)
- Coordinate with other departments and agencies to educate them on the crucial role of trucks for the economy and need to incorporate truck parking into projects for long-term success – truck parking needs are as important as other priorities and should be identified, considered, and addressed in roadway projects

2.7 Supportive Policy PO-7

Consider truck parking needs prior to the purchase or sale of right-of-way (ROW).

As noted in Policy PO-3, early identification and incorporation of truck parking needs makes projects more efficient. As with roadway development processes, truck parking needs should be taken into account as ROW decisions are being considered for planning and implementation. Identified ROW should be reviewed against truck parking high-need areas to ensure that opportunities for expansion or new development are not overlooked. Guidelines governing ROW transactions should be revised to include truck parking in the process and long-range ROW planning processes should be revised to include truck parking.

2.7.1 Responsibility

This policy would be led by DOTs and local agencies. Data analysis might be needed to identify priority areas for truck parking needs or cross-checked with established freight and truck parking plans.

2.7.2 Cost Considerations

Minimal additional cost considerations are anticipated since this policy focuses on internal agency processes.

2.7.3 Implementation Needs

- Revise guidelines governing ROW transactions to include truck parking in the process
- Develop guidelines for integrating truck parking into the land and ROW acquisition process
- Coordinate with other departments and agencies to educate team on crucial role of trucks for the economy and need to incorporate truck parking into projects for long-term success – truck parking needs are as important as other priorities and should be identified, considered, and addressed in roadway projects

2.8 Supportive Policy PO-8

Re-assess public facility closures in high demand areas.

Public facilities such as weigh stations, maintenance yards, rest areas, and picnic areas may be closed due to underutilization, poor condition, criminal activity, or limited agency funding to support adequate maintenance. Converting these areas for truck parking may be an economical way to provide more truck parking inventory in lieu of new site construction. Similarly, evaluating feasibility of maintenance improvements that would be needed to get a potential 'closure' site up to readiness to enable truck parking can be completed to evaluate what steps/maintenance activities are needed. This is particularly important if sites are being considered for closure or potential sale. Guidelines should be developed for assessing and repurposing sites, potential maintenance or site upgrades (such as paving, debris clearance, signing, etc.) and these guidelines should include assessment by the appropriate agency to determine truck parking demand levels before any closure. Existing long-range plans for public facilities should be updated to include assessment and conversion planning. Alternatives to this policy include adding truck parking to public facilities that do not currently support it and exploring partnerships to sponsor facilities, whether for maintenance, renovation, or conversion.

2.8.1 Responsibility

This policy and associated guidelines would be the responsibility of public agencies. DOTs would have a lead role in developing guidelines and processes for facilities on the DOT's ROW, such as rest areas, maintenance yards, weigh stations and other similar facilities. Local agencies (including cities and counties) could develop similar guidelines and processes for land parcels and uses that they own, such as maintenance yards.

2.8.2 Cost Considerations

Minimal additional cost considerations are anticipated since this policy focuses on internal agency processes. Agencies might seek some analysis support to help identify high-demand areas or develop assessment processes to incorporate into guidelines.

2.8.3 Implementation Needs

- Revise or develop guidelines for assessing closure and/or repurposing of public facilities
- Guidelines should include assessment by appropriate agency to determine truck parking demand levels and potential (success measures) to support truck parking needs
- Policy can help avoid need to rebuild closed facility through identification and conversion before closure
- Develop guidelines for including truck parking in short- and long-range planning efforts (local and regional transportation and land use plans, et al)
- Repurposing of underutilized sites (rest stops, weigh stations) for truck parking
- Explore sponsorship of facilities
- Add truck parking at public facilities that do not currently have it

2.9 Supportive Policy PO-9

Establish a policy to require minimum amenities such as toilets, water, lighting, paving and striping, safety/distance from traffic hazards at publicly owned truck parking facilities.

This policy is the simplest strategy to encourage and increase use of publicly owned facilities with truck parking. Making sure minimum amenities are present helps prevent environmental degradation of the site, helps states comply with Jason's Law, and makes the facilities more attractive to drivers. Enhanced amenities could include Wi-Fi, robust vending options, and real-time parking availability to make facilities even more attractive. The more attractive the public facilities, the less likely drivers are to use unauthorized parking locations. There are no federal guides or regulations regarding truck parking facility amenities, but guidelines



Figure 2-1: Food Truck in Rest Area

Caltrans allowed food trucks at rest areas during COVID-19 restaurant restrictions to service truck drivers delivering essential goods.

Source:

<https://www.youtube.com/watch?v=cue2mJKe5Gg&feature=youtu.be>

and design standards should be revised or developed to include minimum amenities and could include a phased approach for introducing enhanced amenity options.

These types of amenities also include an increased responsibility for maintenance and upkeep. There could be guidelines for how to establish partnerships, such as for providing Wi-Fi or vending options. Additional requirements, such as signage and security, should also be factored into the policy.

2.9.1 Responsibility

State DOTs would need to lead development of this policy and associated guidelines. Contracting options would also need to be explored to provide enhanced services such as Wi-Fi, vending or parking availability systems.

2.9.2 Cost Considerations

Minimal additional cost considerations are anticipated since this policy focuses on internal agency processes. Implementation costs after the policy is in place include additional maintenance and upkeep responsibilities, such as contracted services (janitorial and trash collection). There could also be additional signage required for upgraded facilities, as well as security (locks, lighting, routine monitoring).

2.9.3 Implementation Needs

- Revise or develop guidelines and design standards for truck parking facility amenities
- Identify cost requirements for installation of new amenities as well as maintenance needs, security or potential contracted operations
- Identify potential sites for expanded amenities
- Document security considerations and needs

2.10 Supportive Policy PO-10

Increase enforcement of unauthorized parking, especially in areas with available truck parking.

As alternative strategies for truck parking are implemented, enforcement should become more active in preventing and addressing unauthorized parking, especially in areas with available truck parking. When risk of enforcement is higher, drivers feel more incentivized to stop at authorized locations. Authorized parking is safer and reduces environmental and infrastructure challenges associated with unauthorized parking. A strategic communication plan may also be developed to educate drivers about authorized truck parking supply and enforcement practices. Addressing truck parking through enforcement and safety agencies may also make new funding opportunities available. It will be important to understand how these additional enforcement responsibilities will be integrated with local public safety patrolling duties.

2.10.1 Responsibility

Local agencies, in partnership with enforcement agencies, will need to jointly develop recommended enforcement guidelines and requirements. If any penalties are to be assessed, this might need to be included in state or local statutes (such as for parking tickets).

2.10.2 Cost Considerations

Important cost considerations for this policy include additional public safety/law enforcement training, time allocation and any additional equipment that might be needed to support future parking enforcement strategies. A marketing and awareness campaign might also need to be developed, which could have some cost items. Signage might need to be developed to warn drivers of penalties for unauthorized parking.

2.10.3 Implementation Needs

- Establish partnership with law enforcement agencies for enforcement needs
- Develop guidelines, policies, penalties to be assessed
- Identify any changes needed to local or state statutes to provide the support for enforcing the policy
- Identify signing/marketing requirements
- Develop training guidelines and awareness strategies for law enforcement



3 Infrastructure Strategies

The following strategies represent recommended infrastructure investments to implement or expand capacity of truck parking along the I-15 corridor.

3.1 Infrastructure Strategy I-1

Expand and upgrade truck parking at public facilities within I-15 ROW.

