CHAPTER 3.5

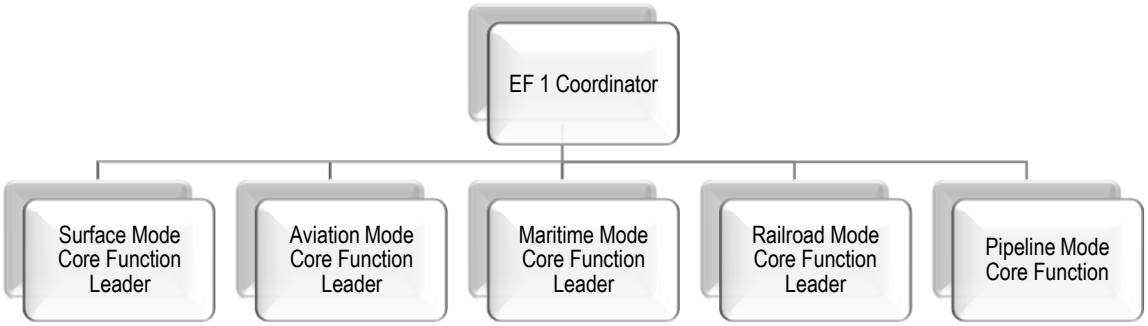
SAFETY, SECURITY AND RESILIENCY

The freight system is a complex network that is susceptible to natural disasters and human-caused events. Whether the result of natural processes, accidents, criminal activity, or terrorist attack, freight system disruptions can have serious, sometimes devastating consequences. California's economy is dependent on the strength, reliability and resiliency of our freight sector, and disruptions can impact the economic health of individual companies, communities, regions, the state, or even the nation. It is essential to ensure that the freight transportation system is able to prevent and minimize negative impacts from such events and to quickly recover when they occur. **The state's entire transportation system needs to strengthen its resilience and the freight system needs to be particularly adaptable so that emergency supplies can be transported and distributed when and where needed.**

EMERGENCY SUPPORT FUNCTIONS

The State of California is prepared to respond quickly and effectively to large-scale safety and security events on a 24-hour basis. When an event or potential event is first detected, the California Office of Emergency Services (Cal OES) is activated to a level appropriate to the magnitude of the threat. All State agencies and volunteer organizations that comprise the State Emergency Response Team are grouped into 17 Emergency Support Functions (ESF) to carry out coordination and completion of assigned missions. These functions represent specific response activities that are common to all disasters. Each ESF comprises one or more primary lead agencies and several other supporting agencies or organizations.[105] (ESF #18 – Cyber Security is under development.)

FIGURE 69. EF 1 - TRANSPORTATION ORGANIZATION DIAGRAM



As shown in the previous figure, the State-level Emergency Function (EF) 1 activities support the coordination of transportation across various modes, including surface, maritime, railroad, aviation and pipeline. The EF 1 lead agency, the California State Transportation Agency (CalSTA), has delegated to the California Highway Patrol (CHP) and Caltrans, the responsibility to provide expertise primarily for surface transportation, and has identified stakeholders from primary and supporting agencies to take the coordination lead for other modes of transportation. According to the State of California Emergency Plan (SEP), EF 1 – Transportation "assists in the management of transportation systems and infrastructure during domestic threats or in response to incidents."

Caltrans specific responsibilities directly related to EF 1 activities:

- Repair, maintain, and operate the SHS during and following emergencies and disasters;
- Assess transportation infrastructure and traffic conditions;
- Assess damage to highway system and establish route priorities during recovery efforts;
- Operate as liaison with the Federal Highway Administration (FHWA) regarding the status of the SHS;
- Operate as liaison with the United States Department of Transportation (US DOT) regarding the status of the SHS;
- Provide transportation policies and guidance as needed;
- Coordinate state agency plans, procedures, and preparations for route recovery, traffic regulation and air transportation; and
- Develop routing and directions for the movement of incident victims out of an impacted area and the delivery of necessary personnel and medical supplies to local medical facilities and shelters.

CHP specific responsibilities directly related to EF 1 activities**:**

- Act as Director of the State Motor Transport Division during times of emergency;
- Perform tasks assigned in the California Emergency Resources Management Plans for transportation during times of a war emergency;
- Continue emergency traffic regulation and control procedures as required;
- Assist Caltrans with traffic route restoration;
- Provide police escorts on closed routes;

- Activate appropriate CHP Emergency Resource Centers to coordinate resources and ensure the timely dissemination of intelligence information;
- Secure routes, regulate traffic flow, and enforce safety standards for evacuation and re-entry into evacuated area;
- Coordinate interstate highway movement on regulated routes with adjoining states;
- Establish highway safety regulations consistent with location, type and extent of emergency conditions; and
- Support Caltrans with traffic route re-establishment, and continue emergency traffic regulation and control procedures as required.

HAZARDOUS MATERIALS TRANSPORT

After the terrorist attacks of September 11, 2001, securing hazardous materials became increasingly important. Hazardous materials – industrial materials that are flammable, corrosive, toxic, explosive, or infectious – play a vital role in the US economy. They are used by industries, such as farming, mining, manufacturing, and pharmaceuticals. They take the form of raw materials, fertilizers, fuels, constituent parts, and other essential inputs. Of all hazardous materials, Toxic Inhalation Hazard (TIH) are among the most dangerous. Chlorine gas and anhydrous ammonia are the most common TIH chemicals; others include sulfur dioxide, ethylene oxide, and hydrogen fluoride, and a variety of other products that are important manufacturing inputs. The potential consequences of a TIH release depend on the severity of the accident or event.

