FINAL REPORT

TECHNICAL MEMORANDUM – MULTIMODAL REVIEW

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1.0 INTRODUCTION

1.1 PURPOSE OF THE I-710 CORRIDOR PROJECT ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL IMPACT STATEMENT (I-710 CORRIDOR PROJECT)

Interstate 710 (I-710) is a major north-south interstate freeway connecting the City of Long Beach to central Los Angeles. Within the I-710 Corridor Project study area, the freeway serves as the principal transportation connection for goods movement between the Ports of Los Angeles (POLA) and Long Beach (POLB), located at the southern terminus of the freeway, and the BNSF/UPRR railyards in the cities of Commerce and Vernon.

As port activity levels have increased over the years, so has the number of Heavy Duty Trucks (HDT) traveling along the corridor. This has resulted in high levels of air pollution and negative impacts to the I-710 community's air quality and health. Additionally, when combined with recent population and employment growth within the study area, these high HDT volumes have lead to considerable congestion on the freeway and arterial systems. With such a large strain placed on the facility's capacity, I-710 is unable to accommodate current or future traffic demands.

The following issues are of particular concern and are included as components in the I-710 Corridor Project Draft Purpose and Need:

- Improve air quality and public health.
- Improve traffic safety.
- Address design deficiencies.
- Address projected traffic volumes
- Address projected growth in population, employment, and economic activities related to goods movement.

An Environmental Impact Report/Environmental Impact Statement (EIR/EIS) will be prepared to inform the public and governmental decision-makers of environmental effects associated with the proposed project and describe the measures that would be undertaken to avoid, minimize, or mitigate those effects. Additionally, federal, state, regional, and local agencies will use this document to assess the environmental impacts of the project on resources under their jurisdiction, make discretionary decisions regarding the project, or exercise review or permit authority over the project.

1.2 PURPOSE OF THIS REPORT

The objective of the report is to determine and assess all other modes of transportation in the I-710 Corridor that could reduce or relieve traffic on I-710. The report compiles and examines operational characteristics on existing or planned multi-modal passenger and goods movement improvements in and near the I-710 Corridor.

The memorandum is based primarily on reports and information from related studies that have examined multi-modal passenger and goods movement improvements in and near the I-710 Corridor. These include the SCAG 2008 RTP, Metro's 2008 LRTP, SRTP and Gateway Cities Sector Service Plans, the I-710 Major Corridor Study, the Multi-County Goods Movement Action Plan, the Ports' Transportation Master Plan, Orange County and Los Angeles Intercounty Transportation Study, and ACTA studies of potential truck trip reduction strategies.

The capabilities of the alternatives to reduce or divert future auto and truck traffic in lieu of adding lane capacity to the I-710 are assessed. For passenger travel, the alternatives assessed include:

- Rail transit (Metro Blue and Green and Lines, Metrolink commuter rail, Orangeline fixed guideway transit line in the former Pacific Electric right-of-way);
- Bus transit (Metro and Long Beach Transit fixed route and express services, including Metro Rapid bus routes);
- Community bus services (e.g. City of Commerce);
- Pedestrian and bicycle facilities;
- Park and Ride lots; and
- High Occupancy Vehicle (HOV) lanes on I-110, I-605 and I-405.
- For goods movement, alternatives assessed include:
    - Alternative technology (evaluated and assessed in a separate technical study);
    - Expansion of the Pier Pass program;
    - Shuttle trains; and
    - Empty Container Management and virtual container yards.

The report determines the potential and the constraints of these alternative modes to attract and carry more passengers or cargo.

2.0 EXISTING MULTIMODAL SYSTEMS

This section describes the existing multimodal transportation systems serving or operating within the I-710 Corridor study area.

