Urban Freight Case Studies:

Los Angeles

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Prepared for:
U.S. Department of Transportation
Federal Highway Administration
Office of Freight Management and Operations

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URBAN FREIGHT CASE STUDIES

The Federal Highway Administration (FHWA), Office of Freight Management and Operations, developed the Urban Freight Cases Studies as a way to document notable practices in urban goods movement. These case studies provide information on freight-related initiatives that mitigate congestion and improve the safety and efficiency of commercial vehicle travel in urban areas. Orlando is one of four urban areas selected for study. The other areas are Los Angeles, New York City, and Washington, DC.

In order to develop the most useful case studies, FHWA conducted an extensive review of freight-related projects and strategies that provide practical information and transferable solutions to the challenges that confront urban goods movement. The project team also conducted site visits and interviews with organizations involved in project implementation, including state departments of transportation (DOTs), metropolitan planning organizations (MPOs), city governments, and private-sector businesses. The results of the site visits and interviews are highlighted here.

LOS ANGELES

As this region's largest city, Los Angeles plays an important role in developing and supporting business and trade. Because of its ideal location as a hub for global trade, its large manufacturing sector, and its massive size and population, the City of Los Angeles' transportation system carries a significant share of the nation's freight. Approximately 35 percent of the nation's waterborne freight travels through the gates of the Port of Los Angeles and the Port of Long Beach, also known collectively as the San Pedro Ports.[1] The City's major airports also generate substantial amounts of truck traffic associated with the delivery of air cargo. Southern California residents and the rest of the nation depend on Los Angeles' transportation system to smoothly transport goods needed to support local, regional, and national economies.

The primary elements of Los Angeles' freight management, operations, planning, and implementation activities include:

[1] U.S. Department of Transportation, Federal Highway Administration, *Freight Facts and Figures 2008* (Washington, D.C.: 2008), figure 3-16, available at www.ops.fwha.dot.gov/freight/freight_analysis/nat_freight_stats/docs/08factsfigures/index.htm.

LOS ANGELES (continued)

- City of Los Angeles *Goods Movement Improvement Plan* that identifies recurring issues and deficiencies related to goods movement. Geographical Information Systems (GIS) analysis is a major component of the plan.

- Tiger Teams Curbside Management Program that improves traffic flow by monitoring designated corridors and enforcing parking regulations.

Geographic Description

Spanning almost 500 square miles, Los Angeles is the nation's second largest city, with a population of 3.8 million (Figure 1).[2] To support this populous City and its numerous freight generators, the Los Angeles area has one of the world's most expansive highway systems. The Los Angeles County highway system consists of 527 freeway miles and 382 miles of conventional highways.[3]

Los Angeles freeways carry 350,000 trucks and 7 million truck miles daily,[4] much of which is generated by the Los Angeles and Long Beach Ports, located less than 20 miles south of the downtown area. The main Interstate connecting the urban area to the ports is I-710, which carries high truck volumes. Like transportation networks in other large cities, the transportation system in Los Angeles is constrained by its existing infrastructure, which was built almost 100 years ago. Moreover, growth in passenger travel and the volume of freight moved has further strained highway capacity and exacerbated congestion in the Los Angeles metropolitan area. According to the Texas Transportation Institute, Los Angeles has the worst traffic congestion in the country, both in terms of annual delay per traveler and wasted fuel.[5] Thus, the management of goods and services delivery is an important issue facing the area.

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[2] U.S. Department of Commerce, Census Bureau, *Los Angeles City Quickfacts* (Washington, DC: 2008), available at quickfacts.census.gov/qfd/states06/0644000.html as of June 5, 2009.

[3] Los Angeles County Metropolitan Transportation Authority, 2003 Short Range Transportation Plan for Los Angeles.

[4] Susan Bok, Los Angeles Department of Transportation, *A Question of Balance: Land Use and Freight Movement Issues in Los Angeles*, presented at the TRB 87th Annual Meeting, Washington, DC, January 16, 2008.