One widely discussed risk-mitigation proposal involves rerouting trains containing TIH tank car loads – for example, by choosing a route with less population exposure. TIH tank cars passing through major population centers were recognized as potential chemical weapons. Proponents of mandatory rerouting of TIH products argued that diverting trains around cities would place fewer people at risk of a terrorist attack, and would also decrease risks due to collisions.

Many hazardous chemicals transported over long distances by rail, and for shorter distances by truck, may be particularly vulnerable to sabotage and disruption. At the federal level, US DOT and the Transportation Security Administration (TSA) have sought to reduce the risk of terrorist attacks on freight. TSA worked with railroad carriers to implement the TIH Risk Reduction Program. TSA assumes that the risk of hazardous materials transport is directly proportional to the dwell time (the length of time that a rail car sits at a particular location), volume, and type of materials transported through densely populated areas. First implemented in New Jersey and New York, the program seeks to establish secure storage areas for TIH materials and to expedite their movement through the system. More recently, the US DOT Pipeline and

Hazardous Materials Safety Administration (PHMSA) has directed rail freight carriers to transport TIH materials over the "safest and most secure commercially practicable routes."

Rail Freight

California has increased state-level oversight of rail freight and strengthened the regulation of railroad security. In addition to its role enforcing federal rail-safety regulations, the California Public Utilities Commission (CPUC) is developing the capacity to improve rail security. The CPUC was charged with enforcing the provisions of Assembly Bill 3023 (Nunez, 2006) requiring railroad operators to conduct risk assessments of their facilities and to develop and implement infrastructure protection programs. In the future, CPUC inspectors are to be federally certified in both safety and security, so that they may issue security enforcement recommendations under the auspices of federal law. Additionally, California actively seeks to bring state-level knowledge regarding rail safety and security to short line rail carriers that may not have the resources to establish robust safety and security programs on their own.

Collision Analysis Working Group

Under the direction of the Federal Railroad Administration (FRA), the Collision Analysis Working Group (CAWG) includes representatives from the American Short Line and Regional Railroad Association, the Association of American Railroads, the Brotherhood of Locomotive Engineers, the United Transportation Union, and the Volpe National Transportation System Center. CAWG was organized to focus on causes of and prevention measures for collision accidents.

CAWG reviewed in detail incidents where human factors contributed to trains "exceeding their authority" by passing a stop signal; failing to comply with a signal requiring restricted speed; or by entering territory without a train order, track warrant, or direct traffic control authority. This information has provided the railroad industry with an opportunity to re-examine its safety practices and policies based on any commonalities found, which will help ensure that every reasonable precaution is taken to prevent future collisions. Recommendations developed through this review and other federally sponsored rail safety initiatives may promote the inclusion of projects identified in state freight and rail plans.

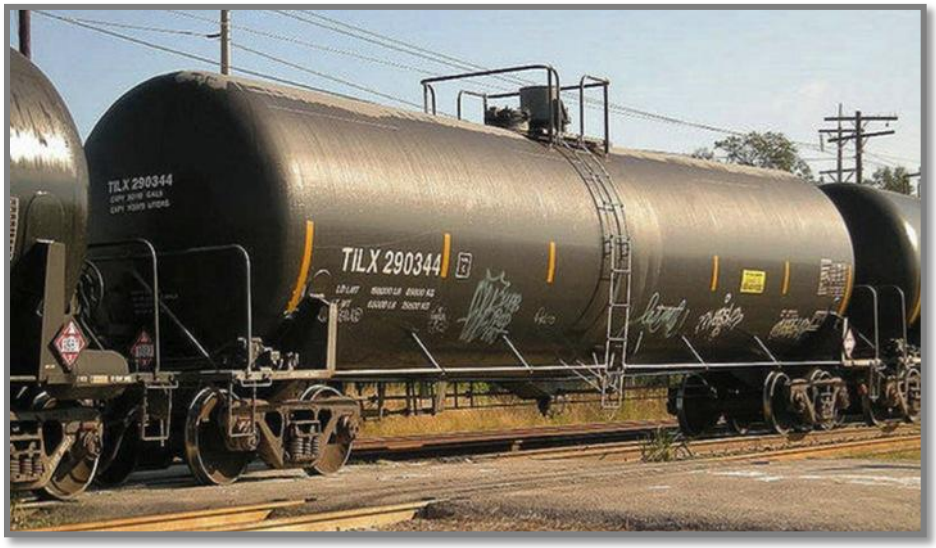
Rail Tank Cars

The US DOT-111 tank car is a type of non-pressurized tank car commonly used in North America. These rail cars are used for transporting a wide spectrum of hazardous goods. The increase in the US of hydraulic fracturing of new oil wells and the insufficient pipeline capacity to transport the petroleum products has led to a rapid increase in use of DOT-111 cars to transport crude oil to refineries. Additionally, ethanol production has soared from 900 million gallons annually in 1990 to nearly 14 billion gallons in 2013. Considering that nearly all of it moves by rail, ethanol has become the highest-volume hazardous material shipped by this mode of transport.