2.1 RAIL TRANSIT

2.1.1 Metro

The Metropolitan Transportation Authority (Metro) operates 73.1 mi (118 km) of Metro Rail service. The system is composed of 62 stations, two at-grade light rail lines, one grade-separated light rail line, and two heavy rail subway lines with total estimated ridership of over 260,100 boardings per weekday. The rail transit lines serving the study area are:

- ***Blue Line*** – The Blue Line is a 22-mile light rail line connecting Downtown Los Angeles to Downtown Long Beach with 22 stations and 69 rail cars in service. Beginning in Downtown Long Beach the Blue Line runs north in the median of Long Beach Blvd, a four-lane arterial. At E. 27th Street the rail line bends to the northwest following a rail corridor separated from vehicle traffic. Crossings with roadways remain at-grade. The rail line passes under the I-405 and then over the Los Angeles River on a bridge. Shortly thereafter the rail line passes over the I-710 again on a bridge adjacent to East 208th Street, a two-lane roadway also elevated. There is also an additional single track rail line running perpendicular to the Blue Line rail corridor that is also elevated over the I-710 at this location. The Blue Line currently operates 228 daily trains with over 84,000 average daily boardings and an average headway of 12-15 minutes. Headways decrease to as short as every six minutes during peak periods and every 20 minutes during off peak periods.

- ***Green Line*** – The Green Line is a 20-mile light rail line running between El Segundo and Norwalk with 14 stations and 34 rail cars that operates mostly in the median of the Century Freeway (Interstate 105). It offers access to Los Angeles International Airport via a shuttle bus from the Aviation/I-105 station. It is the region's only above ground light rail line that is completely grade-separated. The Green Line currently operates with peak headways of seven minutes and off-peak headways with an average of 15 minutes. The Green Line currently has over 45,000 average daily boardings.

From Union Station in downtown Los Angeles, Metro Rail passengers can transfer to Amtrak and the Metrolink commuter rail system.

2.1.2 Metrolink

Metrolink is a regional commuter rail system linking communities to employment and activity centers. In August 1991, the Southern California Regional Rail Authority (SCRRA), a Joint Powers Authority (JPA), was formed. The purpose of SCRRA is to plan, design, construct and administer the operation of regional passenger rail lines serving the counties of Los Angeles, Orange, Riverside, San Bernardino and Ventura. The SCRRA named the regional commuter rail system "Metrolink". As of September 2008 the system comprises seven routes with over 500 route miles, and 145 trains operating daily serving almost 48,000 weekday riders in 50 cities throughout Southern California servicing 56 stations.[1]

The Metrolink routes cross the I-710 freeway at two locations:

- ***Riverside Line*** – The Riverside Line is a 59.1 mile route with seven (7) stations running from the Los Angeles Union Station to Downtown Riverside. Within the study area operating on UP and BNSF tracks, the rail line makes mostly grade separated crossings with the major roadways and highways including Garfield Avenue, Whittier Blvd., Paramount Blvd., SR-19, I-5, and I-710. The Riverside Line has 12 trains operating on it daily with over 5,600 daily riders daily. The nearest station to the I-710 study area is the Montebello/Commerce station in Montebello with 250 parking spaces and connections to Montebello and Metro transit routes.

- ***Orange County Line / 91 Line*** – The Orange County Line is an 87.2 mile route with 14 stations running between Union Station and Oceanside. The 91 Line is a 61.6 mile route with nine (9) stations from Los Angeles Union Station to Downtown Riverside and San Bernardino via Fullerton. Between the Los Angeles Union Station and Fullerton Station, the Orange County Line and 91 Line share the same tracks on the BNSF Main Line. The Orange County Line has 14 round trip trains daily between Los Angeles and Fullerton with over 8,000 riders daily. The 91 Line has 9 round trip trains daily between Los Angeles and Riverside with over 2,400 riders daily. The nearest station to the study area is the Commerce station, with 225 parking spaces and connections to Montebello, Metro, and Commerce transit routes.