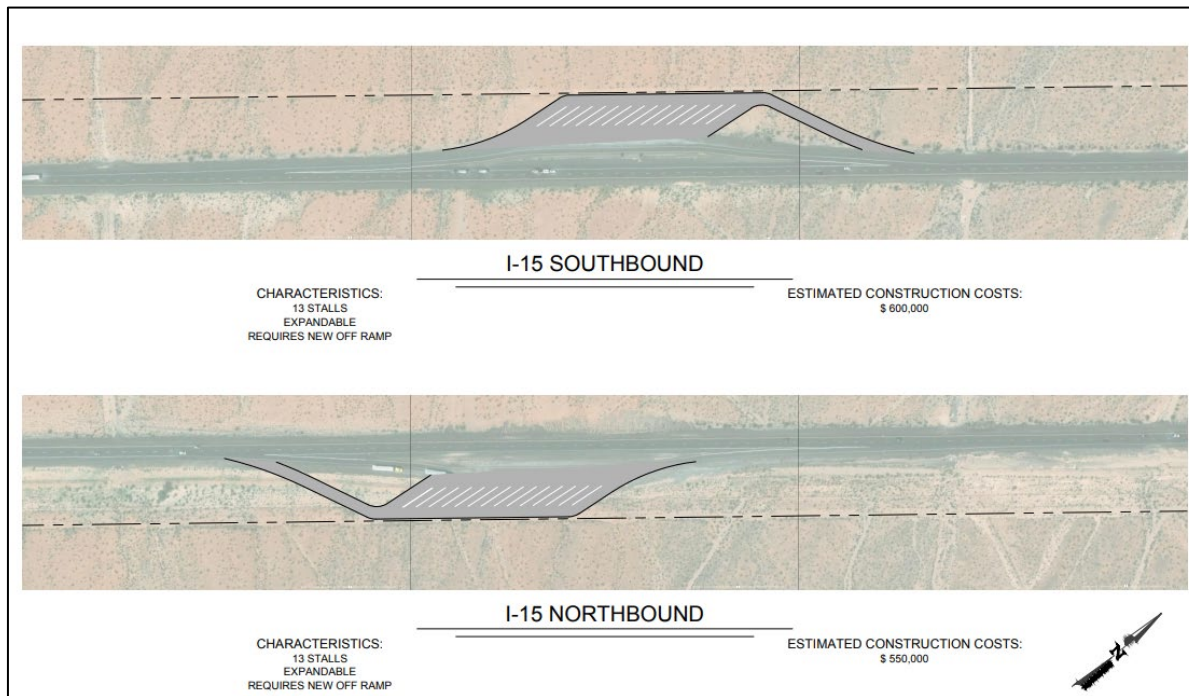
This strategy facilitates accommodating more truck parking at existing public facilities, such as state-run rest areas, safety pull-offs and other similar land uses, as well as improving existing truck parking at public facilities with additional amenities. By using existing public agency-operated and maintained facilities, many hurdles associated with new construction, such as purchasing land and environmental impact studies, can potentially be avoided. *This addresses key needs of increasing truck parking along rural and urban fringe areas of I-15 and improving the amenities of such parking facilities.* By using existing facilities, the project can align with the current facilities maintenance programs as well as deliver results within a shorter timeframe.

The range of upgrade improvements could include wider pavement at safety pull-offs to better allow truck parking, and adding requested amenities such as bathrooms, vending machines, trash receptacles, or security lighting at rest areas. Additional improvements could include restriping, expanding available parking surface areas to allow for trucks (or additional trucks), and additional signage to designate truck parking locations. Locations would need to be evaluated to see if there are improvements needed (expanded parking areas, signing and marking) or additional amenities needed.

This strategy rated relatively high for effectiveness. It expands capacity and number of truck parking spaces at existing agency-owned facilities, with a lower cost than adding new facilities. Since this parking is being provided at existing agency-owned locations, community support is envisioned to be strong. Agencies can implement measures to provide for security and amenities to make these options viable for short-term and longer-term truck parking needs, particularly for sites with existing buildings, such as rest area or weigh station locations.

An example of this strategy is illustrated Figure 3-1 from the Nevada Truck Parking Implementation Plan – Draft Recommendations. It shows how existing turnouts on the southbound (SB) and northbound (NB) sides of the road would be expanded to provide paved and marked parking stalls for freight vehicles. This design adds 13 stalls on each side and is expandable for future phases.

Figure 3-1: Truck Parking Expansion Example



Source: NDOT, Nevada Truck Parking Implementation Plan, July 2019. Accessed at <https://www.nevadadot.com/doing-business/about-ndot/ndot-divisions/planning/freight-planning>

3.1.1 Implementation Needs/Considerations

- Identify and prioritize existing public agency-owned sites
- Evaluate options to expand truck parking, reconfigure available surface parking areas
- Assess amenities that might be needed
- Prepare design plans or prepare strategy for adjusting signing/markings
- Construct, operate and maintain

3.1.2 Cost Considerations

Design, construction, and ongoing maintenance will be some of the cost considerations for this approach. Where sites already have amenities and associated maintenance operations, the cost may just be an incremental increase in work. Sites such as safety pull-offs which gain new amenities such as trash receptacles may have a slightly higher cost of establishing maintenance service.

3.1.3 Supportive Policies

- **PO-4** (allow truck parking in auto-designated and/or nontraditional public areas during off-hours) would be required if this strategy is to be used for safety pull-offs, scenic vistas, and other public facilities not currently designated for off-hours truck parking.
- **PO-8** (re-assess public facility closures in high-demand areas) would be helpful in maintaining this added capacity when facility closures are under consideration.

- **PO-9** (require minimum amenities at publicly owned truck parking facilities) would support this strategy by underscoring the value of minimum amenities at such parking facilities.

3.1.4 Potential Risks

This strategy would incrementally increase operations and maintenance (O&M) costs for agencies for existing facilities. Enforcement and security at sites that are not monitored are also potential risks.

3.1.5 Roles/Responsibilities

The DOT would be the lead for any DOT-owned facility modifications within the I-15 ROW. MPOs and local agencies can partner with DOT's to help direct trucks to these facilities for parking.

3.1.6 Timeframe

This strategy can be implemented on a relatively short timeframe since it involves existing facilities and likely little or no environmental or land acquisition requirements.

3.2 Infrastructure Strategy I-2

Build new dedicated truck parking facilities within I-15 ROW.

This strategy relies on constructing new parking facilities to provide for truck parking in the rural or urban fringe areas along I-15. The dedicated truck parking facilities could be constructed to have amenities requested by truckers, such as lighting, water, and toilets. These facilities would be designed to support truck parking needs, such as appropriately sized parking spaces, adequate turning radii and access from and to I-15. Land would need to be acquired, which would also require environmental reviews. Cost to build the parking facility would also need to account for power, water and other utilities to support security/lighting, restrooms or other planned amenities. Agencies (most likely the DOT) would be responsible for O&M for pavement, signing/markings, buildings, and any amenities that are included with the parking facility.

Building new dedicated truck parking facilities has a high effectiveness rating because it adds parking capacity, provides a safe and reliable parking location, and community support for dedicated facilities is envisioned to be strong. Amenities would depend on which options the agency elects to implement.

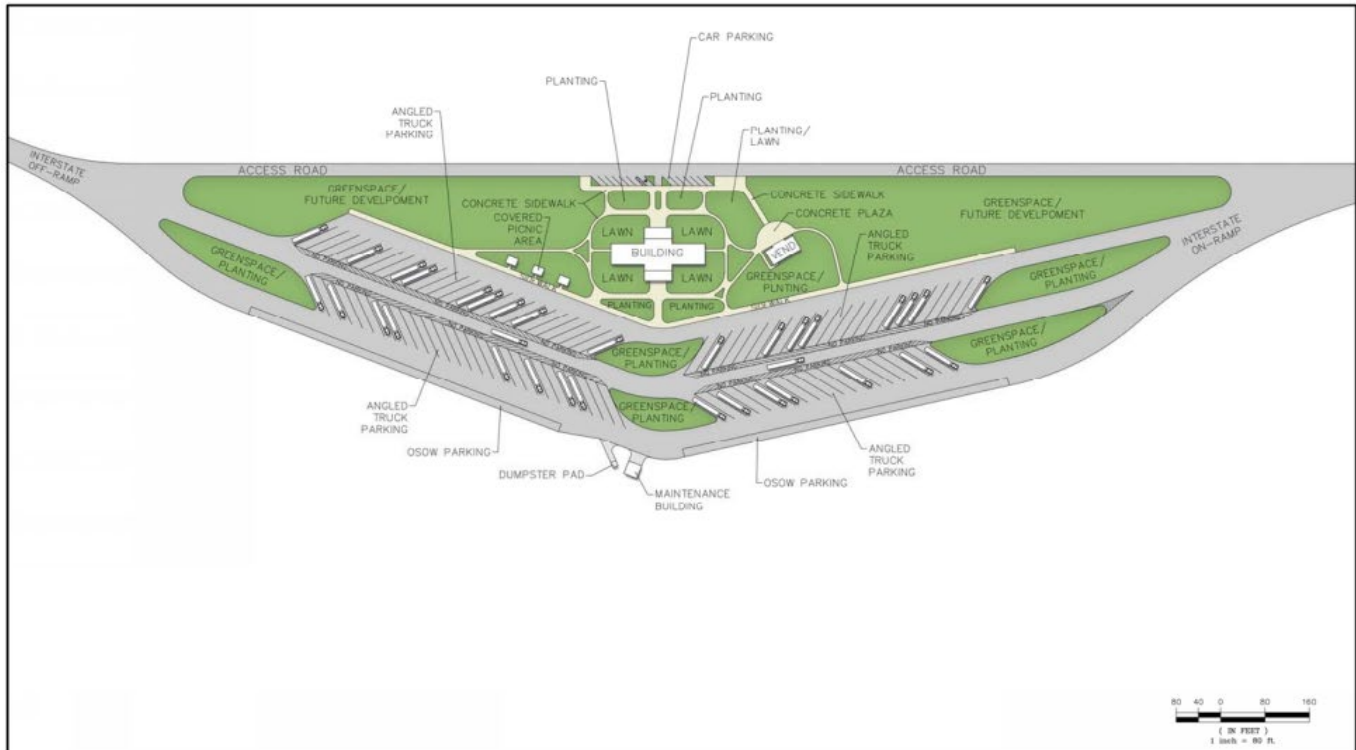
Figure 3-2 is a conceptual drawing from the Texas Statewide Truck Parking Study illustrates a potential concept for a new truck-only parking facility. In this drawing, a highway-adjacent truck parking facility includes approximately 100 truck parking stalls and amenities requested by the trucking community, such as restrooms, enhanced vending, lighting, and trash.

