

NATIONAL ECONOMIC PARTNERSHIPS GRANT

I-15 FREIGHT MOBILITY ENHANCEMENT PLAN

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CALIFORNIA | NEVADA

Prepared for:



In coordination with:



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Acronyms

ABPS	Application-Based Parking Solutions
CA	California
CCTV	Closed-Circuit Television
Caltrans	California Department of Transportation
DOT	Department of Transportation
FHWA	Federal Highway Administration
HOS	Hours of Service
ITS	Intelligent Transportation Systems
MCOM	Multistate Corridor Operations and Management
MEP	Mobility Enhancement Plan
MPO	Metropolitan Planning Organization
NDOT	Nevada Department of Transportation
NV	Nevada
O&M	Operations and Maintenance
P3	Public-Private Partnership
RFI	Request for Information
RFP	Request for Proposals
ROW	Right-of-Way
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 (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 metropolitan planning organization (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 proposals 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 Freight MEP is one of two that is led solely by state departments of transportation (DOTs), taking initiative for actions and coordinating with a diverse base of stakeholders.

The I-15 Freight MEP builds on the Nevada State Freight Plan 2017 and the California Freight Mobility Plan 2020, and complements the ongoing work associated with current truck parking efforts in both Nevada and California, 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 Freight 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 Study Objectives

The I-15 Corridor is a vital link in the economies of the western U.S. and the entire nation, connecting San Diego and the Inland Empire of California with the Las Vegas metropolitan area of Nevada. The corridor links coastal ports to inland population centers and carries an estimated 30 million tons of cargo each year, primarily by truck, leading to a shortage of truck parking. In these three regions with dense freight logistic activity, the need for truck parking is the greatest and the most difficult to fulfill, in part due to the lack of affordable and available land, community opposition, and other factors.

The intent of the I-15 Freight MEP is to build on the efforts of the I-15 Mobility Alliance by bringing together public and private economic partners along the corridor to agree on policies for distributing the cost and responsibility of providing urban truck parking equitably among those generating the demand. This study also seeks innovative technology solutions for better utilizing available public and private spaces for truck parking, thereby reducing the need to build and maintain additional facilities. A toolbox of guidelines and implementation strategies will be developed that partner agencies can select from to help them address their specific needs for urban truck parking.

The overarching objectives of the I-15 Freight MEP are to:

- **Address the critical issue of the lack of urban truck parking on the I-15 Corridor.** Improved outcomes include an increased number of available locations for truck parking, reduced unauthorized truck parking, and improved air quality.
- **Improved transportation system performance** along the I-15 Corridor through reduced congestion, improved safety, and improved infrastructure conditions.
- **Replicate this planning approach in other key corridors.** The I-15 Corridor is developing resources that are scalable and transferable to other key freight corridors in megaregions.



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

1.4 Study Partners

As a multi-jurisdictional and multi-state process, this effort is comprised of several partners. Caltrans and NDOT, as the “owners” of the I-15 Corridor through California and Nevada, are leading the effort, in close coordination with FHWA. The state DOT district offices and MPOs form a tightknit stakeholder group that has been involved throughout every step of the process. Their communication and collaboration is critical to develop meaningful and implementable solutions. To gather the broadest perspectives and input as possible, over 30 other partners have participated in study updates, webinars, and meetings. This group includes a range of organizations such as local cities and towns, technology providers and vendors, freight organizations, and shipping/receiving companies.

1.5 Study Process

This study was largely driven by stakeholder engagement to understand corridor needs and develop reasonable solutions. At each major milestone throughout the process, the study partners were brought together to provide input and feedback, including establishing the study goals, reviewing policy and technology options, recommending policy and technology initiatives, and developing consensus around a multi-organizational implementation framework (Figure 1-2).



Figure 1-2: I-15 Freight MEP Study Process and Timeline

Because of the multi-state span of the study area, engagement opportunities/workshops were mostly held via online webinars, with the exception of in-person introductory workshops held on a regional level. The online webinar method proved to be a very successful approach, with materials distributed in advance, polling opportunities throughout the presentation to gather real and immediate feedback, and open discussion periods to dive deeper into different ideas. Especially in light of the COVID-19 pandemic, this platform worked exceptionally well to bring together a large group of people and ideas.

1.6 Use of Plan

This project seeks to re-define how planning and project programming is approached for key corridors that have major economic and mobility impacts for multiple states and multiple regions. Traditionally, planning for a major interstate corridor is done in piecemeal by different states and regions, potentially with minimal coordination and input from agencies outside of state boundaries.

This Plan develops a thoughtful and in-depth Implementation Framework that spans a wide range of activities that should be undertaken to improve freight operations and truck parking along the I-15 Corridor. The answers to the needs identified do not fall within one jurisdiction or agency (e.g., state DOT) but instead, rely on the coordinated efforts at local, regional, and statewide scales, paired together with private sector-led solutions. Thus, developing an agreed-upon Implementation Framework that will be integrated into the various agency's existing processes outlining how projects will be collaboratively pursued and funded has been a critical measure of success for this study. Developing and integrating the Implementation Framework into all partner agency processes will best ensure the sustainability of the I-15 Freight MEP and create a foundation for the planning, and ultimately implementation, of successful, cross-state and cross-regional projects for this critical economic and mobility corridor.

As I-15 Freight MEP study partners and stakeholders are already active participants in the I-15 Mobility Alliance, a consortium of state DOTs, regional and local jurisdictions, and private sector partners in California, Nevada, Arizona and Utah; this organization provides a logical forum to stay apprised on freight and truck parking progress. Quarterly meetings provide opportunities for collaboration and communication across implementing partners. Realizing wins with truck parking projects contributes to the overall operational success of the I-15 Corridor as a whole, benefiting the economic health of the megaregion, and providing real experiences to replicate measures throughout other Alliance states.

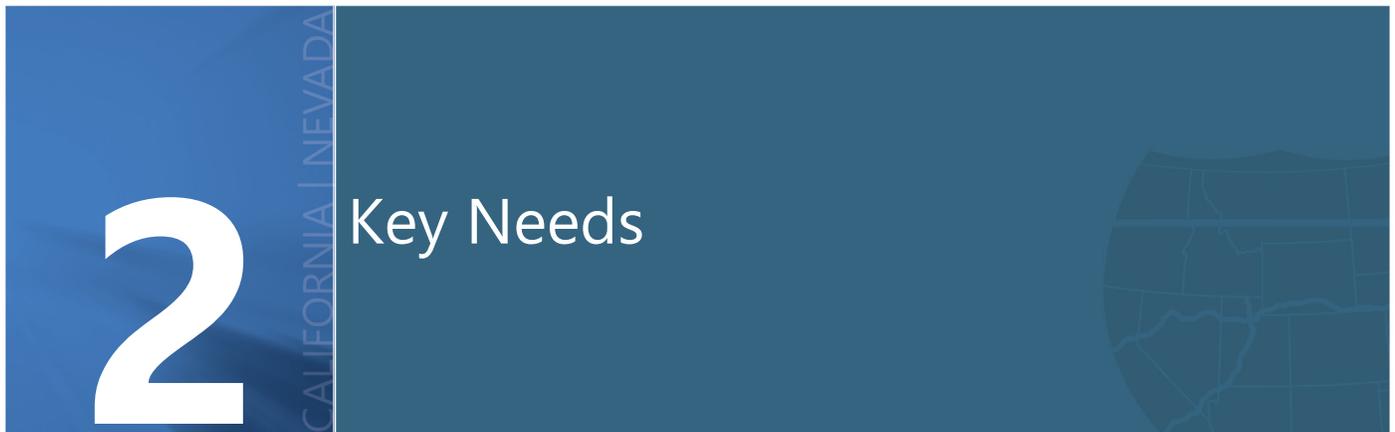
I-15 Mobility Alliance Mission Statement

The I-15 Mobility Alliance transcends traditional transportation thinking by advancing innovation, long-range planning, investment, and implementation of multimodal systems; including not only increased mobility of people and goods through highways, freight rail, transit, and high-speed passenger rail, but also forward-looking technologies for the transport of energy, data, and communications.