2.1.3 Amtrak

The Pacific Surfliner Route is one of three passenger rail routes financially supported by the State of California. The route runs generally southeast to northwest along the Pacific Coast of California, connecting cities in San Diego, Orange, Los Angeles, Ventura, Santa Barbara and San Luis Obispo Counties. Within the study area, the Pacific Surfliner operates on the same segments of rail as the Metrolink Orange County Line and the 91 Line and has eleven round trip

[1] Source: www.metrolinktrains.com

trains daily. Total ridership for this route in 2007 was over 2.7 million with an average 7,000[2] per weekday[3]. The nearest Amtrak station to the I-710 corridor is Los Angeles Union Station. The Surfliner route crosses under the I-710 just north of Bandini Blvd.

2.1.4 Orangeline

The Orangeline fixed guideway transit line is under consideration in the former Pacific Electric right-of-way and would extend from Santa Ana in Orange County through the I-710 corridor to downtown Los Angeles and beyond. The Orangeline Feasibility Study completed in April 2002 estimated a daily ridership of 46,000 by 2025. A recent presentation to OCTA by the Orangeline Development Authority estimated a daily ridership of 225,000 by 2027. The Orangeline project is not included in the financially constrained 2008 RTP but is included in the unfunded Strategic Plan. The website for the Orangeline, www.orangeline.calmaglev.org, has been "down for maintenance" for some time and additional information is not available at this time.

2.2 BUS TRANSIT

The I-710 project study area is served by an extensive bus transit network operated by multiple regional and local agencies. Bus transit services in Los Angeles County are primarily provided by the Los Angeles county Metropolitan Transportation Authority (Metro) and City of Los Angeles Department of Transportation (LADOT). Bus service within the City of Long Beach is provided by Long Beach Transit. City and local agencies provide community bus or shuttle services in localized areas.

2.2.1 Metro

- 1,433-square-mile service area
- 2,000 peak-hour buses on an average weekday
- Over 1.5 million weekday riders

Metro operates the following bus services in the I-710 study area:

- ***Metro Bus*** – Metro Bus operates two types of bus services in the study area.
    - **Metro Local -** This type of service makes frequent stops along major thoroughfares. There are 18,500 stops on 189 bus lines system wide. Some routes make limited stops but do not participate in the Rapid program.

[2] The most recent weekday boardings figure available is from 2005
[3] The ridership for the Surfliner in July 2008 was up 12% over the same month in 2007

- **Metro Rapid -** This bus service offers limited stops on many of the county's more heavily traveled arterial streets. These routes reduce passenger commute times by up to 25 percent over local routes.

In addition, the Harbor Transitway is an 11 mi (18 km) combination transitway and high-occupancy vehicle lanes in the median of Interstate 110 (Harbor Freeway) between Artesia Blvd and 6th Street in downtown Los Angeles. The transitway serves bus routes between San Pedro and Downtown Los Angeles. It carries bus routes operated by Metro, Orange County Transportation Authority, the City of Los Angeles, City of Gardena and City of Torrance (routes that serve the I-710 study area and utilize the transitway are 460 and OC 701). Metro Buses that serve the I-710 study area that provide a connection to this transitway include the 108, 111, 115, 125, 130, 205, and 358.

- Metro Transit routes serving the I-710 study area:

Primary Roadway	Route Number
Ramona Blvd.	Route 70
Floral Dr.	Route 30
Cesar Chavez Ave.	Routes 68 and 770
1st St.	Route 31
3rd St.	Route 256
Olympic Blvd.	Routes 66, 256, and 366
Gage Ave.	Route 110
Florence Ave.	Routes 111 and 711
Firestone Blvd.	Routes 115 and 715
Imperial Hwy.	Routes 117 and 121
Rosecrans Ave.	Route 125
Compton Blvd.	Route 127
Alondra Blvd.	Route 128
Atlantic Ave.	Routes 260, 117, and 762
Artesia Blvd.	Routes 130, 260, and 762
Long Beach Blvd.	Routes 60 and 760
Anaheim St.	Route 232
Alameda St.	Route 202
Garfield Ave.	258
Eastern Ave.	256
Slauson Ave.	Route 108 and 358
Whittier Blvd	Route 18 and 720
I-105	Route 460
Wilmington Ave.	Route 205

2.3 LOCAL TRANSPORTATION SERVICES

2.2.2 City of Los Angeles Department of Transportation (LADOT)

LADOT does not operate any buses that serve the I-710 study area.