3.2.1 Implementation Needs/Considerations

- Identify and prioritize possible sites
- Acquire ROW and land
- Obtain environmental clearance
- Design facilities
- Procurement process to select contractor bids

- Construction of new parking facilities and amenities
- Ongoing O&M

Figure 3-2: New Truck Parking Facility Example



Source: Texas Statewide Truck Parking Study: Recommendations and Action Plan. Accessed at <https://www.dot.state.tx.us/move-texas-freight/studies/default.htm#study1>

3.2.2 Cost Considerations

Some major cost considerations include any ROW acquisition, the design and construction, and ongoing maintenance and security costs. There is a direct cost for expanding the maintenance and security coverage, therefore budgets for maintaining public facilities such as SRRAs would need to be augmented to cover these new sites.

3.2.3 Supportive Policies

- **PO-7** (consider truck parking needs prior to the purchase or sale of ROW) would conserve existing ROW for truck parking needs.
- **PO-8** (re-assess public facility closures in high-demand areas) would be helpful in maintaining this added capacity when facility closures are under consideration.
- **PO-9** (require minimum amenities at publicly owned truck parking facilities) would support this strategy by underscoring the value of minimum amenities at such parking facilities.

3.2.4 Potential Risks

Truckers have previously noted that recreational vehicles and other non-commercial vehicles occupy truck parking at rest areas. This possibility exists for any unattended dedicated truck parking facilities, especially if amenities like toilets and water are provided.

3.2.5 Roles/Responsibilities

The DOT would be the lead to identify sites, acquire land and ROW, and manage the design and construction process. Ongoing O&M is also the responsibility of the DOT. MPOs and local agencies can partner with DOT's to help direct trucks to these facilities for parking.

3.2.6 Timeframe

This strategy falls under the long-term timeframe because it requires the full design, approval, and construction process. Additional ROW and land acquisition may be required, as well as environmental review, which would contribute to the timeframe considerations.

3.3 Infrastructure Strategy I-3

Add truck parking at existing or new commercial vehicle weigh stations.

Commercial vehicle weigh stations are already located throughout the interstate system and have pavement designed for the heavy weight of freight vehicles. Most weigh stations include a handful of truck parking spaces for drivers to use while conducting business at the facility, such as purchasing a permit, or when a truck is temporarily placed out of service. In order to allow parking for hours of service (HOS) required rest breaks additional parking areas would need to be constructed adjacent to weigh stations which typically already have amenities the amenities drivers need such as a water supply, restrooms, and lighting.

For weigh station sites near urban areas, parking could be used as a pre-staging area, reducing the amount of time parking would be needed in urban areas with more limited parking. *This approach directly addresses the key need for increased parking availability in rural and urban fringe sites along the I-15 corridor.* Available land at or near weigh stations may be limited, which could limit the number of spaces that could be made available. Expanding areas near weigh stations to accommodate additional truck parking might be more amenable than reconfiguring an already limited parking area.

From an effectiveness standpoint, this approach would provide for some additional capacity, and would be a secure option since facilities are typically staffed part-time. Similar to the prior strategies, community support for expanding truck parking at an existing facility on the ROW is envisioned to be strong. Under this scenario, existing amenities would be made available to drivers. Cost requirements to modify existing sites are much less than constructing new dedicated parking facilities.

Figure 3-3 shows a weigh station in Kentucky with extra parking specifically short rest breaks and overnight truck parking.

Figure 3-3: Truck Parking at Weigh Station Example



Source: Google Maps. North is to the top of the image.

3.3.1 Implementation Needs/Considerations

- Coordinate with those responsible for commercial vehicle inspection
- Establish policies supporting this usage
- Identify, evaluate, and prioritize sites
- Design the parking expansion
- Obtain environmental clearance (if needed)
- Solicit bids
- Construct facilities
- Operate and maintain

3.3.2 Cost Considerations

Design and construction of the additional parking area would be major cost factors; acquiring land may not be necessary but would be a key cost consideration if required. O&M costs may just be an incremental increase to the existing O&M costs. There may be marginal cost needs for signing/markings to provide guidance on recommended flows and directions within the parking area or reconfiguring existing parking areas.

3.3.3 Supportive Policies

- **PO-4** (allow truck parking in auto-designated and/or non-traditional areas at public facilities during off-hours) would be helpful to allow and facilitate the opportunity for a shared use facility that permits truck parking.
- **PO-9** (require minimum amenities at publicly owned truck parking facilities) would be important if the weigh station did not already provide minimum amenities.

3.3.4 Potential Risks

Current and planned weigh station sites may not be in ideal locations for addressing urban freight staging needs. In that case, this strategy may be of limited effectiveness in addressing the high-priority urban freight parking needs. An additional potential risk is that the truck parking spaces may not get used by truck drivers fearing a surprise inspection if parked at a weigh station.

3.3.5 Roles/Responsibilities

The agency or DOT division responsible for commercial vehicle inspection is ultimately responsible for modifications and ongoing O&M at their weigh stations; however, the state DOT will be a key partner providing all development activities and funding as agreed upon in consultation with the agency responsible for weigh stations.

3.3.6 Timeframe

This strategy would require cooperation from multiple agencies, design and construction, and possible ROW acquisition to expand weigh stations. For these reasons, it is assumed that implementation may include a long timeframe.