Recently, there have been a series of high profile accidents involving DOT-111 rail cars in the US and Canada. The tanker itself is not suspected of causing derailments, but the National Transportation Safety Board (NTSB) has noted several problems. The tanker's steel shell is too thin to adequately resist puncture in collisions. Each of the tanker cars is especially vulnerable to tears from couplers that can fly up after ripping off between cars. In addition, unloading valves and other exposed fittings on the tops of tankers can break during rollovers. The NTSB has investigated accidents involving flammable liquids being transported in DOT-111 tank cars, including the December 30, 2013, derailment in Casselton, North Dakota,[106] and the June 19, 2009, derailment in Cherry Valley, Illinois.[107] After the Cherry Valley accident, the NTSB issued several safety recommendations to PHMSA[108] regarding the inadequate design and poor performance of the DOT-111 tank cars. The recommendations include making the tank head and shell more puncture resistant and requiring that bottom outlet valves remain closed during accidents.

In addition, on January 2, 2014, PHMSA issued a safety alert addressing the flammability characteristics of the crude oil produced from the Bakken Shale region in the US. When announcing the safety alert, PHMSA reinforced the requirement to properly test, characterize, classify, and, where appropriate, sufficiently degasify hazardous materials prior to and during transportation. They also stressed the need for all potential hazards of the materials to be properly characterized, and assigned the appropriate classification and packing group of crude oil shipments.

FIGURE 70. DOT-111 TANK CAR



Source: Caltrans

Properly classified shipments are paramount for appropriate package selection, for assessment of risks to develop meaningful safety and security plans, and for the safety of emergency responders and other individuals who may come into contact with hazardous materials in

transportation. Therefore, in support of Rail Safety Advisory Letter - 13/13, the NTSB recommended that PHMSA require shippers to sufficiently test and document the physical and chemical characteristics of hazardous materials to ensure the proper classification, packaging, and recordkeeping of products offered in transportation.

The US DOT and the rail industry are launching a safety initiative aimed at instituting new voluntary operating practices for moving crude oil by rail. Through the initiative, railroads plan to take the following steps throughout 2014:

- Perform at least one additional internal rail inspection each year above those required by new FRA regulations on mainlines used by trains moving 20 or more carloads of crude oil. They also will conduct at least two high-tech track geometry inspections each year on those mainline routes. Current federal regulations do not require comprehensive track geometry inspections;

- Equip all trains moving 20 or more carloads of crude oil with either distributed power or two-way telemetry end-of-train devices, which enables train crews to apply emergency brakes from both ends of the train to stop faster;

- Begin using the Rail Corridor Risk Management System (RCRMS) analytical tool to aid in the determination of the safest and most secure routes for trains moving 20 or more cars of crude. Developed in coordination with the US Department of Homeland Security (DHS), PHMSA and FRA, the RCRMS is used by railroads in the routing of security sensitive materials. The tool takes into account 27 risk factors to help assess safety and security, including volume, trip length, population density along a route, local emergency response capability, track quality, and signal systems;

- As of July 1, 2014, the nation's major freight railroads will institute a voluntary practice to operate trains moving 20 or more cars of crude that includes at least one older DOT-111 tank car to move no faster than 40 miles per hour in the federally designated 46 high-threat urban areas;

- Continue to work with communities through which crude oil trains move to address location-specific concerns;

- Begin installing additional wayside detectors (detects defects on passing rail cars, including overheated bearings, damaged wheels, dragging hoses, deteriorating bearings, and cracked wheels, and helps to prevent derailment) every 40 miles along tracks;

- Provide $5 million to develop a specialized crude-by-rail training and tuition assistance program for local first responders, including training in the field and at the Transportation Technology Center Incorporation, a subsidiary of the Association of

American Railroads in Pueblo, Colorado. The funding will provide program development and tuition assistance for an estimated 1,500 first responders in 2014; and

- Develop an inventory of emergency response resources for responding to the release of large amounts of crude along routes used by trains moving 20 or more cars of oil. This inventory will include locations for the staging of emergency response equipment and, where appropriate, contacts for the notification of communities. When the inventory is completed, railroads will provide the US DOT with information on the deployment of the resources and make the information available upon request to appropriate emergency responders.

Positive Train Control Program

Positive Train Control (PTC) systems are integrated command, control, communications, and information systems for controlling train movements with safety, security, precision, and efficiency. PTC systems improve railroad safety by significantly reducing the probability of collisions between trains, casualties to railway workers, damage to equipment, and overspeed accidents. The system can recognize a threat of collision or accident and slow or stop a train automatically to avoid the incident. The NTSB has named PTC as one of its "most-wanted" initiatives for national transportation safety.

One of the catalysts for PTC was the collision of a commuter train with a freight train on September 12, 2008, near Chatsworth, California, which resulted in 25 deaths and over 100 injured passengers. The collision was found to have been caused by the commuter train engineer's failure to respond to a stop signal, resulting in a collision with the oncoming freight train which had not yet entered a siding to let the commuter train pass by. The Rail Safety Improvement Act of 2008 (RSIA) required all Class I railroads (the largest) and all intercity passenger and commuter railroads to implement a PTC system on main line track carrying either passengers or TIH materials by December 31, 2015.

PTC systems consist of digital data link communications networks; continuous and accurate positioning systems, such as Nationwide Digital Global Positioning System; onboard computers with digitized maps on locomotives and maintenance-of-way equipment; in-cab displays; throttle-brake interfaces on locomotives; wayside interface units at switches; wayside detectors; and control center computers and displays. PTC systems may also interface with tactical and strategic traffic planners, work order reporting systems, and locomotive health reporting systems. The remote intervention capability of PTC will permit the control center to stop a train should the locomotive crew be incapacitated or distracted.