2.2.3 Long Beach Transit

Long Beach Transit operates 38 fixed routes including the following in the I-710 study area:

Primary Roadway	Route Number
Artesia Blvd	Routes 52, 61, and 63
Long Beach Blvd	Routes 1, 51 and 52
Del Amo Blvd	Routes 191 and 192
Wardlow Rd	Route 1
Willow St.	Routes 101, 102, and 103
Pacific Coast Hwy.	Routes 1 and 171
Anaheim St.	Routes 45, 191, 192, and 193
Atlantic Ave.	Routes 61, 62, and 63
Pacific Ave.	Route 182
Magnolia Ave.	Route 181
Sante Fe Ave.	Routes 191, 192, and 193

Long Beach Transit has 89,000 average weekday riders.[4]

2.2.4 Community Bus Services

There are multiple community bus services operating within project study area. The following list describes the community bus systems serving the I-710 study area.

- Montebello Transit – 42,000 average weekday riders[4]
- Compton Renaissance Transit System – Five local routes, no ridership data available
- East Los Angeles Shuttle – Three local routes, no ridership data available

2.2.5 Pedestrian and Bicycle

As an alternative to the automobile, bicycles are non-polluting, quiet, inexpensive, and a reasonable available source of transportation. Bicycles can be used for many short commuting trips, trip connections, as well as for recreational purposes. Bicycles are generally accessible on the Metro rail and bus systems. Bicycle racks are available on all Metro buses on a first-come, first-serve basis while bicycles are permitted on Metro Rail with restrictions during commuter peak hours (weekday 6:30 – 8:30am and 4:30 – 6:30pm). Bicycle racks are located at most Metro Rail and Metro Orange Line stations. Bicycle racks are offered free to the public on a first-come, first-serve basis. Many Metro stations are also equipped with bike lockers for rental.

[4] Source: www.apta.com

The descriptions below illustrate the three classes of bikeway facilities standards and designations established by the California Department of Transportation (Caltrans).

Bike Path (Class I) – Class I bike paths are separated from roadways by distance or barriers and cross traffic by automobiles is minimized. Bike paths are facilities completely separated from the roadway and expressly for bicyclists. Bike paths can provide recreational opportunities or serve as desirable commuter routes. Design standards require two way bicycle paths to be a minimum of eight feet wide plus shoulders. Bike paths are usually shared with pedestrians. If pedestrian use is expected to be significant on the bike path, the desirable width is twelve feet. Major Class I Bikeways in the study area include:

- **Los Angeles River Route Systems** – The Los Angeles River Trail, one of the longest bike trails within the area, is a Class I bike trail originating north of State Route 134 and follows the bank of Los Angeles River until it is interrupted north of I-110. The trail picks up again just south of the Metrolink Orange County line where it continues southward alongside LA River all the way to the Pacific Ocean in Long Beach. This section from the Metrolink Orange County Line to Long Beach is entirely within the I-710 study area. The LA River bicycle trail extends for some 49 miles along the LA River and has over twenty-five access points along its entire length. The LA River trail merges with two other Class I routes along its way, including the Rio Hondo River Trail and the Compton Creek Trail and connects to the Long Beach Bike Trail at its southern end. The trail travels through various facets of Los Angeles County including its industrial, residential, and natural landscapes. Some parts of the trail are poorly maintained and pose security concerns for bikers traveling alone; other parts of the trail are scenic and are widely utilized for leisure.

Bike Lane (Class II) – A Class II bikeway is a lane on a roadway that is reserved for bicycles. The lane is signed and painted with pavement lines and markings. The lane markings decrease the potential for conflicts between drivers and bicyclists. Bike lanes are one way, with a lane on each side of the roadway between the travel lane and the edge of paving. If parking is permitted, bike lanes are between the travel lane and the parking lane. The bike lanes are at least four feet wide and five feet if parking is permitted. Several Class II bike lanes in the study area exist along Alondra Blvd., Greenleaf Blvd, Santa Fe Blvd, and Central Ave within the City of Compton, Orange Ave in the City of Long Beach and University Dr. and Del Amo Blvd near Cal State University in Carson.