3.4 Infrastructure Strategy I-4

Build dedicated truck parking facilities in/near major logistics centers

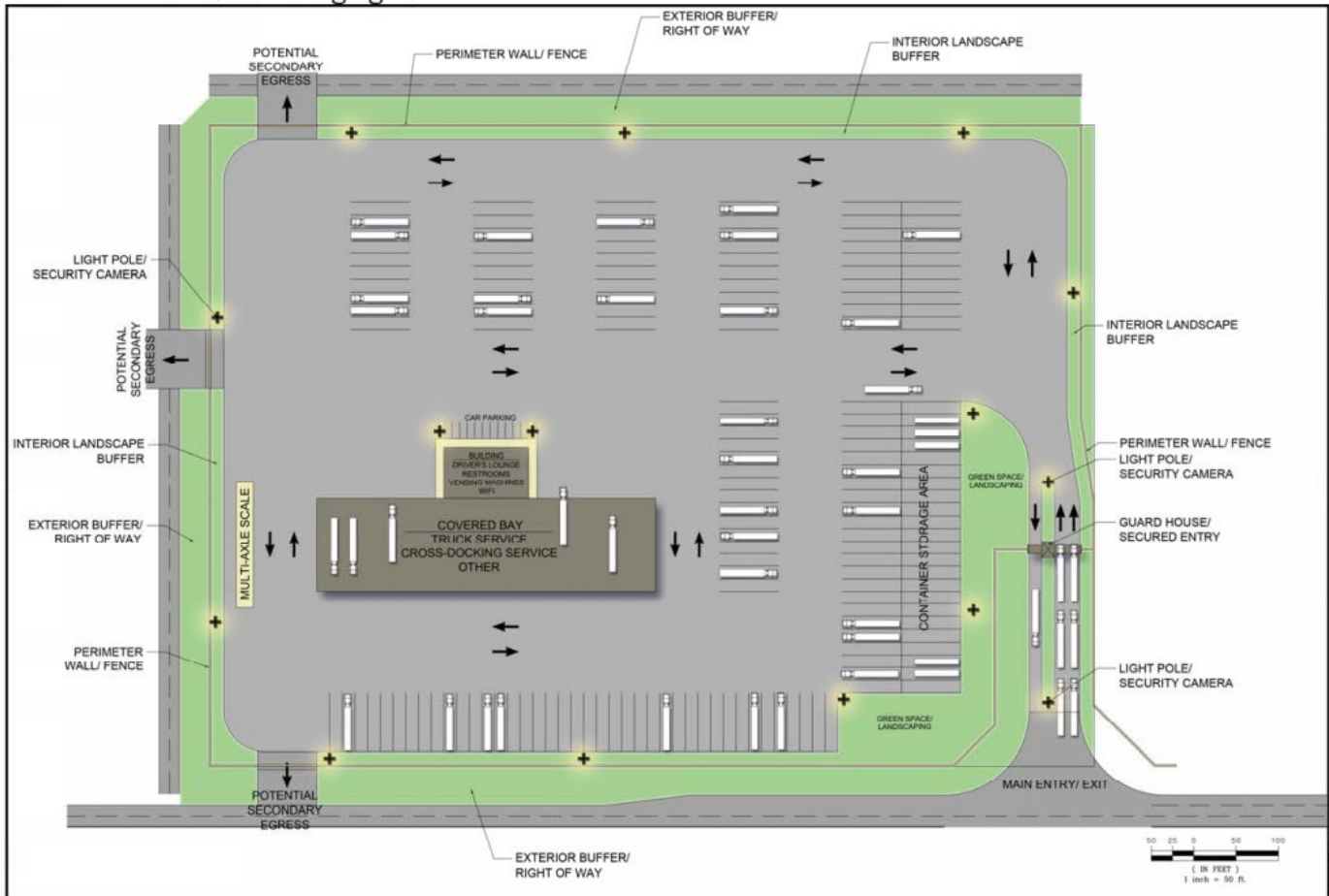
This strategy would construct parking facilities in urban areas, near major logistics center(s). It could be used for short-term staging, required rest breaks, trailer storage, and could also address the needs of local independent owner-operators by providing parking on a monthly basis for their trucks while they are at home. These types of parking facilities do not need to provide fuel, food, and convenient store items available at most truck stops. Instead, they offer only essential amenities such as restrooms, water, vending machines, and a driver's lounge, and unique services such as cross-docking and trailer parking. One of the most important features is security. Because expensive equipment may be left unattended by the driver, perimeter fencing, secure access, and security cameras and/or staff are important. Assessing parking fees for hourly, daily, weekly, or monthly use, as well as fees for specialty services like cross-docking, helps to offset the capital investment and O&M costs.

This addresses key needs by providing parking in the areas of largest need. As identified in a recent statewide truck parking survey, Nevada's largest gaps in truck parking are in the major urban areas. Regional planning studies in California have also identified the need for urban freight parking, especially as staging areas.

This approach is expected to be very effective in that it provides much-needed capacity for a range of parking needs in areas where the demand is highest. Industrial areas would need minimal rezoning, and community support may favor truck parking located in these areas, as opposed to non-industrial areas. Security and reliability are also expected to be high with this approach.

Figure 3-4 is a concept drawing for a dedicated truck parking facility located in/near a major logistics center.

Figure 3-4: Dedicated Logistics Facility Truck Parking Example



Source: Schematics developed by Atkins in consultation with Cambridge Systematics.

Source: Texas Statewide Truck Parking Study: Recommendations and Action Plan. Accessed at <https://www.dot.state.tx.us/move-texas-freight/studies/default.htm#study1>

3.4.1 Implementation Needs/Considerations

- Enact policies to get funding support from freight industries and businesses
- Identify and prioritize possible sites
- Traffic impact analysis
- Acquire land
- Environmental clearance
- Design facilities
- Construct facilities

3.4.2 Cost Considerations

Acquiring land near the logistics center, capital costs and O&M are the major cost factors. Capital and O&M costs could be recovered from usage fees or the more likely scenario is a fee-based partnership with a private reservation system provider.

3.4.3 Supportive Policies

- **PO-7** would create a funding source for construction and maintenance of such a site.
- For long-term planning, **PO-4** may be helpful if ROW near logistics centers were to be up for sale.

3.4.4 Potential Risks

Neighboring residential communities may be opposed to such sites due to concerns such as overnight noise or air pollution from idling trucks, but there are usually limited residential impacts building these facilities within established logistics or commercial centers. Site operations could be tailored to address such concerns, for instance by setting hours of operation and providing a comfortable indoor area so drivers do not need to idle their engines to maintain climate control within their cabs.

Finding an available site which is also in a highly accessible location for the logistics center may be a challenge. Creating a site which is insufficiently accessible may risk underutilization.

3.4.5 Roles/Responsibilities

The most viable business model is some sort of public-private partnership. The public partner, a local agency, could provide the land for the facility and issue a request for proposals for design-build-operate-maintain contractors to bid on building and operating the facility with fees generated from usage. Alternatively, if the local agency could design and construct the facility and contract out operations and maintenance. The local agency can also start the process by implementing policies requiring businesses to create sufficient parking or contribute to shared facilities. This could trigger private businesses to partner with each other to create facilities they can share. There is an opportunity in this scenario to introduce a private partner to support fee-based reservations.

Partnering with logistic center developers, truck parking businesses, and property owners would help in identifying key locations, getting interest and support, and determining appropriate sizing and configuration. These partners could also be involved in ongoing operations, in terms of contributing support or perhaps being directly responsible for upkeep.

3.4.6 Timeframe

This strategy could be implemented relatively quickly based on the type of approach. Acquiring land, designing, and constructing the facilities will take some time. As the site is in or near a major logistics center, the environmental review process may be faster than for a greenfield site or new land acquisition. Private landowners that convert existing available space to be available for broader truck parking needs could implement this strategy relatively quickly providing it complies with local zoning ordinances and codes.

4

Technology Strategies

The I-15 Freight Mobility Enhancement Plan has examined several different technology approaches that could be integrated into truck parking facilities or serve as a tool to connect drivers to designated truck parking areas. This section describes technology strategies to help address I-15 truck parking needs.

4.1 Technology Strategy T-1

Develop a Truck Parking Availability System (TPAS) along the I-15 Corridor.

A truck parking availability system, or TPAS, would include dynamic signs along the highway alerting of upcoming available parking sites, distances, and the number of currently available spots at each site. This strategy allows drivers to make better-informed decisions about whether to continue driving or choose available parking nearby despite the loss of driving hours.

This system functions by having vehicle detection systems installed at existing parking sites, and software to monitor and report availability. At some sites, entrance and exit monitoring may suffice, while at others, monitoring availability of each parking slot is the better option, although detection equipment is a cost consideration to implement and maintain. Visual monitoring systems such as closed-circuit television (CCTV) cameras are also typically installed, to enable remote visual review of parking availability to “truth” the system. The parking availability is then displayed in real-time on dynamic signs along the highway in advance of the parking sites.

While this approach does not add new capacity or additional amenities, it helps drivers to be aware of available spaces on their route, which may include related amenities. Reliability is largely linked to effectiveness of the monitoring systems to provide real-time space availability and keeping the dynamic display sign in good working order.

Community support is expected to be high, since this technology is aimed at providing information about suitable and available truck parking in designated areas. Overall, this is an effective strategy for urban, fringe and rural sites. The photo to the right shows an example of a dynamic roadside sign providing information on upcoming space availability.