The I-15 Corridor is a vital linkage in the economy not only of the western U.S., but of the entire nation. Projected increases in commodity flows from the western U.S. and Mexican ports, and population growth will result in the impacted segments of I-15 experiencing severe congestion thus impeding commerce, hindering mobility, and degrading the quality-of-life of the people served by the corridor.

The mission of the Alliance and its members is to develop, in partnership with public and private sectors, a comprehensive, multimodal master plan for the I-15 Corridor, to prioritize projects and policies of interregional significance, to seek financial and other resources necessary for the implementation of the master plan, and to devise appropriate governance mechanisms for the ongoing efficient and effective construction, operations, and maintenance of the corridor on a more sustainable basis.

This Plan references several of the interim deliverables that were reviewed by the stakeholders, culminating in this final I-15 Freight MEP. These technical documents can be found online on the I-15 Mobility Alliance website: <https://i15alliance.org/>.



2.1 Study Goals

The following overarching truck parking goals evolved through a collaborative effort between Caltrans, NDOT and their partnering agencies:

- Identify strategies, best practices and templates for providing effective urban truck parking along the I-15 Corridor
- Establish new partnerships and a successful multi-state coalition
- Advance important near-term corridor improvement opportunities
- Advance key freight planning efforts in both California and Nevada for I-15
- Better coordinate local and megaregional corridor planning efforts
- Elevate engagement with local and regional planning agencies who have a vital role in mobility, safety planning, and programming for I-15, including facilitating inclusive land use and zoning requirements

2.2 Study Needs

2.2.1 Needs Identification Process

A series of coordination and study activities were carried out to understand and develop a comprehensive set of goals, needs and strategies for the corridor related to truck parking. At the onset of the project, four introductory workshops were held with project stakeholders in the three primary urban regions of the corridor (San Diego, Inland Empire, Las Vegas), along with an online webinar. This open discussion focused on the overall goals that each stakeholder hoped to get out of the study, along with specific needs, which could be common to I-15, or more specific to varying geographies. This information was paired together with a literature review to review current and best practices. The needs provide the framework for developing solutions and implementation actions.

2.2.2 Truck Parking Needs

State and regional freight planning documents were reviewed to understand projects, policies, or other recommendations related to truck parking needs. These needs were paired together with feedback received during the introductory workshops to present a summary of major truck parking needs in the I-15 Corridor.

Common themes identified from the literature review included:

- Maximize truck parking in dense urban areas where parking spaces are limited
- Utilize technology that can make finding parking easier and reduce the impacts of idling
- Increase number of truck parking spaces and facilities and supportive intelligent transportation system (ITS) improvements
- Require facilities that receive and dispatch large numbers of trucks to provide parking onsite and/or contribute to the construction, operations, and maintenance of common staging/parking areas
- Construct truck parking areas adjacent to commercial truck stops and travel plazas
- Provide truck staging at the border (specifically U.S./Mexico border and Port of San Diego)

Common themes heard during the stakeholder workshops included:

- The high cost of land makes it cost prohibitive to build new/independent truck parking facilities, especially in urban areas
 - Facilitate inclusive land use and zoning requirements to:
 - Allow truck parking at underutilized parking locations, such as stadiums, particularly at night when not in use
 - Coordinate truck parking policies and technologies among adjacent jurisdictions to improve economic partnerships and benefits
 - Establish land use policies that require shippers/receivers to provide truck parking
- Relax the Federal law that prohibits commercialization of rest areas or DOT properties; convert closed facilities (e.g., chain up, rest areas, inspection sites) to allow truck parking and/or identify facilities that are underutilized and may accommodate truck parking (e.g., park & rides)
- Foster collaboration between different levels of government and public/private partnerships to collaborate on solutions; involve policymakers
- Provide real-time information on truck parking locations, availability, and amenities
- Identify champions in each region to continue the momentum and carry out recommendations
- Quantify where and how much truck parking is available and needed (*this effort will require intensive data collection, as well as collaboration with state DOTs and local jurisdictions, and therefore would be carried out on a location-specific basis*)

2.3 Purpose Statement

Based on the needs and goals identified, the purpose of investigating urban truck parking solutions through this I-15 Freight MEP is to:

Identify strategies for providing effective urban truck parking along the I-15 Corridor. Effective urban truck parking can be defined as reliable, secure, affordable, with the amenities drivers need, and supported by the surrounding community. Develop an actionable implementation plan that defines the partnerships, technology, policy, and funding frameworks needed for successful implementation, collaboration, and economic partnership.

2.4 Solutions Development

Based on the needs identification and purpose statement development, I-15 Corridor needs relative to truck parking, can be grouped into four primary areas: (1) policies, (2) infrastructure, (3) technology, and (4) programs. While they are all relevant topics and will be explored for I-15, a key need identified was to explore truck parking technology options in greater depth. Thus, a substantial effort was made to issue and pursue a Request for Information (RFI) to technology vendors to weigh in on new and innovative technologies related to truck parking that may provide feasible solutions to issues along I-15.

2.4.1 Technology Exploration

Technology can play an important role in addressing at least part of the urban truck parking challenge for the I-15 Corridor. Many states, including Nevada and California, are implementing truck parking systems on interstates that cater to drivers needing to find areas to park to remain legal with hours of service (HOS) requirements, and these systems are encouraging partnerships and new business models with public and private partners to provide the space for trucks to be able to park. Systems are also being implemented that can detect the number of available spaces and notify truckers of space availability, either through roadside dynamic message signs or through mobile applications. Recent emphasis on curbside management, particularly in urban areas, could also provide some potential strategies that could be adapted to unique needs of truck parking in industrial or commercial areas.

The study team researched existing and emerging technologies related to truck parking approaches and logistics. To supplement this research, in February 2020, the NDOT published an RFI seeking input from a wide range of technology providers and developers, implementing agencies, research and academia and trucking associations. This RFI was designed to obtain input about emerging technologies and concepts that could be considered as part of the Mobility Enhancement Plan, and potentially offer cost-effective options or partnering opportunities. Prospective responders were asked to share information about emerging technologies, technology applications, successful implementations and other information that could assist the team and partner states in evaluating potential options to consider.

A broad range of potential technology solutions came out of this investigation, as presented in Table 2-1. A more thorough discussion of each option can be found in the *Urban Truck Parking Technology Exploration Technical Memorandum*.