Bike Route (Class III) – Class III bike routes share existing roadways and provide continuity to other bikeways or designated preferred routes through high traffic areas. There is no separate lane for bike routes. Bike routes provide for limited pedestrian and driver use for the exclusive use of bicyclists. Bike routes are established by placing signs that direct bicyclists and warn drivers of the presence of bicyclists. Class III bike routes within the study area exist within City of Montebello, City of Lakewood, and along PCH east of the Dominiguez Channel.

Within Los Angeles County there are 520 miles of bike Routes, 481 miles of bike lanes, and 251 miles of bike paths. An estimate of these facilities within the Gateway Cities area is not available at this time.

2.3 PARK AND RIDE FACILITIES

There are number of park-and-ride facilities located within the I-710 Corridor study area. The majority of the park-and-ride locations are served by local and regional transit and are designated transfer points for carpoolers, vanpoolers and buspoolers. Amenities on-site range from parking spaces, bicycle racks, bicycle lockers to security service, restrooms, and telephones. Many of the park-and-ride facilities are also served by rail transit agencies such as Metro and are located in close proximity to transportation centers or transit stations to provide convenient transfers between transportation modes. Other facilities are often located near freeway interchanges or major freeway connections. **Table 2.1** lists the existing park-and-ride facilities within the I-710 Corridor Project study area.

Table 2.1 – Existing Park and Ride Locations in the I-710 Study Area

City	Name	Address	# of Stalls	Operator	Rail Station
Carson	Carson	Carson St. and I-110	140	Caltrans	
Compton	Compton Blue Line Station	Compton Blvd. and Willowbrook Ave.	105	Metro	Blue Line
	Artesia Blue Line Station	Artesia Blvd and Acacia Ave.	380	Metro	Blue Line
Downey	Lakewood Green Line Station	12801 Lakewood Blvd	545		Green Line
	North Lakewood	Lakewood and I-5	83	Caltrans	
Florence	Florence Blue Line Station	7225 Graham Ave	100	Metro	Blue Line
Long Beach	Willow Blue Line Station	2750 American Ave	920	Metro	Blue Line
	Wardlow Blue Line Station	3420 N. Pacific Ave	25	Metro	Blue Line
Los Angeles	Avalon Green Line Station	11667 S. Avalon Blvd	105	Metro	Green Line
	Harbor Fwy Green Line Station	11500 Figueroa St.	341	Metro	Green Line
	Vermont Green Line Station	11603 S. Vermont Ave.	290	Metro	Green Line
	Manchester	I-110 and Manchester	127	Caltrans	
	Slauson	I-110 and Slauson	160	Caltrans	
	Union Station Alameda	800 N. Alameda Ave	1500	Metro	
Lynwood	Long Beach Green Line Station	11508 Long Beach Blvd	650	Caltrans	Green Line
Rancho Dominiguez	Del Amo Blue Line Station	20220 Santa Fe	280	Metro	Blue Line
San Pedro	Channel St	Battery St / Gaffey St / 610 Channel St	106	Caltrans	
	San Pedro II	515 N Beacon and Harbor Blvd	280	Caltrans	

Source: http://www.commutesmart.info/lotslaneslinks/parkridelots.asp, Accessed: May 2008

2.4 HIGH OCCUPANCY VEHICLE LANES

The purpose of the High Occupancy Vehicle (HOV) system is to enhance mobility on the freeway system by enabling carpool users to bypass areas of heavy traffic congestion with exclusive HOV lane use privileges. By encouraging ride-sharing, HOV lanes allow for more passengers to travel in fewer vehicles thereby achieving higher passenger flow rate and enhanced congestion mitigation. In Los Angeles County, Metro and Caltrans are cooperatively responsible for planning and funding the development of Los Angeles County's HOV system. The existing HOV system in Los Angeles County includes 425 miles of HOV lanes along fourteen freeway corridors. The entire County HOV system is open to HOV traffic 24 hours a day, seven days a week, and permits carpools with a minimum occupancy of two persons (except for El Monte Busway). The following sections describe the existing and future HOV systems in or near the I-710 study area (I-710 does not have HOV lanes).