4.1.1 Implementation Needs/Considerations

- Optional partnership with private truck stops to more broadly report parking availability
- Sensor design and installation
- Monitoring system design and implementation
- Procure sign display
- Technology infrastructure to enable dynamic updates and information displays as well as back-office software for processing
- Sign and monitoring system O&M

4.1.2 Cost Considerations

Costs to implement TPAS system are very modest and include installing communication and power to the sites of TPAS signage, as well as installing detection/monitoring and communication at parking sites, where power is assumed to already be present. Solar power and cellular communications could also be used in remote sites. Long-term costs include maintenance of system and ongoing human oversight of the system to ensure reasonable accuracy.

4.1.3 Supportive Policies

No policy changes are needed to implement this strategy.

4.1.4 Potential Risks

Maintaining and operating the system (including detection/monitoring and dynamic display time) will be an ongoing maintenance commitment. Accuracy of the information provided will need to be periodically monitored and system troubleshooting could be necessary if the information is not displaying accurate space availability. Driver trust could be compromised if there are recurring errors in what is displayed on the sign and actual available spaces at the parking location. For TPAS systems installed at private truck stops, there could be an unwillingness to provide 'no availability' information, since that could deter trucks from stopping at private facilities, even for meals or fuel.

4.1.5 Roles/Responsibilities

The DOT would be the lead on installing detection in parking sites within the I-15 ROW and corresponding signage along I-15. Given the benefits on congestion and idling around urban areas, MPOs could partner for funding and publicizing the system. Technology providers could be brought in as partners so the parking information would be available natively in other apps or systems (dispatchers) commonly used by the trucking community. Truck parking can be and is provided by the private sector at locations such as truck stops and travel plazas; partnership with or cooperation from private truck stops would be useful to accurately report on availability. Many truck stops already report parking availability, but often it is collected manually, and they may welcome an automated and more reliable system.

Ongoing maintenance operations for detection/monitoring at public sites, and the dynamic display for all sites, would likely be the responsibility of the DOT. Private truck stops could be responsible for installation and maintenance of detection devices on their properties.

4.1.6 Timeframe

This strategy is expected to have a mid timeframe, because it involves construction to deploy sensors, CCTVs, and other technology systems at the parking sites and communication to the dynamic road signs. The signs are located within existing ROW, and detection/monitoring are located at existing parking facilities, so it's expected to be faster than new construction projects. Time consideration also needs to be given to establishing partnerships with private truck stop operators.

4.2 Technology Strategy T-2

Install static signs indicating upcoming locations for truck parking (pre-TPAS).

This strategy is considered a precursor to an electronic TPAS system and would install traditional roadside signs indicating truck parking locations, distance, and the number of truck parking spots at upcoming locations. These static signs would require very little operation or funding beyond installation. These signs could help provide wayfinding to sites not visible from the highway or clearly communicate that truck parking is provided. Unlike a TPAS system, these signs would not reflect current conditions such as already parked vehicles or site closures, but would merely indicate number of designated truck parking spaces provided.



This approach intends to address the key needs of more efficient use of existing resources by communicating parking locations in advance, potentially increasing awareness of underutilized parking. That is expected to help drivers make informed choices to balance their hours of service (HOS) requirements with maximizing distance traveled and reduce the need for ad-hoc parking in risky locations such as interstate shoulders or on/off ramps.

From an effectiveness standpoint, this approach is expected to be somewhat helpful, although since it is not real-time, it does not reflect actual spaces available to truckers to park. This strategy does direct drivers to locations with some amenities. Overall, it's thought to be helpful for all urban, fringe, and rural sites. This strategy could be applied to non-rest areas, including designated truck parking facilities in urban areas or at weigh stations.

4.2.1 Implementation Needs/Considerations

- Identify underutilized sites and prioritize signage
- Identify effective signage locations (relative to parking sites)
- Identify any relevant private parking availability

4.2.2 Cost Considerations

Implementation costs for this strategy, creating and installing static roadside signage, are very low.

4.2.3 Supportive Policies

No new policies are needed for this strategy.

4.2.4 Potential Risks

There are minimal obstacles to implementing this project. However, the effectiveness of static parking signage when compared to roadside or app-integrated TPAS may be limited. If parking locations are closed (such as a rest area closure), this would need to be reflected on the sign or the sign covered up.

4.2.5 Roles/Responsibilities

The DOT would be the lead and sole entity on this strategy, since the work is entirely within I-15 ROW, and no ongoing operations are needed other than sign maintenance.

4.2.6 Timeframe

This strategy could be implemented in a short timeframe, because no new ROW is required, any environmental review would be expedited as a minor change to an existing site, and no partnership is required. Additionally, acquiring funding for this low-cost project may be easier than for other, higher-cost strategies.

4.3 Technology Strategy T-3

Deploy Smart Urban Parking Zones in/near major logistics center.

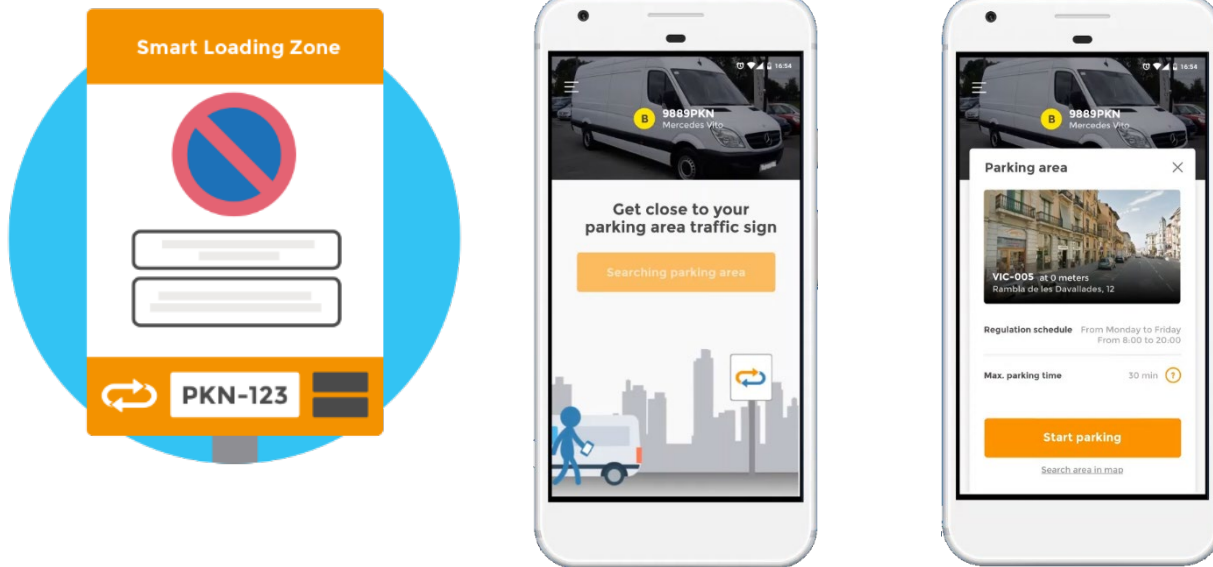
Deploying smart urban parking zones would enable curbside areas or other suitable parking locations (lots, existing industrial sites or underutilized commercial sites) to be designated for multiple purposes over the course of a day. Drivers could locate parking within a short time window and close geographic proximity to their destination, reserve a spot for a specific time window, and facilitate payment through a mobile app or other reservation system. Detection could be installed to monitor parking availability, or the app could use reservation information to gauge whether or not a location is already reserved. Smart signage might contain technology to recognize the mobile device of the driver when they arrive at the parking spot.

This approach aims to make more efficient use of existing curbside areas in commercial/industrial areas by communicating both location and availability, and then enabling the ability to reserve spaces. This strategy offers opportunities for cities to partner with private sector technology developers who are creating the business model and technologies (apps) to facilitate curbside area parking solutions to truck drivers. Cities would need to designate curbside areas near logistics centers, and then drivers could find and reserve time windows in these designated areas through a private sector-provided app.