Table 2-1: Technology Options

Type	Solutions Identified
Technology Infrastructure	<ul style="list-style-type: none"> • Lot-Based Truck Parking Availability Systems (TPAS) • Dynamic Mobile Application-Based Parking Solutions (ABPS)
Business Models	<ul style="list-style-type: none"> • Agency-owned land/lots partnering with technology supplier • Public agency responsible for enabling technology infrastructure • Private entity responsible for enabling technology infrastructure
Policy Considerations	<ul style="list-style-type: none"> • Zoning and land use requirements • Revenue and cost share models • Safety policies for mobile communications • Federal policies and regulations

3 Menu of Strategies

I-15 Freight MEP stakeholders recognize that there will be a range of potential strategies that will be needed to address the unique truck parking needs of different communities along the I-15 Corridor. There are strategies aimed at providing or expanding capacity of truck parking facilities, implementing creative land use sharing agreements to utilize available capacity for trucks in non-traditional locations (such as shopping malls). This process also has examined unique technology-based solutions that could help to connect drivers with available parking options as well as support wayfinding, reservations and advanced information about truck parking options.

Agencies also recognize that there are some fundamental policy changes, or enabling policies that would need to be developed, that could help to support new approaches to providing much needed truck parking in areas along I-15 where it could be of most benefit. Many of these policies would need to be developed and implemented at the local level, but there is some support that state DOTs and regional entities could provide to help develop policies, conduct research and analyze data that could help to inform policy language, as well as facilitate collaboration among local entities to promote consistency among similar policies.

A total of 19 strategies and four supportive programs are recommended as part of this I-15 Freight MEP. Recommendations are organized into the following categories, shown in Table 3-1.

Table 3-1: Menu of Strategy Types

Strategy	Description
Supportive Policies (10)	Policies are needed to modify land use and zoning requirements, provide a framework for public/private partnership for land use sharing, and guide future industrial development standards to promote greater flexibility in allocating truck parking areas.
Infrastructure Strategies (4)	These strategies focus on building new facilities or expanding existing facilities to provide for additional truck parking. Infrastructure strategies represent a higher cost investment than the other strategies but have the most immediate return-on-investment in terms of providing additional dedicated areas for truck parking.
Technology Strategies (5)	The technology strategies are focused on real-time space availability information, connecting truck drivers to available and safe parking areas, and even advanced reservation capabilities for truck parking spaces. Technology options range from agency-operated infrastructure and sensors to mobile-based applications provided by a

Strategy	Description
	third party. Many of these strategies provide unique partnering opportunities with the private sector.
Supportive Programs (4)	The supportive programs represent important next steps for continuing the collaborative discussions for truck parking on I-15 once the I-15 Freight MEP is complete. These include projects and studies that will result in outreach tools and resources, an ongoing awareness campaign, and guidance and analysis on truck parking demand and performance reporting. These programs would be led by the state DOTs with involvement and engagement of local and regional partners.

3.1 Summary of Strategy Recommendations

Strategy recommendations in each of the four categories are summarized in Table 3-2. It was important to consider a range of factors when developing the different strategies, recognizing that infrastructure strategies (and the design, cost and approval processes) will differ from those strategies involving data analysis and policy development. Strategy recommendations were developed in response to priority needs and objectives identified in the *Goals and Needs Technical Memorandum*, and through an iterative process of stakeholder feedback throughout the study. The Technology Exploration task, and feedback from the technology providers within the industry, also helped to inform some of the technology-focused recommendations.

Table 3-2 is organized to succinctly present information about the lead and partner agencies, ease of implementation, timeframe required to implement the strategy, and what the most applicable location would be for a particular strategy.

Costs presented range from no cost to higher cost assumptions, indicated with \$, \$\$, \$\$\$ symbols. Effectiveness and cost effectiveness ratings are also included for the infrastructure and technology strategies. 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.

Lead and support agencies are also identified and are intended to be used as a guideline. There are some strategies identified as good candidates for the state DOTs to lead with support from regional and local agencies, and others (such as policy development) will require local and regional agencies to take a stronger leadership role. Agencies should not feel constrained when reviewing these recommended roles and responsibilities.

The following sections contain abbreviated summaries of the strategies presented in the *Strategy Development and Implementation Framework Technical Memorandum*.

Table 3-2: I-15 Freight Mobility Enhancement Plan Strategy Recommendations

Category	ID	Strategy	Cost	Implementation				Ease	Time Frame	Applicable Location		
				Effectiveness	Cost Effectiveness	Lead	Partners			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	●	●	●

3.2 Supportive Policies

3.2.1 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 truck parking spaces across the country and are the preferred parking location for the vast majority of truck drivers. These facilities have amenities such as fuel, food, showers and other services. Public sector assistance of private sector truck parking facility owners – by way of reduced or waived fees and permits, off-site improvement partnership, and/or tax incentives – removes barriers to the development of expanded truck

parking facilities or constructing new facilities. This policy would be led by state and local permitting agencies.

3.2.2 Supportive Policy PO-2

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



This policy includes revising or developing zoning ordinances and guidelines to require shippers and receivers to accommodate parking on their sites. These guidelines should clarify requirements for existing sites versus new developments and provide a path to compliance for established entities. 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/marketing, pavement upgrades, security). 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.

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

3.2.4 Supportive Policy PO-4

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



Truck parking at low traffic times in auto-designated and non-traditional areas at public facilities creates additional truck parking supply and efficiencies. 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. 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. This policy could be developed at a relatively low cost.

3.2.5 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. 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. Identifying feasible sites and emergency conditions to allow emergency truck parking at large private facilities enhances safety and saves public resources from being used to create infrequently used sites. Parking lots at commercial/shopping areas could have constraints such as medians or lane dividers that could be challenging for trucks to navigate. 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.

3.2.6 Supportive Policy PO-6

Integrate truck parking needs into agency roadway project development processes.

Integration of truck parking in the roadway project development process increases efficiency of projects by coordinating issues and needs early and preventing 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. 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. There are minimal additional cost considerations for this policy since it focuses on internal agency processes.

3.2.7 Supportive Policy PO-7

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

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. 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. There are minimal additional cost considerations for this policy since it focuses on internal agency processes.

3.2.8 Supportive Policy PO-8

Re-assess public facility closures in high demand areas.

Converting public facilities such as weigh stations, maintenance yards, rest areas, and picnic areas for truck parking may be an economical way to provide more truck parking inventory in lieu of new site construction. 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.

DOTs would have a lead role in developing guidelines and processes for converting public facilities on the DOT's ROW. Local agencies (including cities and counties) could develop similar guidelines and processes for land parcels and uses that they own, such as maintenance yards. There are minimal additional cost considerations for this policy since it focuses on internal agency processes.

3.2.9 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. 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 and design standards should be revised or developed to include minimum amenities and could include a phased approach for introducing enhanced amenity options. State DOTs would need to lead development of this policy and associated guidelines.

Drivers Need...



Lighting, trash cans, and toilets

Drivers Desire...



Food options, showers, Wi-Fi, and security measures

Drivers Appreciate...



Laundry, green space, and convenience items

3.2.10 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, increasing overall interstate safety and facility utilization. Authorized parking is safer and reduces environmental and infrastructure challenges associated with unauthorized parking. 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). The primary cost consideration for this policy includes additional public safety/law enforcement training and time allocation for additional enforcement.

3.3 Infrastructure Strategies

Specific locations where these infrastructure strategies could be deployed was not determined as part of this study, however other studies do address this. NDOT completed a statewide Truck Parking Implementation Plan in 2019 (<https://www.nevadadot.com/doing-business/about-ndot/ndot-divisions/planning/freight-planning>) that identified needs and recommended repaving, expanding, and adding toilets to three existing truck parking lots maintained by NDOT on I-15 at mileposts 88, 96, and 110 north of Las Vegas. Figure 3-1 is a conceptual layout for one of those. In July 2020, Caltrans initiated the California Statewide Truck Parking Study to identify where additional truck parking is needed using GPS truck probe data. As part of that study the San Diego region will be used as a case study for identifying and screening public parcels for siting new truck parking facilities.