In addition to providing a greater level of safety and security, PTC systems also enable a railroad to run scheduled operations, provide improved running time, greater running time reliability, higher asset utilization, and greater track capacity. They will assist railroads in measuring and

managing costs and in improving energy efficiency. PTC systems will be able to optimize acceleration and/or braking to minimize fuel consumption and train-handling forces. To assist crews, these systems can recommend train-handling instructions based on tonnage, track grade, and curvature characteristics, allowable speed, and train-dynamic performance. Simulators can optimize operations by calculating several hundred train-handling alternatives per second and forecasting train velocity several miles in advance.

TRUCK FREIGHT

Truck safety has improved measurably over the past decade. Since 2001, the number of truck crashes, and truck crash-related fatalities and injuries have dropped sharply. From 2001 to 2011, the number of truck crashes dropped 33 percent, outpacing the safety improvements of other vehicles. In this same period, the number of truck-involved fatalities fell 28 percent and the number of truck-involved injuries fell 39 percent. The primary causes in crashes where the truck driver is at fault are driver fatigue, excessive speed, unfamiliarity with the areas traveled, equipment failure, and weather conditions. However, according to recent FHWA data, a passenger car driver is three times as likely to contribute to a fatal crash as was the truck driver's behavior. Trucks can weigh up to 30 times more than passenger vehicles and require more stopping distance, especially when loaded. They also cannot be steered as easily as cars. When involved in a collision with a passenger vehicle, the size and weight of large trucks increases the severity of the damage. Although fatal crash rates for large trucks have fallen (by 77 percent from 1975 to 2009, compared to 64 percent for cars over the same period), truck crashes are more likely to result in severe injuries or fatalities than those involving only cars.

Another serious safety concern is distracted driving and driver inattention. A distraction is anything that diverts the driver's attention from their primary tasks of navigating the vehicle and responding to critical events. According to an in-cab driving study of commercial truck drivers by the Virginia Technical Institute, the most dangerous distraction observed was texting. However, texting and phone calls aren't the only distractions. Distractions can include passengers, eating, drinking, grooming, and in-vehicle technologies such as navigation systems and audio players. The Federal Motor Carrier Safety Administration (FMSCA) and the PHMSA have published rules specifically prohibiting interstate truck, bus drivers, and drivers who transport "placardable"[109] quantities of hazardous materials from texting or using handheld mobile phones while operating their vehicles. The joint rules are the latest actions by US DOT to end distracted driving. Violations can result in fines and/or driver disqualifications and will impact a motor carrier's and/or driver's Safety Measurement System results. With new electronic log device rules, computer programs will track driver activities automatically, ensuring more rigorous monitoring and adherence to rules that limit service hours.

The California Trucking Association (CTA) has a long history of supporting truck safety initiatives and was an early proponent of mandatory drug and alcohol testing for truck drivers, banning

radar detectors in trucks, and prohibiting the use of handheld mobile devices by truck drivers. CTA is now calling for a number of additional safety improvements, such as mandatory use of devices to limit maximum truck speed and a national clearinghouse to track positive drug and alcohol test results and refusals to test.

Commercial Vehicle Enforcement

The California Highway Patrol (CHP) provides safety oversight of approximately 7.4 million commercial vehicles that travel over 32 billion miles each year on California's publicly maintained roadways. Currently, there are 51 commercial vehicle enforcement facilities (CVEF) located throughout the state, with a total of 59 weight scales. (See Appendix F) The CHP has jurisdictional authority over the CVEFs and maintains responsibility for commercial enforcement. The CHP is currently working with Caltrans on the design and construction of the Mountain Pass CVEF, located on the Nevada and California border on Interstate 15.

CHP mobile road enforcement units are used within their eight divisions throughout the State's highways and county roadways. The CHP conducts over 500,000 inspections annually in accordance with the California Vehicle Safety Alliance standards and those set forth in the North American Standard Out-of-Service Criteria. These standards are recognized nationwide as the "gold standard." The CHP has successfully reduced commercial vehicle collisions through aggressive enforcement and education utilizing the Department's Commercial Industry Education Program.

The CHP also provides off-highway enforcement utilizing the Motor Carrier Safety Unit (MSCU), which comprises over 300 non-uniformed motor carrier specialists assigned to one of the eight field divisions throughout the state. During 2013, the MCSU, in concurrence with industry, performed over 26,000 truck terminal inspections.

The CHP and Caltrans are the State agencies designated by the Governor's Office as the certifying officials for size and weight regulations and enforcement. The CHP is the primary agency responsible for the enforcement of size and weight statutes and regulations, pursuant to the California Vehicle Code and Title 13, California Code of Regulations. The California Size and Weight Enforcement Plan is reviewed and updated annually and provided to the FHWA Division office by October 1 each year. The Size and Weight Plan will be followed by the required Size and Weight Certification by January 1 of each year. The CHP provides basic commercial vehicle enforcement training (including size and weight enforcement) for local law enforcement agency personnel. The goal is to provide uniform size and weight enforcement training.