This approach is expected to be effective in directing trucks to curbside areas designated for truck parking and acceptable to the community, in effect, creating new parking inventory by better utilizing public assets. It is expected to be somewhat reliable, but that would largely be dependent on the mobile app technology. From a safety standpoint, these spaces would be designated for truck parking and presumed to be relatively safe. Current apps on the market do not include information on nearby amenities.

Figure 4-1 illustrates a conceptual drawing that shows the type of sign which might be posted at smart urban parking zones, along with example smartphone screenshots reflect how the app can recognize parking zones and inform the user of the current regulations at the location.

Figure 4-1: Smart Urban Parking Zone Examples



Source: Parkunload® Mobile app image from Parkunload® app, tutorial video on <https://www.parkunload.com/en/how-does-it-work/>

4.3.1 Implementation Needs/Considerations

- Pass local ordinances to support smart urban parking zones
- Partner with a technology provider
- Install field equipment
- Publicize program and app among residents as well as freight drivers
- Enforce parking

4.3.2 Cost Considerations

Cities will need to fund this strategy, which will include contracting with a technology provider to develop software, implement software security/payment capabilities, update/maintain the software solution, and install field equipment for parking detection as well as any smart signage to interact with the mobile apps of drivers as they arrive.

4.3.3 Supportive Policies

- **PO-10** (increase enforcement of unauthorized parking) would be helpful in disincentivizing free parking in unauthorized locations, and thus encouraging use of authorized parking via this program.

4.3.4 Potential Risks

An app used for this purpose would need to be carefully designed to avoid distracted driving. Paying for parking could be done while safely parked, reserving a parking spot in advance but only when in geographic proximity, implies the vehicle would be in motion. Features within the app could limit usage while the vehicle is in motion. A website could enable parking reservations by a trucking dispatch center, and then the reservation could be sent to the driver.

This strategy also assumes drivers would have smartphones, and that the driver will use the app after safely pulling over or a passenger would use the app while the truck is in motion.

In initial deployment, this strategy might lead to conflicts between vehicles parking in the visibly open spots and vehicles using the app for reservations only to find the spot occupied. As drivers become aware of the app and adopt its use, this conflict would be reduced.

4.3.5 Roles/Responsibilities

Local agencies would be the lead on this approach for identifying and designating curbside areas or zones for truck parking and would contract with a private sector entity to install, operate and maintain. DOTs and MPOs could champion this strategy, potentially providing funding for agencies to get started or supporting policies that could designate truck parking areas.

A technology provider would be involved in a contracted capacity for app development, operations and maintenance.

4.3.6 Timeframe

This strategy can be implemented in a short timeframe, because no ROW acquisition or construction on new sites is required. Installing detection equipment and signage at designated areas is expected to take a relatively short time.

4.4 Technology Strategy T-4

Truck Parking Marketplace mobile application.

A truck parking marketplace mobile application would allow drivers to identify, reserve, and pay for parking at small scale freight-appropriate parking locations. This tool would help expand the pool of available parking beyond truck stops and interstate rest areas by enabling property owners with freight-accessible parking areas to market their spaces. This tool also provides a financial incentive for property owners to do so.

The key needs addressed by this model are:

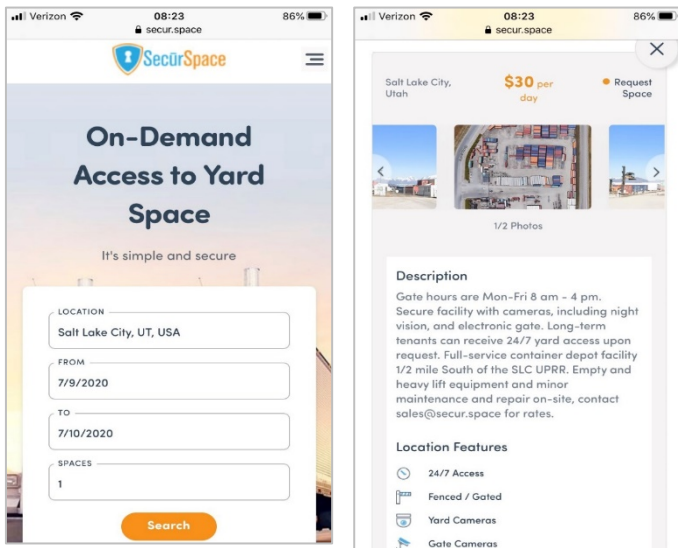
- Quickly increasing parking capacity in urban and urban fringe areas
- Effectively managing existing assets
- Minimal initial and ongoing cost to public agencies

In this model, truckers are directed to parking in existing lots which are already zoned as commercial or industrial facilities. Construction is not required, and no financial investment is required by public agencies.

This approach is expected to be moderately effective for addressing capacity concerns. Communities are likely to support directing trucks to higher volume commercial areas away from residential neighborhoods. Reliability is linked to the accuracy of the information within the app, and convenience of parking options near pick-up and drop-off locations.

Figure 4-2 illustrates an example of SecureSpace's truck parking marketplace's mobile application.

Figure 4-2: Truck Parking Marketplace App Example



Source: SecureSpace

4.4.1 Implementation Needs/Considerations

- Implementation is largely the responsibility of the technology provider and partnering landowners
- Implement supportive policies
- Publicize technology program (identify venues for technology partner to do their outreach – chambers of commerce, trade associations, etc.)

4.4.2 Cost Considerations

The technology provider’s costs are recouped from membership, subscription, or transaction fees. Costs related to expanding into a geographic region could be supported by regional agencies interested in expediting adoption of the system.

Property owners may bear the costs of investing in amenities such as security or restroom facilities, either as a prerequisite to engaging in a marketplace or as a voluntary investment to attract more truckers to their facility.

Truckers would bear the cost of paying for parking.

MPOs, DOTs, and local agencies would not have any initial or ongoing costs from this plan. There may be staff time in coordinating with technology providers to identify areas of need or policy changes.

4.4.3 Supportive Policies

- **PO-3** (allow commercial and industrial property owners to provide truck parking on unused portions of their properties) would support this business model.

4.4.4 Potential Risks

While there is no investment required from public agencies for this initiative, there may also be little control over the resulting service. Areas would need to be properly zoned for truck parking to enable this model.

If few local property owners are interested or willing to try, there may not be enough market coverage for drivers to feel the service is worth trying. Similarly, if there are not many drivers using the app, local property owners may not feel it is worth trying.

4.4.5 Roles/Responsibilities

A technology provider would be the lead on such an initiative and would be responsible for ongoing software development and maintenance. Local agencies, MPOs, and DOTs could partner by removing any existing policies which would prevent such a program, and adding policies to explicitly support this business model. MPOs and local agencies could further partner by funding, or participating in, outreach to engage property owners in the marketplace to help achieve rapid adoption and use of the system.

4.4.6 Timeframe

This approach was identified as a short time frame because it avoids construction and its related design and permitting phases. Additionally, several such apps already exist, though they may not yet cover the I-15 corridor to the extent desired by the end users, truck drivers.

4.5 Technology Strategy T-5

Integrate I-15 truck parking locations with I-15 MCOM and regional 511/traveler information systems.

This strategy integrates truck parking location information, either static information about number of designated spaces or real-time information about actual truck parking availability, into regional traveler information sites such as 511 web site and mobile apps. This is a similar strategy to TPAS mentioned earlier, but there is no roadside signage required. TPAS could be another data source integrated with the data feed that is sent to agency and commercially-available mobile apps. By providing a data feed for traveler information systems, apps such agency sites or third-party options such as Google Maps, Waze, or Trucker Path would be able to integrate the parking information within their existing tools.

There is also an opportunity to integrate this information into the I-15 Dynamic Mobility Program (DMP) site, which is making freight-specific information available across the I-15 corridor. The I-15 DMP was a federal-grant fund initiative, led by NDOT, and included Caltrans, Utah DOT and the Arizona DOT. This site is primarily for use by agency traffic management centers to see real-time road and travel conditions across state lines, but there were some features provided as part of a pilot program to the freight community.