Figure 3-1: I-15 Truck Parking Expansion Concept on I-15, North of Las Vegas



Source: Nevada Truck Parking Implementation Plan. Accessed from: <https://www.nevadadot.com/mobility/freight-planning>

3.3.1 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 (see Figure 3-1).

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. 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.

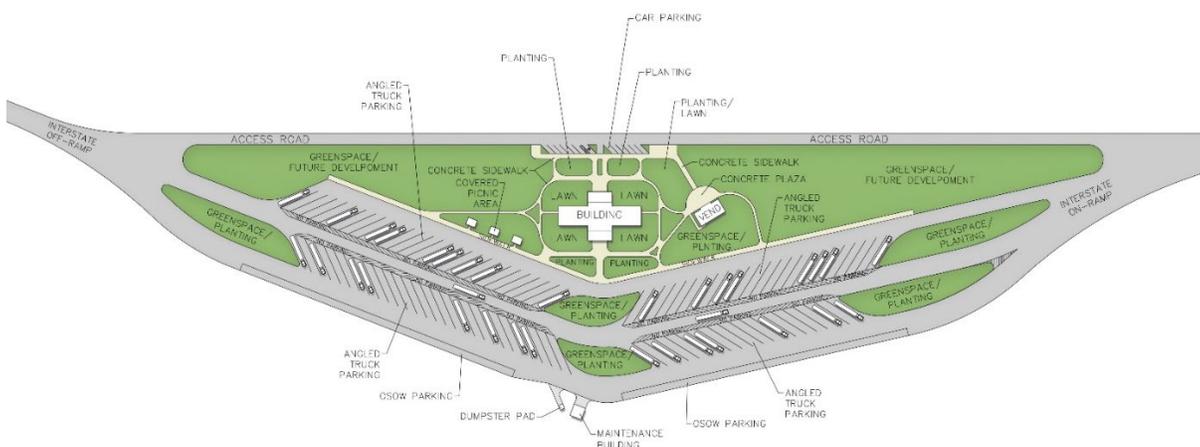
It expands capacity and number of truck parking spaces at existing agency-owned facilities, with a lower cost than adding new facilities. Design, construction, and ongoing maintenance will be some of the cost considerations for this approach. Where sites already have amenities and associated maintenance operations, the cost may just be an incremental increase in work.

3.3.2 Infrastructure Strategy I-2

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

Building new truck parking facilities in the rural or urban fringe areas along I-15 adds parking capacity and provides safe and reliable parking locations. 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. Building new dedicated truck parking facilities adds parking capacity, provides a safe and reliable parking location, and community support for dedicated facilities is envisioned to be strong (Figure 3-2 provides an example).

Figure 3-2: Concept Drawing for Large Truck Parking Facility with Interstate Access



Source: Texas Statewide Truck Parking Study. Accessed from: <http://ftp.dot.state.tx.us/pub/txdot/move-texas-freight/studies/truck-parking/final-report.pdf>

This is one of the highest cost strategies within the suite of recommendations for I-15. Some major cost considerations include any ROW acquisition, the design and construction, and ongoing maintenance and security costs. 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 operations and maintenance (O&M) for pavement, signing/markings, buildings, and any amenities that are included with the parking facility.

3.3.3 Infrastructure Strategy I-3

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

Adding or expanding truck parking at weigh stations creates opportunities to increase capacity and share amenities at sites that are already designed for truck usage. 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 (Figure 3-3 provides an example).

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. 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.

Figure 3-3: Walton Weigh Station, KY



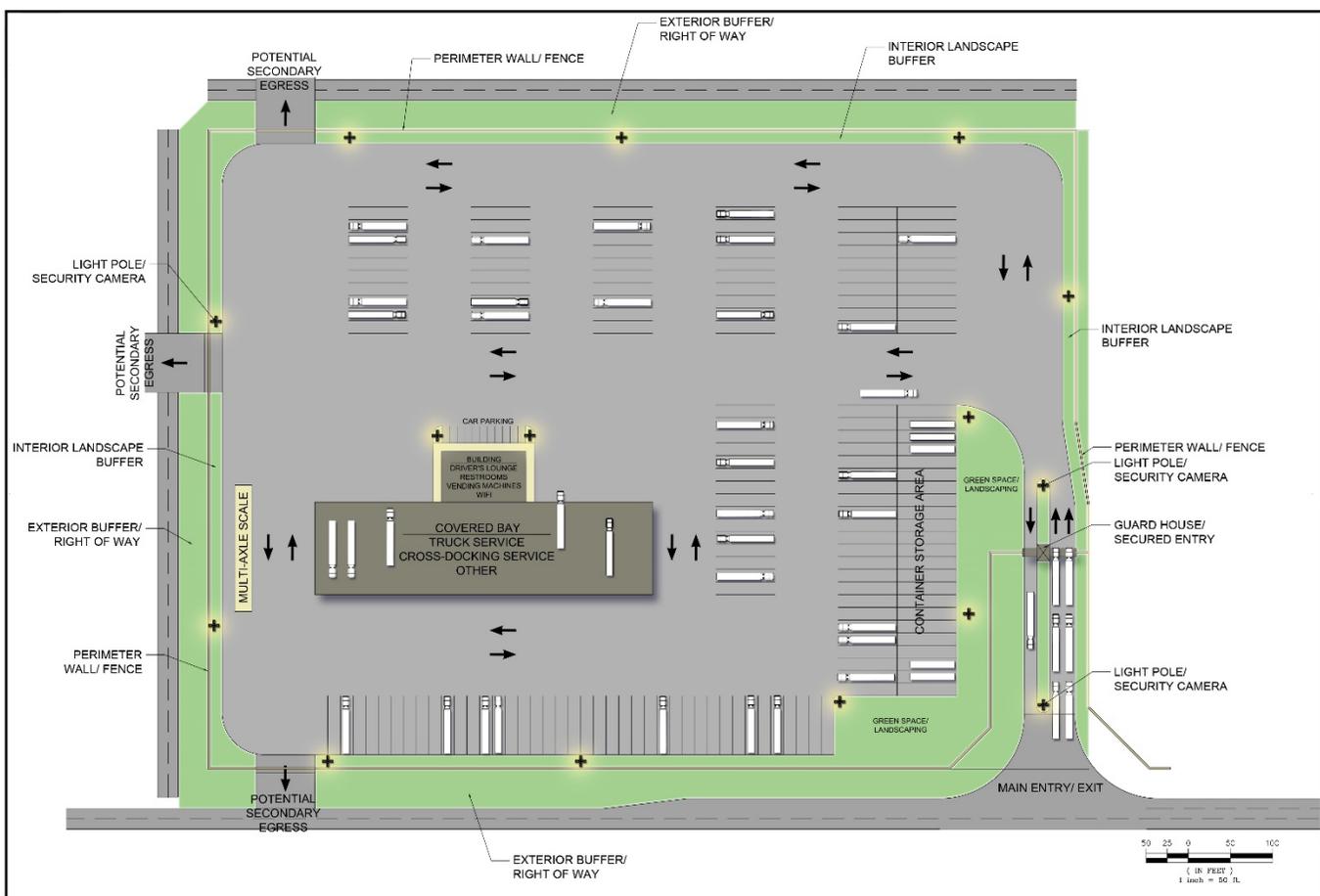
Source: Google Maps. North is to the top of the image.