2.4.1 I-110 Existing and Planned HOV Lanes

- 12 miles of existing HOV lane from SR-91 to I-10
- Direct HOV connector from I-110 southbound to I-105 eastbound and westbound and I-105 eastbound and westbound to I-110 northbound.
- No future HOV facilities are currently planned on the I-110.

2.4.2 I-605 Existing and Planned HOV Lanes

- Approximately 20 miles of HOV lanes from north of I-405 to I-10
- No existing direct HOV connectors between the I-605 and intersecting freeways
- Future HOV facilities that are currently planned on the I-605 include direct HOV connectors from the I-605 to I-405 freeway

2.4.3 I-405 Existing and Planned HOV Lanes

- Along the entire length within project study area
- No existing direct HOV connectors between the I-405 and intersecting freeways within project study area
- Future HOV facilities that are currently planned on the I-405 include direct HOV connectors from the I-405 to I-605 freeway

2.5 GOODS MOVEMENT

Goods movement has become a serious challenge for the San Pedro Bay ports' transportation network for it influences traffic congestion and delays on roadway systems and inter-modal corridors as a result of large truck volumes. Within the study area, increased congestion is

anticipated as the infrastructure capacity is not growing consistently with the projected trade growth. Goods movement in the Project vicinity utilizes a system of airports, seaports, and intermodal facilities[5] linked by rail lines and trucks to inland warehousing and distribution centers. Among these various import/export channels, port-specific truck traffic most directly impacts the mobility on the I-710 study corridor given the freeway's direct access to the San Pedro Bay ports.

In 2006, the Port of Los Angeles (POLA) and the Port of Long Beach (POLB) together handled 15.7 million Twenty Foot Equivalent Units (TEU); making them the largest and second largest container ports in the United States. Port related freight movements rely mainly on the rail network, the trucking network through the local and regional roadway systems or a combination of the two systems.

2.5.1 Goods Movement by Rail

Cargo movements utilizing the rail system are handled either directly at on-dock rail yards or trucked to near-dock or off-dock intermodal rail facilities. In the year 2006, over 24 percent of San Pedro Bay ports' international cargoes were processed through on-dock rail yards, 8 percent through the near-dock intermodal yard, and 20 percent through off-dock facilities[6].

2.5.1.1 Railroad Lines

The two long-haul railroads operating in the study area are Union Pacific (UP) Railroad and Burlington Northern and Santa Fe (BNSF) Railroad. Together, the two railroad networks cover the western two-thirds of the United States and transport more intermodal cargo than any other rail system in the world. The **Alameda Corridor** is a railroad mainline shared by BNSF and UP that provides direct access to POLA and the POLB, as well as to near-dock intermodal facilities.

- **Union Pacific (UP) Railroad** – Within Project vicinity, UP Main Line shares railway with the Metrolink Riverside Line and runs in the east-west direction through the San Gabriel Valley. The UP Main Line connects to the UP East Los Angeles Rail Yard located in Commerce. In most cases, the UP Main Line remains at grade and the roadways pass below the tracks except at the I-710 interchange just south of I-5 where the freeway crosses over the tracks. Another UP railway traversing the study area is the former UP main line (prior to the opening of Alameda Corridor). This line is generally north-south oriented and is used for industry access as well as emergency backup to the Alameda Corridor. This railway crosses the I-710 at two locations: between Imperial Hwy and Firestone Blvd. where the railway crosses below the I-710 and between I-405 and Del Amo Blvd. where the railway crosses over the I-710 via a bridge. There are two other instances where UP facilities cross over the I-710 freeway: between Slauson Ave. and

[5] A facility that involves the transportation of freight in a container or vehicle, using multiple modes of transportation (rail, ship, and truck), without any handling of the freight itself when changing mode.
[6] SCAG 2008 Draft RTP Goods Movement Report, December 2007

Gage Ave. and just north of Firestone Blvd. Based on aerial photography these two railways appear to be inactive at this time.