[5] David Schrank and Tim Lomax, Texas Transportation Institute, The Texas A&M University System, 2007 Urban Mobility Report, available at http://mobility.tamu.ede.

Geographic Description (continued)

Figure 1: The City of Los Angeles

Source: Los Angeles Department of Transportation, The City of Los Angeles Transportation Profile (Los Angeles, CA 2009).

Institutional Involvement

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS (SCAG)

SCAG is a leader in promoting goods-movement planning. As the MPO for six counties in California (Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial), SCAG is responsible for maintaining and updating regional transportation plans for this area. Given this daunting task, SCAG has excelled at keeping freight at the forefront of the planning process using several techniques.

SCAG has supported goods movement planning through the funding of projects and studies, several of which are discussed in this case study. With the objective of improving truck circulation in the downtown Los Angeles area and thus keeping the city economically competitive, SCAG awarded the City a two-year grant of $145,000 to begin a *Goods Movement Improvement Plan*.[6] After first-phase results were reviewed, SCAG provided the City with an additional $70,000 for the second phase of the study, and $50,000 for the third phase.[7]

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[6] Ibid.
[7] Ibid.

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS (SCAG) (continued)

SCAG also provides other means of support for the advancement of goods movement in the region. In 1996 SCAG brought together both public- and private-sector stakeholders and formed the Goods Movement Advisory Council to discuss the region's freight transportation issues and needs. The Advisory Council supports the development of policies and programs aimed at improving goods movement while fostering better working relationships between the trucking industry and the private sector.[8]

LOS ANGELES DEPARTMENT OF TRANSPORTATION (LADOT)

LADOT has devoted much time and effort to improving truck mobility in and around the City. As part of its work on the *Goods Movement Improvement Plan*, LADOT identified 75 locations that affect truck mobility in the City. This approach can be used for similar planning applications in jurisdictions throughout the United States.

Like other state DOTs, LADOT funds, plans, designs, and constructs transportation improvements; manages traffic operations, including the design, installation, and timing of traffic signals; and enforces parking and other regulations. It also sponsors transportation-related research and publishes of variety of studies. Freight transportation is a major component of LADOT's research program, project identification, and planning initiatives.

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY (METRO)

Metro is one of six County Transportation Commissions (CTCs) in Southern California. It is responsible for funding and programming all transportation projects in the region. Tasked with the assignment of allocating federal transportation funds, Metro has been a major source of funding for SCAG and other agencies involved in freight planning and project implementation.

NOTABLE PRACTICES

GIS Analysis

LADOT used GIS analysis to identify truck routes, truck circulation and access problems, hazardous locations, and corrective measures. LADOT undertook this project as part of the effort to develop the *Goods Movement Improvement Plan*.

[8] Ibid.

METHODOLOGY

The first step was to identify the study areas. Phase 1 examined the industrialized area east of downtown Los Angeles. Phase 2 focused on City suburbs, including Northeast Los Angeles and the San Fernando Valley. Phase 3 covered areas not explored in the first two phases, including Hollywood, Mid-City, South Los Angeles, West Los Angeles, Los Angeles International Airport, and the Port of Los Angeles. Sub-areas were identified on an as-needed basis.