3.3.4 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. *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.

Figure 3-4: Concept Drawing for Large Truck Parking Facility near Logistics Center



Source: Texas Statewide Truck Parking Study. Accessed from: <http://ftp.dot.state.tx.us/pub/txdot/move-texas-freight/studies/truck-parking/final-report.pdf>

These types of parking facilities do not need to provide fuel, food, and convenience 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. 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.

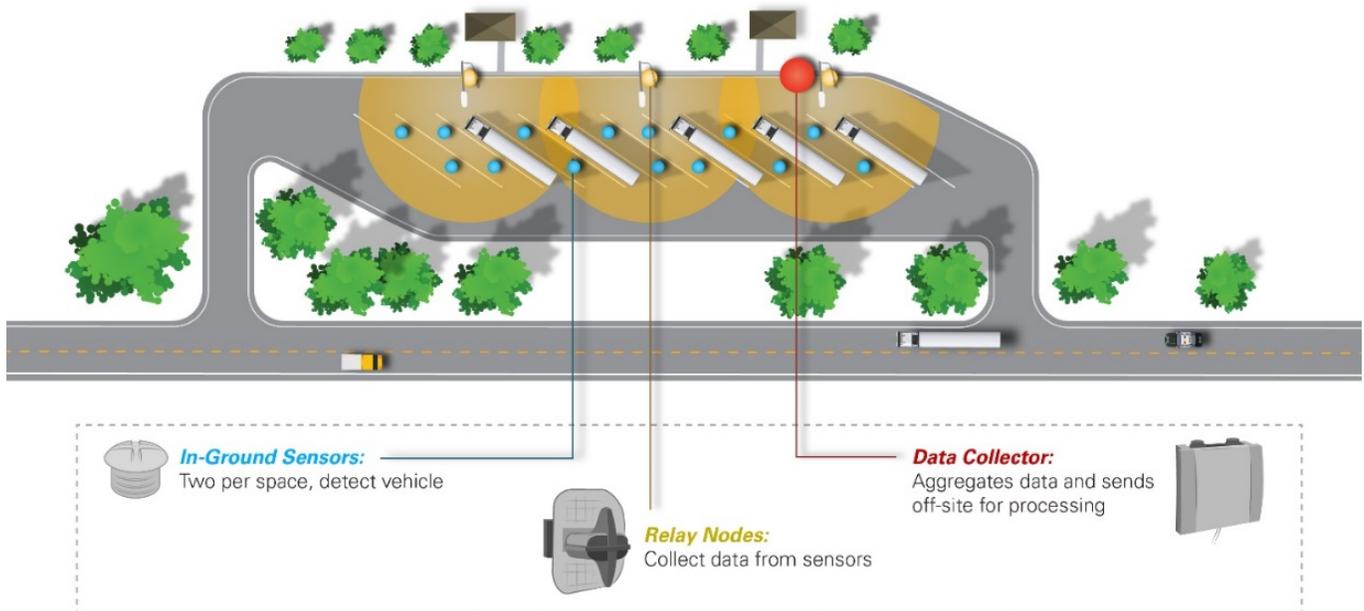
3.4 Technology Strategies

3.4.1 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. Sites could include rest areas, but more commonly TPAS is associated with dedicated public truck parking facilities or in partnership with private lots (such as truck stops). 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. A typical TPAS system consists of sensors at parking facilities to detect available (and occupied) spaces, software to monitor and report on availability, and some might include closed-circuit television (CCTV) cameras to provide real-time visual monitoring (Figure 3-5 provides an example concept). 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.

Figure 3-5: TPAS Site Concept



Source: Nevada TPAS Concept of Operations, NDOT, March 2020

The DOT would be the lead on installing detection in parking sites within the I-15 ROW and corresponding signage along I-15. 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.

In the Spring of 2020, NDOT completed the concept of operations and system engineering requirements for an initial pilot TPAS deployment at six NDOT facilities across the state, including the three on I-15 at mileposts 88, 96, and 110 north of Las Vegas. Caltrans is currently developing a concept of operations for a multistate TPAS on I-10 in partnership with Arizona, New Mexico, and Texas.

3.4.2 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. This approach makes more efficient use of existing resources by communicating parking locations to truck drivers in advance, potentially increasing awareness of underutilized parking. That is expected to help drivers make informed choices to balance their 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.

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

3.4.3 Technology Strategy T-3

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



Smart urban parking zones can be used to designate multiple purposes over the course of the day for curb areas and other applicable parking locations. 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. This approach aims to make more efficient use of existing curb 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 curb area parking solutions to truck drivers. Cities would need to designate curb areas near logistics centers.

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.

3.4.4 Technology Strategy T-4

Truck Parking Marketplace mobile application.

Using a truck parking mobile app would allow drivers to identify, reserve, and pay for parking at available parking locations, expanding the pool of inventory and providing a financial incentive for participating property owners. 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. The technology provider would have costs for initial development, regional publicity and engaging property owners, ongoing maintenance, and any upgrades required by changes to technology or regional policies. The technology provider's costs are recouped from membership, subscription, or transaction fees.

3.4.5 Technology Strategy T-5

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

Integrating truck parking location information – with or without real-time availability information – with existing I-15 Multistate Corridor Operations and Management (MCOM) and 511/traveler information systems provides truck parking information in one place and makes it easier to access. There is currently very limited information specific to truckers on Nevada's 511 or California's QuickMap sites. Agencies could integrate real-time information (such as from TPAS systems) about available truck parking locations into existing tools to make them more user-friendly for freight users. The Arizona DOT recently started displaying the number of designated truck parking spaces at public rest areas on its www.az511.gov web site. This does not provide real-time availability information but is a first step in providing available truck parking locations. Nevada and California can enhance this data feed over time as real-time truck parking information on I-15 becomes available through other projects.

3.5 Supportive Programs

3.5.1 Supportive Program PR-1

Create an awareness campaign on the importance of truck parking.

A truck parking awareness campaign can showcase the value of freight movement while providing potential solutions. 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. Elements of the awareness campaign are recommended to include a web page with summary information and truck parking facts/statistics; summaries and presentations that can be shared with councils, agencies, and economic development groups; branded content to provide a consistent look and feel across multiple platforms; and a library of highlights and success stories that agencies can promote.

This strategy should be led by the state DOTs, including freight planners and communications/public information staff. 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.

3.5.2 Supportive Program SP-2

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

The unique needs of commercial truck parking require different analysis methods than the established methodologies of parking and demand analysis typically used by local agencies. 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. 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. 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.

3.5.3 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. Accurately capturing the performance of different truck parking strategies and their benefits provides valuable information to support ongoing truck parking planning, industry engagement, and community promotion. 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. 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.

3.5.4 Supportive Program SP-4

Establish forum for ongoing agency collaboration and coordination.

Ongoing collaboration among agencies is needed to maintain continuity of discussion and 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. Other regional technical committees can also provide a forum to identify priority locations that could benefit from expanded truck parking, as well as lead initiatives to develop policies and guidance to support various strategies. 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.

4 Implementation Framework



Implementing various strategies to address truck parking needs on I-15, whether these strategies involve a supportive policy or a project to expand or build truck parking facilities, will require active involvement from many agencies. There are key roles for planning and implementing strategies for state, regional and local agencies. Many strategies will also need to involve additional entities, such as the freight community, trucking associations, landowners and private sector technology providers.