Truck Parking

It has long been acknowledged that a shortage exists of adequate and safe parking for commercial motor vehicle operators at the state and national levels. The demand for commercial vehicle parking far exceeds capacity. As originally conceived, public rest areas were to serve as temporary rest areas and short-term safety breaks for the traveling public. As the trucking industry expanded, these rest areas began to serve as long-term, overnight parking for long-haul commercial vehicle operators, thereby contributing to overcrowding at rest areas. As reported in the National Transportation Research Board National Cooperative Highway Research Program (NCHRP), Synthesis 317: Dealing with Truck Parking Demands (2003), "most parking supply is located in commercial truck parking lots and plazas, and the overcrowding problem (is) concentrated in public rest areas." Factors contributing to the commercial vehicle parking issue include poor geometric design of facilities and access; lack of information at the location on space availability, including amenities; and lack of security. Limits on stays in public facilities and parking space shortages leave truckers with few alternatives. To get needed rest, they park underneath overpasses, on roadway access ramps, and on roadway shoulders. In most cases, these parking locations are illegal as they create safety risks for the driver and other users of the highway or road. Particularly challenging for a truck driver is their difficulty gaining enough acceleration from their parked position to safely enter into the stream of traffic. In addition, "errant vehicles" may stray into these areas and strike parked commercial vehicles. Private truck stops are not always available to provide long-term parking. Lack of facilities can influence route decisions, with route selection based on the availability of amenities, whether the trip is a long or short haul, time of day, and the need for staging areas. Just-in-time delivery scheduling and "rolling warehouse logistics" puts even greater demand on drivers and truck parking facilities.

Legislation (Title 23, Section 752.3 of the Code of Federal Regulations) defines a safety area as "a roadside facility safely removed from the traveled way with parking and such facilities for the motorist deemed necessary for his rest, relaxation, comfort and information needs." Furthermore, the ability to provide amenities to drivers is restricted by U.S Code 23, § 111, which limits commercialization of public rest areas on the Interstate Highway System.

MAP-21 does not include a formal truck parking program; however, it does make truck parking projects eligible for funding under the National Highway Performance Program, the Surface Transportation Program and the Highway Safety Improvement Program. Projects eligible to receive funding include:

- Construction of safety rest areas with truck parking;
- Construction of truck parking areas adjacent to commercial truck stops and travel plazas;

- Opening existing facilities to truck parking, including inspection and weigh stations and park-and ride facilities;
- Promoting availability of publicly or privately-provided truck parking on the National Highway System (NHS);
- Construction of turnouts along the NHS for commercial motor vehicles;
- Capital improvements to public truck parking facilities that close on a seasonal basis, allowing them to remain open all year; and
- Improving the geometric design of interchanges on the NHS to improve access to truck parking facilities.

Trucks parking in undesignated areas have sometimes tragically resulted in death. For example, in 2009 truck driver Jason Rivenburg experienced fatigue while transporting a load. Since there were no rest stations, he pulled into an abandoned gas station to take a nap. As he slept, he was robbed and fatally wounded. As part of MAP-21, $6 million in federal funding was provided for the construction and restoration of safe roadside parking lots where truck drivers can rest. Typically, truck rest areas are located near major truck routes between urban areas and freight facilities. Jason Rivenburg's fate highlights the need for truck rest areas in urban areas. Jason's Law makes construction of safety rest areas, commercial motor vehicle (CMV) parking facilities, electric vehicle and natural gas vehicle infrastructure eligible for federal funding. It also requires US DOT to survey states within 18 months of enactment regarding their CMV traffic and capability to provide CMV parking. US DOT must periodically update this survey and post the results. The CHP, as an executive member of the Commercial Vehicle Safety Alliance (CVSA), has assisted US DOT in an information-gathering exercise related to truck parking, as mandated by MAP-21. In order to meet this mandate, the CHP assists Caltrans in evaluating the capability of the State to provide adequate parking and rest facilities for commercial motor vehicles engaged in interstate transportation.

The availability of parking is not just an issue for truck drivers who struggle to secure parking; but it is also an issue for neighborhoods in the vicinity of freight facilities such as ports, intermodal facilities, warehouse and distribution centers, and manufacturing. Besides creating safety hazards, neighborhoods frequently have to contend with noise, smell, vibration, degradation of air quality, loss of viewshed, and disruption to community cohesion. A recommendation of this Plan is to investigate the potential for creating a truck parking program.

Weight Limits

California follows federal law by placing weight limits on trucks in order to protect pavement and bridges from damage and excessive wear and tear. Truck weight is also a major factor in

the severity of truck-passenger vehicle incidents. Simply put, the heavier the vehicle, the worse the damage. Heavier trucks, and trucks carrying loads in excess of maximum weight limits can be more difficult for the driver to control because they require increased stopping distance; have an increased potential to roll due to a higher center of gravity; and attain higher speeds when traveling downhill, decreasing steering capability.

Caltrans often receives requests to increase truck (or axle) weight limits or to implement programs that would collect additional fees for compensation of overweight loads. There are several reasons for these requests. Hauling larger loads with fewer trucks can help some industries reduce transportation costs and increase efficiency. Competition and changing market conditions puts pressure on freight-dependent industries to lower costs, to provide greater efficiencies and to increase service quality. Transportation costs and flexibility for load size can have a significant effect on economic sustainability, particularly for heavy and bulk commodities and highly priced sensitive goods, such as agriculture, lumber and timber, and construction materials. It is paramount to the economic vitality of the state that we maintain an efficient freight transportation system and support freight-dependent industries. It is also vital that decision makers and the public understand the trade-offs between economic benefit and increased infrastructure and safety costs that occur when increasing load weight limits.