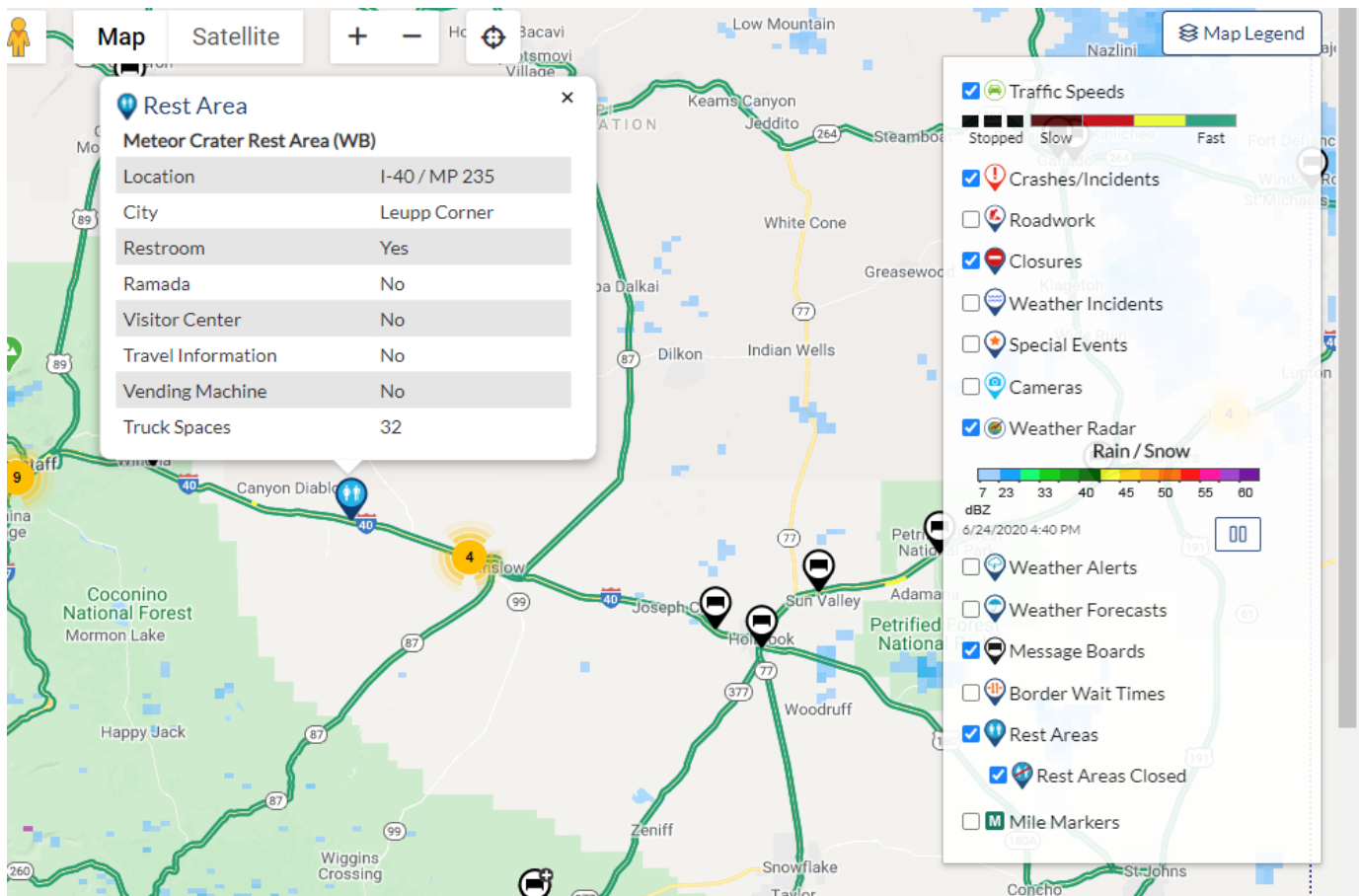
This addresses key needs of using multi-state partnerships to address freight issues and using intelligent transportation systems to provide truck parking information.

While this approach is not expected to generate any new capacity, it does provide information about available (or designated) capacity. Since this is also a 'no build' option, there is no community opposition envisioned for

this particular strategy. This could include a range of parking sites, including public facilities such as rest areas or weigh stations, as well as private facilities such as truck stops or other designated parking areas.

The Arizona DOT recently started displaying the number of designated truck parking spaces at rest areas on its www.az511.gov web site (Figure 4-3). This does not provide real-time availability information. The graphic below is an example of other information provided for rest areas on I-40, including amenities as well as truck parking spaces.

Figure 4-3: Arizona 511 Rest Area Information Example



Source: Arizona 511 web site, www.az511.gov

4.5.1 Implementation Needs/Considerations

- Configure regional 511 and I-15 MCOM to be compatible with data feed
- Occasional updates as new parking sites are created or agreements are established to add private parking locations to the public agency sites and data feed
- Create common data feed for publishing to other sources

4.5.2 Cost Considerations

Major costs for this strategy would be for technology changes to integrate information with the desired sources and publish a data feed for third-party tools to consume. Maintaining a data feed would have some ongoing operational costs.

4.5.3 Supportive Policies

This strategy does not depend on any new policies.

4.5.4 Potential Risks

There are few risks anticipated with this strategy. One option (similar to the example above) is to provide the number of spaces available at an agency-owned site, although this is not real-time information. Private lots might opt to not provide real-time space availability information, particularly if their lot is continually full, as this could discourage truckers from stopping at their business. Use of mobile sites or mobile apps will need to include appropriate disclaimers and safety advisories about not using the apps while driving. Whether and how technology partners will use the data feed is somewhat outside an agency's control. Using a regional or national standardized format for publishing the data feed increases the chances the information will be readily adopted by technology partners.

4.5.5 Roles/Responsibilities

The DOT and MPOs are well placed to lead regional partnership initiatives and integrate this with statewide and regional 511 sites. Local agencies can partner by providing information about their local truck parking availability.

4.5.6 Timeframe

Elements of this strategy could be implemented quickly, such as agencies providing static information about the number of designated spaces available at rest areas or other publicly owned facilities. Integrating real-time information is expected to take a mid timeframe, because it is dependent on broader adoption of real-time availability information through other systems (such as TPAS).



There are several projects and programs that are recommended that will be critical to sustaining the efforts of I-15 agencies as they plan for and implement truck parking initiatives. The following four programs will help to foster ongoing coordination among agencies for truck parking strategies, promote consistency among strategy implementations, and facilitate information sharing among agencies on the I-15 corridor.

5.1 Supportive Program PR-1

Create an awareness campaign on the importance of truck parking.

This program is aimed at creating a consistent set of talking points, facts, communication tools and developing a business case for continued focus on improving and expanding options for truck parking on the I-15 corridor. Efficient freight movement and freight mobility is a key part of several regional and local economies in communities throughout the I-15 corridor. While there has been increased awareness of strategies and programs for Interstate parking, the concept of truck parking options at the regional and local levels have not been widely communicated. An awareness campaign should be developed that provides:

- Facts and figures on freight volumes and movements through urban and regional areas along the I-15 corridor.
- Relative economic impact of freight on local and regional economies, highlighting the importance of addressing the truck parking need.
- Projected increases in freight volumes through the I-15 corridor, and with particular emphasis on regional and local communities.
- The business case that can serve as a call to action for communities and agencies to partner with industry to seek out truck parking solutions

An important element of this awareness campaign is to also communicate potential solutions, such as partnering between agencies and commercial/industrial landowners to seek out innovative approaches to addressing truck parking needs, or new technologies that can guide trucks to areas that are safe and designated for truck parking. These can help to garner support at the local level for continued focus on innovative ways to address this important need.

Elements of the awareness campaign should include:

- A web page with summary information and details, such as facts and statistics, that easily be linked from trucking association web sites, regional and local government web sites.

- Brief PowerPoint presentations and short executive-summary level information or brochures that can be shared with City and Regional Councils, public agencies, economic development organizations, and similar entities.
- Branded content, which can include a consistent look and feel across multiple platforms (web, social media, collateral pieces/brochures, presentations).
- Develop a library of brief highlights on truck parking that can be used by agency social media channels. These should be two to three sentences integrating statistics, “did you know” facts, and graphics that will translate well into social media posts.

This information should be periodically updated to highlight innovative strategies or partnerships that agencies have established to showcase success stories.