Moving goods through the I-15 Corridor – safely and efficiently – has been a cornerstone of agency I-15 planning efforts for more than a decade. Agencies recognize the vital role that freight plays in the regional and state economies. Finding creative solutions to truck parking needs on and off the interstate will help to serve industries and residents of communities throughout the I-15 Corridor in Nevada and California.

Strategy recommendations summarized in the prior chapter and discussed in detail in the *Strategy Development and Implementation Framework Technical Memorandum* of the I-15 Freight MEP provide partner agencies with a range of solutions to address unique truck parking needs throughout the corridor. There is recognition that parking needs to be provided close to those industrial and high-demand areas that generate frequent truck trips throughout the day, as well as parking solutions that can support emergency parking needs or allow for flexible land uses to accommodate peak periods of planned or unexpected truck parking demand. Some strategies look to implement innovative business models that can establish partnerships to leverage available parking areas for truck parking needs, or allow private technology providers to facilitate wayfinding and reservation systems to help provide for guaranteed safe parking zones for trucks in areas that are best suited for truck parking and staging.

The Implementation Framework builds on the following core principles:

- Planning, developing and implementing strategies – whether they are policies, process changes, infrastructure or technology – will require a team of partners to be successful.
- The long-term success of truck parking solutions for I-15 does not hinge on any single strategy, but rather a suite of approaches working together.
- Engaging the freight community and the private sector will be an essential part of many strategies. In the case of some technology solutions or policies that seek to support expanded or alternate land uses, involvement of the private sector will be critical.
- Ongoing dialogue and collaboration, highlighting innovative truck parking solutions, and reporting on progress will help to sustain the momentum that is already underway within the I-15 Corridor.

- Established forums such as the I-15 Mobility Alliance that can provide the multi-agency collaborative environment to sustain the focus of truck parking needs and priorities. There needs to be continued effort to engage regional and local agencies and decision-makers to help champion various strategies.

4.1 Implementation Timeframes

The strategies developed for the I-15 Freight MEP have been developed with a 10-year horizon. This planning timeframe acknowledges that there are some recommendations that can, and should, be implemented within a relatively short time frame. Strategies such as policy development and internal agency process changes represent relatively low-cost strategies. There might be some incidental costs, such as to research best practices or develop analysis methodologies, but these are minimal costs compared to the investment required for new or expanded parking facilities. Infrastructure recommendations that will directly expand truck parking capacity, either through constructing new truck parking facilities or expanding existing facilities, will take much longer to come to fruition due to the investment needed, design/clearance/approval processes and timeframes for construction.

Table 4-1 on the following page groups the recommended strategies into short-term, mid-term and long term. These correspond to the phasing presented in the Strategy Summary in the prior chapter (Table 3-2). For these recommendations, timeframes generally correspond to the following:

- **Short** – refers to strategies that can be developed (and potentially implemented) within 2 years. Most of the short-term strategies are policies, process updates, and the supportive programs.
- **Mid** – refers to strategies that are envisioned to take between 3 and 5 years to develop and implement. Some of the technology and infrastructure strategies fall into this timeframe.
- **Long** – these strategies are primarily infrastructure strategies that focus on building new truck parking facilities or adding parking at weigh stations. Three supportive policies are identified for the longer-term due to the complexity of these policies and the need to revise land use requirements and standards and collaborate with private landowners.

4.2 Key Priorities

The four supportive programs are strategies that can begin immediately, providing that funding can be identified. These are:

- Create an awareness campaign on the importance of truck parking
- Create guidance to help municipalities include truck parking demand as part of Traffic Impact Analysis for new developments
- Develop a performance assessment and reporting strategy to highlight freight mobility benefits, economic benefits and safety benefits
- Establish a forum for ongoing agency collaboration and coordination

Table 4-1: I-15 Freight Mobility Enhancement Plan Implementation Timeframe Overview

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

* Refers to relative ease of implementation, with 1=easier to implement and 3=more complex to implement

The supportive programs will help to provide the tools, outreach, guidance and sustaining collaboration that will be essential for the success of the supportive policies, technology and infrastructure strategy recommendations. 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.

It is recommended that the state DOTs take a lead role in these supportive programs because they are able to garner the resources to initiate them, and it will be minimal effort to start elevating the priority of the I-15 Freight MEP within existing institutional structures like the State Freight Advisory Committees and the I-15 Mobility Alliance. These early efforts can start to develop the branding, materials and information that will be needed by regional and local agencies to begin more grassroots outreach efforts within those local agencies.

In addition to the four supportive programs, there are some near-term items that agencies can begin immediately, which will help to refine priorities and initiate key stakeholder discussions:

- Collaborate among local and regional agencies to identify priority locations, facilities or industrial areas where parking demand for trucks is high, or parking demand is forecast to increase as a result of new or changing development. This can be identified through various means, such as input from landowners, through recent studies or freight frameworks, or from other planning processes.
- Identify where additional data might be needed to assess freight volumes or freight demand and begin planning for how to obtain that data. Data might come from public safety/law enforcement to identify where there is a prevalence of citations for illegal truck parking, or potentially high numbers of freight/vehicle crashes.
- Several different technology companies responded to the RFI and were engaged to identify the types of solutions that could help to support truck parking needs in different areas of the I-15 Corridor. Agencies should continue to engage potential partners to stay on top of emerging capabilities. Showcasing different technology solutions and business models, many of which can be very cost effective to implement, can help to educate stakeholders and agency leaders about the potential benefits these partners can provide.
- Begin identifying locations where new facilities are needed. The investment required to build new facilities can be substantial. It is likely that funding would need to be identified and a project developed to include within a construction program, which could be several years out. Initial due diligence and preliminary planning activities can help to prepare concepts and cost estimates so that projects can be programmed for future years.
- Identify alternative funding sources, such as federal grant funding, that could be used to support the higher-cost strategies. Identify requirements of different grant funding mechanisms and begin to assess what data or analysis might be needed (such as a formal cost-benefit assessment) or what preliminary plans, surveys or clearances are required to be able to submit a 'shovel ready' parking concept. If there are formal agreements required, begin coordinating with those partners well in advance of grant deadlines.

4.3 Implementation Roles and Responsibilities

Planning, implementing, and sustaining strategies for truck parking within the I-15 Corridor will involve several different public and private interests. The long-term success of truck parking solutions will only be possible through an ongoing partnership of state, regional, local and private sector stakeholders. Table 4-2 summarizes the different roles and responsibilities for agencies and private partners in the I-15 Freight MEP strategies.

Table 4-2: Stakeholder Roles

Stakeholder	Role for Strategies
State DOTs	<ul style="list-style-type: none"> • Leadership for supportive programs, including providing guidance, tools for outreach and communications, promoting awareness of truck parking needs and success stories. • Lead strategies for expanding or building facilities in the state ROW. • Lead strategies to implement pre-TPAS signage and technology-based TPAs solutions. • Integrate real-time parking information with existing state traveler information systems. • Support local and regional policy development. • Elevate importance of truck parking in State Freight Advisory Committees and through the I-15 Mobility Alliance.
Regional Agencies and MPOs	<ul style="list-style-type: none"> • Promote and integrate truck parking needs into regional planning processes and project programming. • Highlight needs, successes and innovative truck parking solutions to regional governance boards and commissions. • Support policy development and establish regional standards for truck parking zoning updates.
Local Agencies	<ul style="list-style-type: none"> • Work with shippers and freight operators to develop supportive policies to expand truck parking capacity within existing industrial and commercial areas. • Lead strategies with the private sector to designate parking zones and spaces that can be reserved near logistics centers. • Partner with commercial and industrial landowners to add amenities to support truck parking in designated areas. • Develop and implement policies that require truck parking to be integrated with industrial zoned areas. • Support strategies that allow for truck parking at local-agency facilities during off-hours.
Shippers and Freight Operators	<ul style="list-style-type: none"> • Partner and collaborate with agency-led forums to help inform truck parking needs and policies.