Truck Enforcement Network Systems (TENS)

TENS is an evolving project that runs in parallel and in coordination with the Gateway Cities Technology Plan for Goods Movement Study (October 2012). The project is an excellent example of planning safety and security processes and facilities at the subregional level. This project, described in the Feasibility Study Report (FSR) for the Implementation of a Truck Enforcement Network System for Gateway Cities and Surrounding Regions [(Gateway Cities Council of Governments (GCCG), October 2012)], includes strategies, concepts, and layouts for truck enforcement that meet the needs of the stakeholders within the study area. TENS must also meet the needs of the CHP daily truck enforcement facilities operations. Caltrans is an overseer of the transportation system and works in a partnership with the CHP (operators of the commercial vehicle enforcement facilities) on the design of Commercial Vehicle Enforcement Facilities (CVEF).

Due to the very high truck volumes associated with the San Pedro Bay Ports, current practices of truck enforcement cannot process trucks at a rate that meets present and future demands. New technology is needed. Technology tools that can accurately measure commercial vehicles while they are in motion, for example, Weigh-In-Motion (WIM) can indicate if an inspection is warranted; determine if a commercial vehicle is in compliance with size and weight, safety and credentialing regulations; and pursue noncompliant and high-risk motor carriers and commercial vehicles. These tools include, but are not limited to, infrared brake detectors,

license plate readers, placard readers, inspection software, closed circuit television, and optical character recognition hardware and software.

Drug and Alcohol Use

In 1991, the US Congress passed the Omnibus Transportation Employee Testing Act that required US DOT to implement drug and alcohol testing of safety-sensitive transportation employees. The FMCSA and its antecedent agency have defined drug and alcohol testing rules and regulations for employees who drive commercial vehicles (trucks and buses) that require a commercial vehicle license. Vehicle Code Section 34520 requires motor carriers and drivers subject to the controlled substances and alcohol testing requirements of US DOT to comply with the FMCSA regulations found in Title 49, Code of Federal Regulation, Part 382, or the Federal Transit Administration requirements in 49 CFR Part 655, whichever is applicable. As with trucking and rail, this program is also applicable to safety-sensitive transportation employees in aviation.

For purposes of Part 219, FRA has designated its safety-sensitive employees to be those who perform service covered under the hours-of-service laws (covered service). This includes "contracted" hours of service employees and also individuals who may volunteer to perform hours-of-service duties for a railroad. These generally include train and engine service employees involved in the movement of trains or engines (e.g., conductors, brakemen, switchmen, engineers, locomotive hostlers/helpers), dispatching employees who issue mandatory directives (e.g., train dispatchers, control operators), and signal employees who inspect, repair or maintain signal systems.

The CHP continues to work closely with the trucking industry in an effort to help educate and reduce impaired driving in order to maintain the highest level of compliance. Controlled substances and alcohol testing is required for every motor carrier with a terminal located in California. The goal of the program is to ensure all motor carriers located in the State are inspected for continued compliance with state and federal drug and alcohol testing requirements. These inspections are necessary in the continued efforts to reduce the number of impaired drivers on the road.

Air Freight

Like its passenger counterpart, the airline freight industry is facing stringent security requirements. Since 2010, TSA regulations mandate the screening of all cargo before being loaded and carried by air within the US or internationally. As part of the 9/11 Commission Act of 2007, Congress requires that **all** cargo transported in the holds of passenger airplanes originating in the US be screened at a level commensurate with passenger luggage. The deadline for meeting this mandate was August 3, 2010. TSA is charged with enforcing it.

Recognizing that the problem of screening a wide variety of diverse cargoes and packages is much more complicated than screening passenger baggage and the potential bottleneck in the global supply chain that would be created if all cargo had to be screened at the airport, the TSA devised the Certified Cargo Screening Program (CCSP). Under the CCSP, shippers, freight forwarders, logistics services providers, indirect air carriers, independent cargo screening firms and air carriers can screen cargo and pass it along the supply chain via a secure chain of custody to the airport, where it can go directly onto the aircraft without undergoing additional screening. This approach effectively creates a distributed screening network, allowing screening to be performed at the most cost-effective point in the supply chain, mitigating the impact on system performance and thereby expediting the flow of commerce. The CCSP is a flexible, voluntary program specifically designed to allow shippers with unique requirements to find the approach that best meets their needs. The CCSP requires airlines, freight forwarders and shippers to assume the costs of these security measures to establish a secure air freight transport chain.

NextGen

The Next Generation Air Transportation System (NextGen) modernization of the US air traffic system is due for implementation across the US in stages between 2012 and 2025. NextGen will transform America's air traffic control system from a ground-based system to a satellite-based system. Global Position System (GPS) technology will be used to shorten routes, save time and fuel, reduce traffic delays, increase capacity, and permit controllers to monitor and manage aircraft with greater safety margins. Planes will be able to fly closer together, take more direct routes, and avoid delays caused by airport "stacking" as planes wait for an open runway. To implement this, the Federal Aviation Administration (FAA) is undertaking a wide-ranging transformation of the entire air transportation system. This transformation has the aim of reducing gridlock, both in the sky and at the airports.