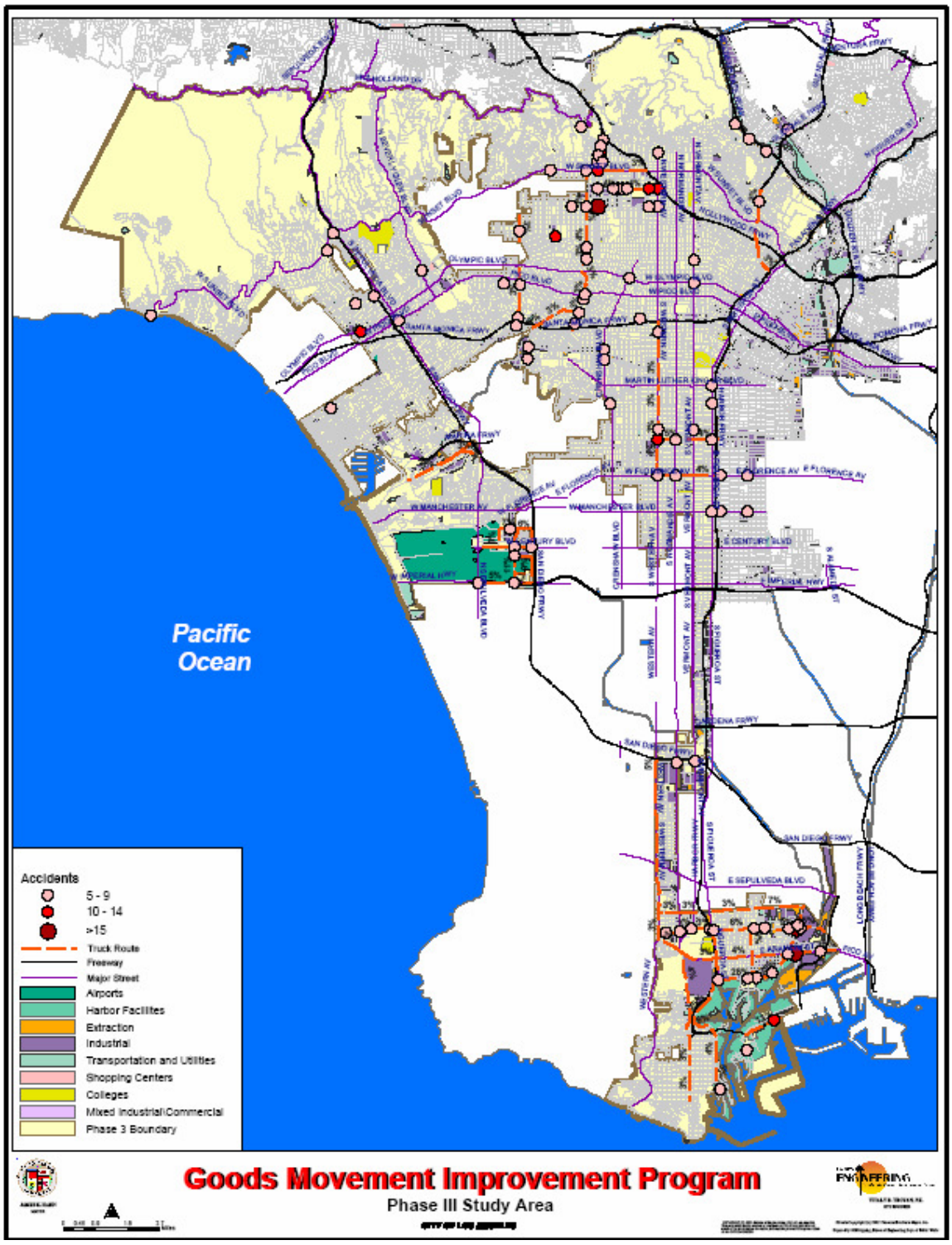
After the study area for each phase was defined, work began on the impediments to efficient goods movement. LADOT identified routes that trucks use to travel between Interstates and local freight attractors and generators by compiling truck count data and information from trucks studies from the City of Los Angeles. Truck count data were geo-coded to illustrate areas experiencing high truck volumes.

Using the data, LADOT calculated the truck share of all traffic on all roadways and designated de-facto truck routes. Truck routes were defined as roads that have existing truck volumes of 6 percent or greater for the downtown area and 3 percent or greater for suburban areas. These de-facto truck routes and those identified in previous studies were added to the City's GIS database.

LADOT also added other information to the GIS database, such as truck-generated land uses, freeway entrances and exits, railroad grade crossings, and the percentage of trucks using specific roadway segments.