Stakeholder	Role for Strategies
Landowners	<ul style="list-style-type: none"> • Participate in strategies that allow for flexible use of existing privately-owned sites to allow truck parking during designated times or for emergency parking needs. • Build new truck parking facilities in areas that provide access to shipping and logistics centers.
Private Technology Companies	<ul style="list-style-type: none"> • Develop and implement technology solutions to help guide trucks to available parking or reserve spaces. • Provide technology systems to support real-time truck parking availability systems. • Cultivate business partnerships to expand truck parking options within the urban, fringe and rural areas of the I-15 Corridor.

4.4 Engaging the Private Sector

There has been strong interest from the private sector throughout the development of the I-15 MEP. Several technology developers responded to the RFI for unique or innovative technology-based solutions, and these ranged from companies that offer technologies and systems to support detection and wayfinding, to partners that could establish and facilitate business models that could identify land uses and land owners and expand that land use to allow for shared or dedicated truck parking facilities. Allowing flexible usage of existing land in high-density freight areas or implementing policies that could change requirements for truck parking in industrial and commercial areas will place new responsibilities on private landowners. Many of the technology strategy recommendations, as well as several policy recommendations, are dependent on sustaining involvement from various private sector interests.

As noted in the prior subsection, there are several key roles in the I-15 MEP and strategies that will need sustained private sector involvement and leadership. Whether it is a shipper/operator, private landowner, technology provider, contractor, or business partner, there are many potential roles for private entities and the public sector alone cannot successfully address the needs for truck parking within the I-15 Corridor. Fostering partnerships with private entities will be essential to advancing policies, expanding capacity and providing effective, flexible and innovative truck parking options throughout the corridor.

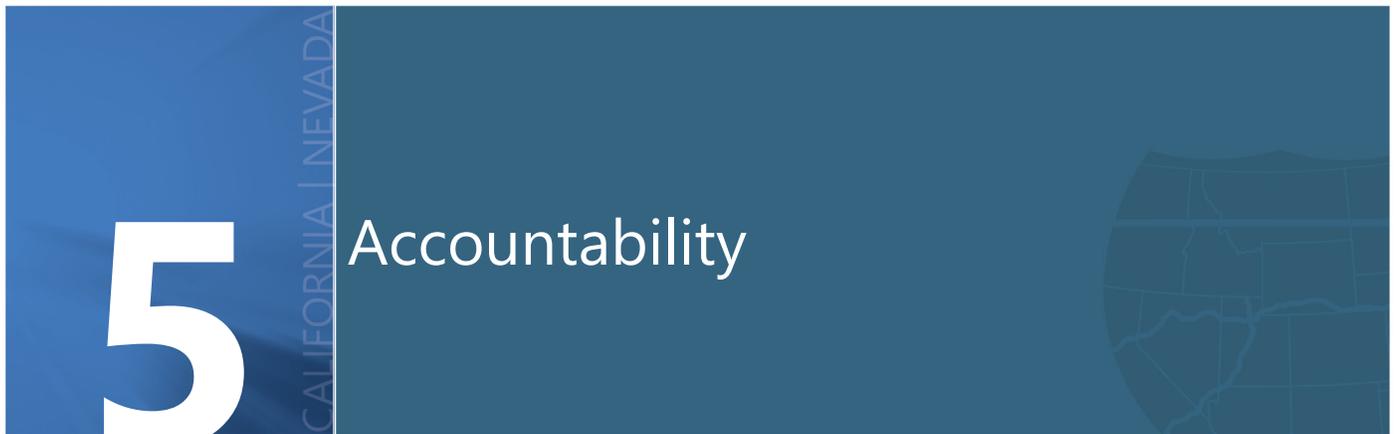
Strategies for engaging and sustaining involvement of the private sector in I-15 truck parking initiatives include:

- Existing forums and groups, including the I-15 Mobility Alliance, Move I-15, and State Trucking Associations provide opportunities to reach key freight and shipping stakeholders that will have a vested interest in advancing discussions on truck parking and truck parking needs. Agencies can target communications about upcoming truck parking projects and solicit input on priority truck parking locations through these groups. These forums and groups also have web presence and social media that can help to promote awareness of various initiatives or upcoming projects.
- Local agencies have a primary role in developing policies aimed at land use changes and new regulatory requirements for parking. Identifying key landowners in industrial areas or landowners that

have property in desirable truck parking areas and including them in the policy development process will help to foster these important stakeholders as partners in the process.

- The technology RFI was able to garner significant interest due in part to the outreach activities that were used to promote awareness of the RFI. Trucking associations, transportation industry associations (including the National Operations Center of Excellence), and freight-related technical committees of the Transportation Research Board were encouraged to share the official notice of the RFI through their membership email lists. This helped to promote the MEP to a much broader audience than might have otherwise been aware of the RFI being published through agency procurement notifications. Similar outreach can be facilitated for future opportunities in the I-15 corridor.

Additionally, as part of the California Statewide Truck Parking Study, Caltrans will develop a Public-Private Partnership (P3) Implementation Framework to help with policy analysis, planning, and procurement of private sector expertise for P3s for truck parking facilities. This framework shall identify existing Caltrans capabilities, policies, and processes as they may be related to P3 authorizing legislation and statutory frameworks; P3 implementation regulatory frameworks; and Department-wide contracting processes for P3s as well as other forms of innovative contracting. The outcome of this task is expected to result in identification of the components of a successful P3 implementation framework for truck parking, including the statutory requirements, governing procedures, project selection, project planning, P3 program organization, and P3 value propositions.



A critical element of conducting a planning study such as this I-15 Freight MEP is to ensure that the partnerships and collaboration established as part of the process do not end when the study is published. Thus, this chapter outlines an approach to keep this effort alive and assess progress of carrying out the implementation plan.

5.1 Performance Management

As this effort came out of the pre-existing I-15 Mobility Alliance, a consortium of four state DOTs and more than 90 other public and private sector stakeholders, the Alliance is the logical “keeper” of this study’s action items. The I-15 Mobility Alliance maintains a set of activities that are updated at regular intervals, including a list of Interregional Projects of Immediate Significance – projects that are mutually beneficial to stakeholders along the entire corridor; and the Corridor System Mater Plan – which tracks the operational performance of I-15 with regards to congestion, safety, and infrastructure condition. Ideally, as Alliance members conduct improvements along the corridor, performance improves, or if it declines, provides a mechanism for identifying issue areas that require new solutions.

In much the same manner, the Alliance can take on a performance review of the I-15 Freight MEP implementation plan bi-annually, reporting out accomplishments, action item status, and outstanding needs. This can be performed by a simple questionnaire to applicable agencies (e.g., Caltrans, NDOT, MPOs, local jurisdictions) to learn what has been completed, what is underway, and what obstacles may stand in the way of further implementation. See Figure 5-1 for a sample questionnaire.