Once implemented, NextGen will allow pilots and dispatchers to select their own direct flight path, rather than using a grid-like highway system. By 2020, aircraft are expected to be equipped to tell pilots exactly where their location is in relation to other aircraft, enabling planes to safely fly closer together. By providing more information to ground control and planes, planes are expected to land faster, navigate through weather better, and reduce taxi times so flights and airports themselves can run more efficiently.

Maritime Freight

The maritime industry has always placed a high priority on security. Drug smuggling, custom duty evasion, and piracy have been some of the most important concerns. The international dimensions of the shipping industry, the large number of maritime ports, the vast fleet of global shipping, the range of products carried in vessels, and the difficulty of detection has made the

issue of security in shipping a persistent concern. For ports, vulnerabilities can be exploited from both the landside and the water side. Recently, customs officials have focused more scrutiny on containers in order to identify illicit and/or dangerous cargoes. All containers imported to US seaports are scanned through radiation portal monitors (RPM) prior to leaving a marine terminal on trucks or rail cars. Other selected containers are also scanned or manually inspected by US Customs and Border Protection (CBP) based on their assessment of risk or by random selection.

The United States Coast Guard (USCG) inspects cargoes and containers for compliance with the Federal Hazardous Materials Transportation Law (FHMTL) and the International Safe Container Act of 1977 (ISCA) (46 U.S.C. 80501-80509). Regulations implementing the FHMTL are codified in 49 CFR 107-180. Regulations implementing the ISCA can be found in 49 CFR 450-453. The Coast Guard inspects containers of general cargo to ensure hazardous materials are not being shipped illegally, or as "undeclared hazardous materials." Undeclared hazardous material shipments are a leading cause of transportation incidents.[110]

The USCG also has responsibility for the Transportation Worker Identification Credential (TWIC) program. The TWIC program was developed in accordance with the legislative provision of the Maritime Transportation Security Act (2002, 2010) and the Security and Accountability for Every Port Act of 2006 (SAFE). The TWIC identification card is a tamper-resistant credential that contains biometric information about the holder, rendering the card useless to anyone other than the rightful owner.

Vessel Safety and Security

The Maritime Transportation Security Act of 2002 (P.L. 107-295) was designed to protect the nation's ports and waterways from a terrorist attack. The basic elements of this legislation were adopted by the International Maritime Organization (IMO) in 2002 as the International Ship and Port Security code (ISPS). There are three important features of these interventions. First, is the requirement of an Automated Identity System (AIS) to be fitted on all vessels between 300 gross tonnage and upwards. The AIS requires vessels to have a permanently marked and visible identity number, and a record must be maintained of its flag, port of registry, and address of the registered owner. Second, each port must undertake a security assessment of its assets, facilities and the effects of damages that might be caused. The port must then evaluate its risks, and identify any weaknesses in its physical security, communication systems, and utilities. Third, all cargoes destined for the US must receive customs clearance prior to departure of the ship. In addition, it is proposed that biometric identification for seafarers are implemented and that a national database of sailors be maintained.

The ISPS code is being implemented in ports around the world. Without certification, a foreign port would have difficulty trading with the US. Thus, compliance is becoming an urgent

competitive issue in ports large and small around the world. The cost of securing sites, of undertaking risk assessments, and monitoring ships represents an additional burden without any commercial return. US ports have been able to tap funding from the Department of Homeland Security, but foreign ports have to comply or risk the loss of business. In 2008, legislation in the US required that all containers being shipped to the US undergo screening. Foreign ports will be expected to purchase gamma-ray and x-ray scanners, and undertake screening of all US-bound containers, regardless of the degree of the security threat. This is a further financial and operational cost for foreign ports. Security has become an additional element in determining competitive advantage.

Border Safety and Security

California and Mexico share over 130 miles of an international border. The border is a vital economic gateway for international trade and a key contributor to the economic well-being of both countries. Under the auspices of the Department of Homeland Security, the US Customs and Border Protection (CBP) safeguards the US - Mexico Border. Their top priority is "to keep terrorists and their weapons from entering the US while welcoming all legitimate travelers and commerce."[111] With regard to freight, the CBPs primary responsibility is to secure "the nation's air, land, and sea border to prevent illegal activity while facilitating lawful travel and trade."

The CBP "creates and implements programs using sophisticated technologies, and trains personnel to help achieve the goals of securing US ports and borders while supporting and expediting trade." The Office of International Trade within the CBP organization focuses its resources on high-risk areas that can cause significant revenue loss, harm the US economy, or threaten the health and safety of the American people" and are referred to as Priority Trade Issues. They consist of the following:

- Agriculture (invasive species, agro-terrorism, etc.);
- Anti-dumping and countervailing duties (unfairly low or subsidized price);
- Tariffs (levied on imported goods to offset subsidies made to exporters who produce these goods);
- Import safety (avoiding unsafe products from entering the U.S);
- Intellectual property rights (trademarks, copyrights, and patents, fake goods);
- Penalties, revenue (established as an effective internal control policy for the protection of duties and taxes that are collected from imported merchandise); and
- Textiles (undervalued, misclassified, or illegally transshipped or entered).