Moreover, LADOT collected data on truck-related crashes that occurred over the previous five years and the Level of Service (LOS) at various intersections on designated truck routes. Locations with more than five crashes over a five-year period were geo-coded. Figure 2 illustrates the type of map produced for each phase of the study.

Figure 2: Sample GIS Map



Source: Los Angeles Department of Transportation, *Improving Truck Movement in Urban Industrial Districts: Application of GIS, Accident and Field Data* (Los Angeles, CA: 2005).

METHODOLOGY (continued)

After fully documenting the existing system in the GIS, LADOT gathered input through interviews with various stakeholders, including trucking companies, local businesses, other agencies, and elected officials. It gained input on issues that hinder efficient goods movement through and within the City. These issues were documented and, where applicable, included in the GIS database.

LADOT then sent its engineers out to the field to observe problem locations identified by stakeholder input, truck-volume data, and crash data. By observing the circulation of trucks around specific locations throughout the City, LADOT engineers were able to better describe the real-world problems experienced by commercial vehicle operators. The documentation produced by LADOT engineers included the exact location, time of day, description of issues encountered, photographs, and videos.

The research identified 75 problem locations: 43 in greater downtown Los Angeles, 20 in Northeast Los Angeles and the San Fernando Valley, and 12 in the rest of the City (Hollywood, Mid-City, South LA, West LA, Los Angeles International Airport, and the Port of Los Angeles). Table 1 lists the wide-ranging issues identified during the research.

Table1: Recurring Issues and Deficiencies

Issues Encountered	Deficiencies in System
• Turning problems at intersections	• Inadequate curb return radii (25 feet or less)
• Trucks blocking road while backing into docking facilities	• Inadequate lane width (10 feet or less)
• Trucks blocking road while loading/ unloading on the street	• Inadequate arterial street access to freeway ramps
• Long queues at railroad crossing gates	• Insufficient length of staging areas for off-street loading
• Long queues at railroad crossing gates	• Limited availability of truck staging/ loading areas
• Delays at traffic signals	• Signal operations and timing not optimized for trucks
• Slowing of through truck traffic	• On-street parking restricting truck access
• Severe truck bottlenecks	• Lack of curb-side loading zones
• Delivery trucks parked illegally	
• Deteriorated street surfaces and faded lane strips	

METHODOLOGY (continued)

Based on the detailed problem descriptions, LADOT developed a list of potential solutions that fall into four categories: 1) Operational Improvement Measures, 2) Engineering Improvement Measures, 3) Capital Improvement Measures, and 4) Programmatic and Policy Measures. Table 2 illustrates some of the specific problems identified in the three phases of the study and recommended solutions.

Through extensive marketing efforts, the City of Los Angeles continues to push for the implementation of these solutions. As a result, the City received $2 million funding from Metro for implementation of six projects that improve the efficiency of goods movement.

Table 2: Examples of Project Identified in the Goods Movement Improvement Plan

Phase	Problem Location	Problem Description	Type of Solution	Specific Solution
1	Alameda St & Freeway 10	Long left turn queue on NB Alameda at EB I-10 rwy on-ramp, high truck volumes and truck stop with entry/exit problems	Capital Improvement	Widen roadway and add 2nd left turn lane (1999 RTIP funded); coordinate with Alameda CTA engineers
1	Alameda St & 8th St	Congestion at main entrance to Produce Mart, trucks entering/ exiting public scale block intersection	Engineering Improvement	Reconfigure public scale driveway
1	Central Ave & 5th St	Trucks back into cold storage docks blocking thru traffic on Central & Park in two way left turn lane	Operational Improvement	Provide temporary legal parking or staging area nearby
1	Central Ave & 16th St	Trucks splinter telephone pole on NE corner when turning right onto Central Ave	Capital Im-provement	Widen roadway and increase right lane from 10 to 18 ft (1999 RTIP funded)
	San Pedro St & 11th St	Semi-trailers clog narrow 11th St as they enter and exit from the city Produce Mart	Engineering Improvement	Design an internal circulation plan for City Market Produce Center
1	San Julian be-tween 9th & 11th Sts	Trucks block San Julian while loading/unloading behind City Produce Mart	Engineering Improvement	Consider extending San Julian as a 1-way street