5.1.1 Roles and Responsibilities

This strategy should be led by the state DOTs, including freight planners and communications/public information staff. These specialists have the background information and understanding of how to craft compelling messages and resources for awareness campaigns. The DOTs can establish a consistent look and feel for outreach materials, including a web site or page that can be shared with various public and private entities, and can be responsible for periodically updating the information.

Regional and local agencies will benefit from having communications tools, information and resources to provide ongoing outreach and awareness of the importance of focusing on truck parking needs within their jurisdiction. Trucking associations can provide important insights and contacts for industry representatives who can share lessons learned and challenges first-hand, and these can be integrated into the facts and messages.

5.1.2 Implementation Needs

- Establish a working group comprised of state freight planners, agency public information/communications staff and trucking association representatives.
- Develop an outreach plan that includes strategies for promoting awareness at the local, regional and state levels, as well as through trucking associations.
- Identify contacts at local and regional agencies, chambers of commerce, and other key stakeholders.
- Develop web content, including establishing a brand/visual identity, and supporting fact sheets/materials and presentations.
- Prepare social media strategy and develop a library of content that can be used by multiple agency and association platforms.

5.2 Supportive Program SP-2

Create guidance to help municipalities include truck parking demand as part of Traffic Impact Analyses for new developments.

Many local agencies have established parking analysis and demand methodologies that are linked to specific land uses. These are typically associated with the type of establishment (commercial, retail, residential, medical, etc.) and use an equation based on number of square feet of the establishment or anticipated trip

generation. While these methods might be adequate in planning for typical vehicle parking needs, they are not likely going to translate well when considering the unique needs of commercial truck parking.

This project would research parking supply and allocation methods, and document unique parking considerations for trucks, including:

- Vehicle length
- Turning radius
- Anticipated utilization
- Circulation lanes
- Pavement structure requirements

New methodologies will be needed to estimate demands for truck parking in industrial areas. Feedback and input from shippers, industrial landowners, commercial centers and others can help to provide some context for anticipated demand. Methodologies will need to account for larger vehicle sizes, anticipated trips, access requirements and flow. Some municipalities currently accommodate truck trips within their traffic impact analysis guidelines based on passenger car equivalents. While this helps to integrate a truck-related data point into a travel forecast or parking model, the reality is that trucks travel much differently than cars, and there needs to be some unique considerations for how trucks actually use roads, make turns, and maneuver through intersections.

The Illinois Center for Transportation prepared a report that could be a helpful reference for this supportive program: “Guidelines, Site Selection and Design for Implementing Truck Parking/Rest Facilities in Chicago’s South Suburbs” (2015) <https://apps.ict.illinois.edu/projects/getfile.asp?id=3072>. Although this report emphasizes design guidelines, there are several site profiles that provide helpful information that could factor into a truck-focused traffic impact analysis methodology.

5.2.1 Roles and Responsibilities

Agencies will need to collaborate on an approved methodology to adequately assess parking demands in urban areas. This effort should be led by state DOTs, in close coordination with regional and local agencies. The state DOT will need to provide a forum for regional agencies and municipalities to come together to identify analysis needs, gaps in current traffic analysis methods, and review proposed approaches. The state DOTs can support regional and local agencies by sharing methods states have used to assess truck parking demand for interstate sites and identify synergies between interstate and local truck parking needs.

Agencies might need to contract traffic engineering services, or leverage internal resources that are actively involved in reviewing traffic impact studies, to be able to develop appropriate methodologies for assessing truck parking demand. Input from shippers and industrial landowners can help to provide estimates on potential demand, peaks for freight travel and other parameters that should be factored into the guidance.

5.2.2 Implementation Needs

- Research potential methods and models for analyzing truck parking demand
- Identify gaps in current municipal and/or regional parking demand assessment requirements
- Prepare and test methodologies for assessing impacts of truck parking
- Document updates needed to local approval processes for parking demand to accommodate truck parking analyses

5.3 Supportive Program SP-3

Develop performance assessment and reporting strategy to highlight freight mobility benefits, economic benefits, safety benefits.

It will be important to capture ongoing performance information of the benefits of agency investments in truck parking strategies. Different truck parking strategies will likely yield a range of benefits, and documenting these benefits will provide valuable information to support ongoing truck parking planning, industry engagement and help to promote benefits to the communities where truck parking is most needed.

Implementing designated truck parking areas is anticipated to yield numerous benefits, including improved safety on roadways, reduced congestion, improved utilization of available land, and improved efficiency for truck operators and industries. Some strategies are also envisioned to highlight key benefits of public-private partnerships in providing truck parking. Agencies need to develop strategies for gathering data on safety improvements, road network and travel conditions to be able to provide before and after comparisons. Feedback from the trucking industry, operators and shipper/warehouse staff can provide further quantitative and qualitative information on the positive impacts of truck parking investments.

This performance information can be used to support outreach and awareness, promote benefits of truck parking to local and regional planning agencies, and garner support from industry for future truck parking initiatives.

5.3.1 Roles and Responsibilities

Agencies will need to lead development of the assessment strategy and data collection. Information may come from existing data sources, such as safety data and congestion/road network data. Agencies can coordinate with industry representatives to obtain additional feedback.

5.3.2 Implementation Needs

- Develop specific performance objectives and goals of truck parking initiatives
- Identify performance metrics and indicators, such as reduction in commercial vehicle incidents, reduced delay on key corridors, improved mobility on corridors, economic benefits of more efficient freight operations, and other key measures to be determined at the local level.
- Identify data sources, including existing data sets, and data needs (such as industry feedback)
- Establish process for periodic performance assessments, such annually or biannually
- Document and update results to share through outreach and awareness strategies

5.4 Supportive Program SP-4

Establish forum for ongoing agency collaboration and coordination.

Addressing truck parking needs on the I-15 corridor will require ongoing collaboration among agencies to plan for and implement parking solutions. Specific projects or planning studies are a logical setting for agencies to work together to implement a specific strategy, but there is a need to maintain continuity of the discussions to keep truck parking needs a priority.

The State Freight Plans in California and Nevada both established Freight Advisory Committees and these provide a good model for elevating coordination at the local and regional levels. Some MPOs already have freight-focused committees, including SANDAG (Freight Stakeholders Working Group) and the Regional Transportation Commission of Southern Nevada. These technical committees provide an ideal forum to identify priority locations and demand areas that could benefit from expanded truck parking, as well as lead initiatives to develop policies, recommend zoning updates and develop guidance for truck parking implementations. Similarly, the I-15 Mobility Alliance brings many key freight and policy stakeholders together through its planning activities. Establishing a subcommittee of the I-15 Mobility Alliance to focus specifically on truck parking can help to advance discussions at the state and regional levels.

The I-15 Mobility Alliance can also help to share best practices and coordinate truck parking planning activities across regional and state boundaries. It can provide a forum for exchanging ideas, discussing recent truck parking initiatives and sharing outreach strategies to elevate the priority for truck parking throughout the corridor, and allow agencies to benefit from lessons learned from their peer counterparts. This forum could meet virtually on an annual or semi-annual basis and serve as a multi-agency peer group with the common goal of advancing urban truck parking initiatives.

There could be an additional benefit of economies of scale when coordinating with private partners (such as technology app providers) to provide a more consistent parking experience for truckers along the corridor. This group can also help to support future grant funding opportunities to implement higher-cost truck parking solutions, such as new parking facilities or expanding parking availability and amenities at existing locations.

5.4.1 Roles and Responsibilities

The state DOTs should support continued discussions through established forums such as existing Freight Advisory Committees and I-15 Mobility Alliance. There needs to be additional focused engagement to sustain involvement of regional agencies, engage local agencies, trucking associations, fleet operations and industrial landowners to identify priorities for truck parking strategies in their respective areas. The DOTs can spearhead coordination for annual or semi-annual discussions, set the agenda, and help to facilitate exchanging resources and materials.

5.4.2 Implementation Needs

- Develop a vision and charter for an agency forum focused on I-15 truck parking, leveraging existing collaborative structures such as Freight Advisory Committees and the I-15 Mobility Alliance
- Identify champions at local and regional agencies who can represent truck parking needs and priorities for their areas
- Engage trucking associations to provide feedback and serve as liaisons to the trucking community
- Facilitate annual or semi-annual forum meetings to exchange ideas and share best practice