5.2 Progress Evaluation

The results of the performance assessment will be summarized in a fact sheet to report out the status of implementation, track progress from year to year, and present any findings related to operational improvements. All this information will be made publicly-available on the I-15 Mobility Alliance website. At the will of the Alliance leads, enhanced fact sheets for specific use by legislators or lobbyists may be produced to seek additional funding for implementation.

Figure 5-1: Sample Performance Management Questionnaire

Dear Agency,

The I-15 Freight Mobility Enhancement Plan was completed in 2020 by the Nevada Department of Transportation, in conjunction with Caltrans and regional transportation agencies along the I-15 Corridor from Las Vegas, Nevada to San Diego, California. The stated goals of the Plan were to:

"Identify strategies for providing effective urban truck parking along the I-15 Corridor. Effective urban truck parking can be defined as reliable, secure, affordable, with the amenities drivers need, and supported by the surrounding community. Develop an actionable implementation plan that defines the partnerships, technology, policy, and funding frameworks needed for successful implementation, collaboration, and economic partnership."

The recommendations resulting from this study were intended to provide state, metropolitan, and local planning agencies with the tools they need, in the form of best practices and templates, to address the needs for urban truck parking within their jurisdiction.

We desire to assess the effectiveness of this Plan and acknowledge the progress any agency may have made implementing the recommendations. Please take a few minutes to answer the following questions. We acknowledge that some of these questions may be very difficult to answer in the absence of driver input. For instance, if truck parking is available but drivers are choosing to park in undesignated areas, this could be an indication drivers lack information about available parking, don't feel safe parking there, can't afford to park there, can't access the amenities they need, don't feel it is located where needed, a combination of all of these, or some other factor or combination of factors. Please use your best judgement with data available to you.

1. How reliable is truck parking within your jurisdiction? (Reliability can be defined as a sufficient amount to serve truck drivers where and when its needed.)
 - a. Very reliable
 - b. Somewhat reliable
 - c. Not reliable
2. How secure are the truck parking options within your jurisdiction? (Security can be defined as free of physical harm to the drivers and risk of damage or theft to their equipment or loads.)
 - a. Very secure
 - b. Somewhat secure
 - c. Not secure
3. How affordable are the truck parking options within your jurisdiction? (Affordable can be defined as an amount drivers are willing and able to pay.)
 - a. Very affordable
 - b. Somewhat affordable
 - c. Not affordable
4. Do the truck parking options within your jurisdiction have the amenities drivers need? (Restroom are a basic necessity. Other amenities drivers desire include food options, showers, laundry machines, convenience store, green space, striped/designated parking, Wi-Fi, drivers lounge.)
 - a. All truck parking options include restrooms and most desired amenities
 - b. Some truck parking options include restrooms and some desired amenities
 - c. Few to no truck parking options include restrooms or desired amenities
5. How frequently do residents complain about trucks parking in nondesignated areas?
 - a. Frequently
 - b. Occasionally
 - c. Rarely
6. Briefly describe any truck parking policies, programs, infrastructure projects or technologies that were implemented within your jurisdiction in the past two years. These could have been implemented by your agency, a partner agency, private industry, or a partnership between any of these.



A core component of this study was to explore possible technology solutions for improving truck parking in dense urban environments. Research into freight and truck parking applications yielded some promising information about the current state of the practice as it pertains to interstate truck parking approaches, how and where truckers access information through mobile applications, and the types of applications that are most prevalent in the freight industry. In addition to collecting information from a review of literature and planning documents, it was felt that an industry RFI would provide information about recent implementations and emerging capabilities that might not be widely available in published literature. The process and findings of the RFI are described in the *Urban Truck Parking Technology Exploration Technical Memorandum*. As this was a unique manner of gathering data and information, a review of some of the lessons learned are discussed in this chapter in the hopes of capitalizing on the successes achieved in this RFI, and improving the feedback received in future RFIs.

Future lessons learned relative to policy development and policy changes are yet to be determined. A significant number of the policy recommendations within the I-15 MEP will be the responsibility of the local agencies. The ability for local agencies to develop and implement these policies will be determined by several factors, and should include active engagement of landowners and freight industry representatives. Elements such as the timeframe to develop policies, supporting information needed to inform policy development and adoption, or special circumstances that might limit requirements of new policies on existing land uses and landowners are important considerations that will be beneficial to share among peer agencies. While policies will be sensitive to the local political environment and influences, some level of policy consistency among I-15 peer agencies will help to benefit the broader corridor community.

6.1 Technology Solutions

6.1.1 Successful Elements

The technology solutions RFI needed to reach a wide and diverse set of parties with relevant input to share. To that end, the team leveraged contacts in various associations and research groups to spread the word to their members. By doing so, the notice of the RFI was posted through national association channels, including the National Operations Center of Excellence electronic newsletter, the Transportation Communications Newsletter daily email blast, and two Transportation Research Board urban freight-focused committees. The RFI posting also was picked up by several lead-sharing services, where several of the respondents indicated they were made aware of its availability. In addition, stakeholders who had participated in interviews and prior

project webinars and workshops received direct notification of the RFI. A total of eight responses were received, strengthening understanding of some known technologies, and introducing new applications of technologies being deployed to solve related problems.

The study team tried to identify in the RFI all possible inputs that would be helpful, however it is often the case that the process of gathering information introduces needs for additional information. For that reason, the RFI left open the option for follow-up interviews which proved very useful for clarifying and gathering additional information.

6.1.2 Areas of Improvement

To ensure all respondents had access to the same information, the RFI process followed similar rules employed for requests for proposals (RFPs) including one pre-submittal meeting, requiring all questions be submitted in writing, and prohibiting contact with anyone other than a designated procurement specialist. Due to the sensitive and competitive nature of some technologies, some respondents hesitated to ask questions in an open meeting or in writing that would be posted for others to see. In addition, fairness is less important when the agency is only requesting information.

A more open and applicable process is that followed by NDOT's Research Program for soliciting proposals for research topics. The RFP instructions clearly state: "Please work directly with the DEPARTMENT's Project Champions...in order to develop your research proposals." Points are even rewarded for "[describing] the efforts made in seeking and utilizing the project champions' input in developing [the] full proposal." Had a similar process been followed it is believed that more focused submittals may have been received.

Because of certain confidentiality clauses in the RFI it made it difficult to summarize some of the specific technologies or the findings of the RFI in a report, including the use of submitted graphics. In instances where RFIs will be used for research purposes, as for this study, it should be indicated prominently in the introduction that by submitting a response the participant agrees to allow the requesting agency to use all graphics and text in a summary report, unless otherwise indicated, and that the requesting agency will appropriately cite the source of all such material. In most cases the submitters want their information distributed to a wider audience. Including portions of their submittals in a summary report rewards them for taking the time to prepare a response and makes for a more robust and complete report.

6.2 Policy Influences

Most of strategies identified for the I-15 MEP focus on needed policies and improved processes. The responsibility for developing, implementing and overseeing adherence to the policies recommended in this plan are largely within the local agencies. There will be many lessons learned as agencies begin to examine the potential for developing and shaping new policies that can help to advance truck parking initiatives, including stakeholder engagement, support or challenges from landowners, ability to implement new policies within existing land ownership and regulatory environments, and the overall processes for changes to zoning and requirements. Local agencies will need to determine what support, if any, they need from regional and state agencies in crafting, implementing and overseeing certain policies. It will be important for agencies to share experiences and lessons learned with their peers to enable more widespread interest in implementing policy-level changes within local jurisdictions.