Table 2: (continued)

Phase	Problem Location	Problem Description	Type of Solution	Specific Solution
1	4th St & I-5 SB on/off ramp	Queuing on off-ramp at stop sign waiting for gap on 4th St.; visibility hindered by overpass (doubletrailer semi making left from off-ramp forces cars w/ ROW to stop)	Engineering Improvement	CalTrans has installed a signal
1	Soto St & I-60 Freeway off-ramp	Trucks back up on off-ramp while waiting for signal & have difficulty turning left onto Soto St	Operational Improvement	Increase left turn interval when ramp traffic is heavy
2	San Fernando south of Lankershim Blvd	Staging in the two way left turn lane	Programmatic and Policy Improvement	Designate area for truck staging
2	Branford St west of San Fernando	Trucks double parking	Operational Improvement	Install curbside loading zones
3	Highland Ave at Sunset Blvd	Rear-end collisions involving trucks on southbound Highland Ave	Operational and Capital Improvement	Improve speed enforcement on Highland Ave; widen curb return at NW corner of Sunset Blvd and Highland Ave when feasible
3	Melrose Ave & First St	Trucks sideswiped due to narrow southbound curb lane on Western Ave and on-street parking along west side of Western Ave	Operational Improvement	Prohibit parking on west side of Western Ave along area of left turn channelization to provide wider southbound curb lane
3	Los Angeles Port Area	Poor roadway condition, substandard roadway width and lack of signalization on Alameda Street	Engineering, Capital and Programmatic Improvements	Consider installation of traffic signal at Alameda & Henry Ford Ave; Implement Port of LA plans to improve Alameda St; escalate roadway maintenance schedule for Alameda St

PROJECT COSTS/BENEFITS

The costs associated with the development of a GIS database will differ by agency and jurisdiction and depend on the availability of transportation-related data. Many agencies, including LADOT, maintain a database of roadways and other transportation facilities. In this case, the costs associated with the development of a freight-focused GIS database include the collection of truck-specific data, analysis, and report preparation. Although the initial cost of developing a similar database may be substantial for a smaller jurisdiction, the tool can be used by several agencies, updated easily, and tailored to meet the needs of other agencies. By creating this system of documentation and analysis, future planning efforts are enhanced.

LESSONS LEARNED

The lessons learned during the development of a freight-focused GIS database can be transferred to other jurisdictions and agencies undertaking similar projects. Several of the lessons learned during this project include:

- Get input from the trucking industry and other freight-related businesses, associations, the police department, agencies focused on safety, and the community. The trucking industry, in particular, has a bird's eye view of issues and the location of roadway problems areas.
- Share information with all stakeholders.
- Foster communication and develop better relationships with the private sector.
- Shift the focus of planning from minimizing the negative effects of truck traffic to improving transportation operations.
- Proactively identify and correct transportation deficiencies.

TRANSFERABILITY

The LADOT strategy to locate and document truck-related problem areas and develop solutions can be adopted and implemented by any size jurisdiction. With slight modifications, this strategy can be simplified to fit the needs of a smaller community or enhanced to develop a more extensive database. By using GIS to document and analyze goods movement or other transportation issues, agencies can build a tool that can be easily updated to support future planning efforts.

TRANSFERABILITY (continued)

According to LADOT, an agency needs to collect data on land use, traffic and truck volumes, and truck crash rates, in order to begin work on developing a freight-focused GIS database. Although many jurisdictions maintain GIS programs with road and land-use layers, some have not yet begun to geo-code information on traffic volumes and crash rates. Therefore, the current state of an agency's GIS program and availability of analytical staff will determine the cost and effort needed to develop a freight-focused GIS database.