Initiated after 9/11, the Free and Secure Trade (FAST) Program is a commercial clearance program for known low-risk shipments entering the US from Mexico and Canada. It allows for expedited processing for commercial carriers who have completed background checks and have completed certain eligibility requirements. Participation in the "trusted trader" program requires that "every link in the supply chain, from manufacturer to maritime freight carrier to driver to importer, is certified under the Customs-Trade Partnership program, or C-TPAT." C-TPAT is a voluntary government-business initiative intended to build cooperative relationships that strengthen and improve overall international supply chain and US border security. Nationwide, there are over 78,000 commercial drivers enrolled in the program and 10,000 companies certified worldwide. Five years of FAST membership costs $50, US or Canadian. One of the key benefits of enrollment for carriers is access to dedicated lanes for greater speed and efficiency in processing transborder shipments. For the US, Mexico, and Canada, the program helps to support supply chain security while promoting economic prosperity.

In February 2014, President Obama issued an Executive Order (E.O. 13659), *Streamlining the Export/Import Process for America's Businesses*, which, among other things, directs federal agencies with a role in trade to design, develop, and integrate their requirements into an electronic "Single Window," known as the International Trade Data System, by December 2016. Currently, there are hundreds of paper forms being used to import and export goods. Through the Automated Commercial Environment (ACE), CBP's cargo processing system, trade transactions will be more efficient, standardized, simplified, less costly, and more predictable for importers and exporters. ACE will streamline collection and improve enforcement and will ultimately serve as the "single window" to enable businesses to electronically transmit the data required by the US government to import or export cargo. This approach will ensure cargo is more secure, will reduce transaction costs for both the government and the trade, and will expedite cargo release. The E.O. also requires agencies to work together to enhance supply chain processes so that the US can compete more effectively in the world marketplace. CBP is also working to design a Government-wide 'trusted trader' partnership program that would integrate CBP's C-TPAT and the Importer Self-Assessment (ISA) with other US government trusted trader programs. On June 16, 2014, CBP, in collaboration with the US Consumer Product Safety Commission and the US Food and Drug Administration, announced the joint effort to begin the testing of the Trusted Trader program.[112] This pilot is expected to inform a comprehensive trusted trader program that standardizes program participation criteria and assists CBP in addressing supply chain security, trade compliance, financial compliance, and enforcement. The program would allow CBP to redirect resources to unknown and high-risk importers, while improving predictability and transparency.[113]

Radiological Responsibilities

As the nations' primary border enforcement agency, the CBP is tasked to do "everything in its power to prevent terrorist and terrorist weapons, including weapons of mass destruction, from entering this country. Nuclear and radiological materials are of particular concern because of the potential to harm large numbers of people and to disrupt the national economy. The goal is to screen 100 percent of all incoming goods, people, and conveyances for radiation.

The CBP is installing radiation portal monitors for nuclear devices and for radiological materials. The monitor is a non-intrusive, passive means to screen trucks and other conveyances for the presence of nuclear devices and radiological materials. Portal monitors will be installed at seaports, land ports of entry and crossings, rail crossings, international airports, and at international mail and express consignment courier facilities.

On a daily basis, the CHP is directly involved with the CBP, in the oversight of all commercial vehicles transporting radioactive materials that enter California through its southern borders. Unlike other states whose roles are often limited to oversight of transportation of radiological materials, the CHP regulates both radiological transportation and radiological threats within the state. The CHP currently has 50 hazardous material specialists assigned statewide, with seven of the specialists assigned to work closely with allied agencies to assist in developing emergency incident protocols.

Freight Transportation Resiliency

In addition to safety and security, MAP-21 identifies resilience of freight movement as an important component of the National Freight Policy. Resilience of the transportation network is the capacity to absorb the disruption of small-scale events, recover quickly from large disasters, and return to normal operating levels. This ability depends on the network structure and the actions taken to preserve or restore service in the event of a disaster or other disruption. Factors that enhance resilience of the transportation system improve responsiveness of operations and infrastructure repairs after a disaster and add capacity and flexibility at critical intermodal connections or choke points in response to a disruption. Resilience is a property of the system as a whole, not its component parts.

The rapid development of e-commerce, economic globalization, just-in-time production, and logistics and supply chain systems over past decades, has led to a significant need for efficient and effective management of freight movements. Businesses and consumers have become increasingly dependent on the freight transport system to deliver their goods with far less inventory stored in regional warehouses and stores. Freight movement in the US has increased dramatically over the past 20 years, and highway vehicle miles traveled grew by approximately 98 percent, however, the highway network expanded less than 5 percent between 1980 and

2007. During that same period, risks from incidents, weather-related hazards, and terrorist attacks on freight transportation systems have also increased significantly. Trucking companies, rail carriers, infrastructure managers, and terminal and port operators must invest to prevent or mitigate the effects of disasters. Individuals, private sector businesses and industries, and public sector government agencies are not immune to sudden events that disrupt normal daily activities. Disasters on the transportation network, whether attributable to nature, human or mechanical error, or human intent, raise the awareness of the need for plans of action to quickly respond and restore mobility.

Accommodating disruptions within the freight transportation system often requires a variety of measures. Reliable freight transportation is a prerequisite for an efficient supply chain. As ground transportation systems have become more congested and less able to accommodate shifting demands, improving resilience of the transportation system itself becomes a priority. Researchers and consultants have provided a number of key insights to address freight transportation resiliency. Two are important to mention here: public-private relationships are integral, and communication capabilities are critical, including strengthening pre-disruption communication within the freight industry to prepare for recovery. Further work is needed on this topic, and it is the recommendation of this Plan to more fully address the subject of freight transportation resilience in the update to the California Freight Mobility Plan.