Tiger Teams Curbside Management Program

Like any city with a vibrant central business district, the City of Los Angeles has had problems with managing curb space. As the percentage of just-in-time deliveries and the overall amount of goods delivered has risen, the demand for curb space in urban centers also has increased, leading to congestion on downtown City streets. The City of Los Angeles could not meet the increased demand for curb space because of infrastructure constraints, regulations, and other factors, and so LADOT initiated an enhanced enforcement program called Tiger Teams.

Named for its aggressive strategies, the Tiger Teams program changed the perception of parking enforcement in downtown Los Angeles. This targeted enforcement program deploys 15 uniformed traffic control officials and 10 tow trucks during the peak hours to monitor designated corridors in search of parking violations, and this has led to a drastic decrease in the number of violators.

Before this program was introduced, curb-space management in Los Angeles consisted of loosely enforced regulations that were often ignored. Although tickets were issued to parking violators, citations failed to deter offenders. In fact, some violators received nearly 100 tickets per year. To better understand the problems facing truck drivers and couriers, LADOT set up interviews with repeat offenders. From these discussions, LADOT received input that helped identify and establish loading zones in areas where they were most needed.

Tiger Teams Curbside Management Program (continued)

After addressing the inadequate loading and unloading space issue, the City introduced the Tiger Teams to enforce curb-space regulations. Before officers were sent out, an extensive marketing campaign was launched to inform the public of the new enforcement program. Although initial results left room for improvement, drivers soon got the point that violations would not go unpunished.

MAJOR FINDINGS AND CONCLUSIONS

LADOT's research strategy, project development, and implementation efforts serve as examples to others wishing to improve their goods movement system. Its method of identifying and documenting truck-related problem locations in their downtown area has helped remove many obstacles that once stood in the way of efficient goods movement. The following strategies and practices identified in this case study can be implemented in other areas around the country:

- **Application of GIS to identify truck routes, truck circulation and access problems, truck safety concerns, and corrective measures.** LADOT demonstrated that the development and implementation of a freight-focused GIS database can help jurisdictions move freight more efficiently, thereby enhancing the economic vitality of an area. Agencies can use this tool to plan infrastructure and operations improvements.

- **Initiate an enhanced enforcement program.** Implementation of a targeted enforcement program, such as the Tiger Team Curbside Management Program, improves traffic flow in urban areas and enhances goods movement.

CONTACTS

Susan L. Bok, AICP

Supervising Transportation Planner

Los Angeles Department of Transportation

100 S. Main Street, 9th Floor

Los Angeles, CA 90012

Tel: 2139728623

Fax: 2139728610

sbok@dot.lacity.org

Zaki Mustafa, P.E.

Chief of Field Operations

Los Angeles Department of Transportation

100 S. Main Street, 10th Floor

Los Angeles, CA 90012

Tel: 2139728436

Fax: 2139728410

Zaki.Mustafa@lacity.org

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16. Abstract

This report documents notable practices in urban goods movement. Los Angeles is one of four urban areas selected for study. The other areas are New York City, Orlando, and Washington, DC.

The case studies provide information on freight-related initiatives that mitigate congestion and improve the safety and efficiency of commercial vehicle travel in urban areas. To develop the most useful case studies, FHWA conducted an extensive review of freight-related projects and strategies that provide practical information and transferable solutions to the challenges that confront urban goods movement. FHWA also conducted site visits and interviews with organizations involved in project implementation, including state departments of transportation, metropolitan planning organizations, city governments, and businesses.

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Federal Highway Administration
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1200 New Jersey Avenue, SE
Washington, DC 20590
Phone: 202-366-9210
Fax: 202-366-3225
Web site: www.ops.fhwa.dot.gov/freight

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U.S. Department of Transportation
Federal Highway Administration
Office of Freight Management & Operations
1200 New Jersey Avenue, SE
Washington, DC 20590

Phone: 202-366-0408
Fax: 202-366-3225
Web site: http://www.ops.fhwa.dot.gov/freight

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