- **Burlington Northern and Santa Fe (BNSF) Railroad** – Within the I-710 Corridor vicinity, the BNSF Main Line is generally east-west oriented and shares its railway with the Metrolink Orange / 91 Line and the Amtrak Pacific Surfliner. The BNSF Main Line connects to the BNSF Hobart Yard located in Vernon. The BNSF Main Line crosses the I-710 just north of Bandini Blvd. where the I-710 freeway is elevated over the railway.

- **Alameda Corridor** – The Alameda Corridor is a 20-mile rail expressway managed by the Alameda Corridor Transportation Authority (ACTA) that runs from the San Pedro Ports to the rail yards in East Los Angeles connecting them to the BNSF and UP mainlines heading east. The expressway runs fully grade-separated along Alameda Street allowing trains to travel more efficiently and safely.

2.5.1.2 On-Dock Railroad Intermodal Facilities

The Ports have 10 on-dock intermodal facilities, with five each at POLA and POLB. Located at the Port of Los Angeles are the following:

- West Basin ICTF (operated by China Shipping and Yang Ming),
- Terminal Island Container Intermodal Facility, operated by NYK and Evergreen (considered to be two terminals as each operator has a designated lease of tracks for it's exclusive use and operation),
- Pier 400 operated by Maersk, and
- Pier 300 operated by American President Lines.

The Port of Long Beach's facilities include:

- Pier T operated by Hanjin,
- Pier A operated by Mediterranean Shipping Company,
- Pier F operated by Long Beach Container Terminal on behalf of OOCL,
- Pier G operated for K-Line, and
- Pier J operated for COSCO (Pier J has two separate terminals, which are assumed to operate in tandem as one facility to serve the needs of COSCO in this study.).

Three major port tenants do not have on-dock intermodal facilities. They are TraPac in POLA, which is operated for Mitsui. Cal United Terminal, Pier D and E in the POLB, operated for Hyundai, and Pier C in the POLB which is operated for Matson.

The Environmental Impact Report (EIR) for the expansion of TraPac, which includes an on-dock intermodal facility, has been approved by the POLA Board of Harbor Commissioners. The process awaits approval by the City Council of Los Angeles. If approved, it will be the first Port expansion project cleared for construction in the past 7 years and, according to the *San Pedro Bay Ports Rail Study Update*, it will be operational by the end of 2009.

The POLB has plans to develop a Middle Harbor Terminal Rail Yard. This project would combine Piers D, E, (Hyundai) and F (OOCL) into a mega terminal and provide an on-dock intermodal facility for Hyundai. According to the Plan, this project has a completion date of late 2015. It is worth noting that at Pier F, OOCL has an on-dock facility in POLB that is inadequate to meet the volume demand of OOCL for on-dock loading. The Middle Harbor project will satisfy this demand too, in addition to meeting the needs of Hyundai.

The construction of the facilities described herein will greatly lessen the need for off-dock rail intermodal facilities, provided new and modernized near-dock terminals are also constructed. In addition, the POLB is in the process of constructing a new facility at Pier S, with an on-dock intermodal facility, on Terminal Island. The *San Pedro Bay Ports Rail Study Update* shows this project being completed in 2009.

2.5.1.3 Near-Dock Railroad Intermodal Facilities

The Intermodal Container Transfer Facility (ICTF) is operated by UP for its exclusive use. The facility is situated about 5 miles north of the Ports. Access is from the Terminal Island Freeway, SR 47/103. The original facility footprint of 148 acres was constructed on POLA property. The terminal opened in November 1986, and currently has a property lease of 50 years expiring in 2034. Since the opening of ICTF, UP has expanded the operation to 233 acres by purchasing and leasing adjacent property. In its first full year of operation (1987), ICTF loaded 303,056 containers. In 2007, the lift volume was 710,460 containers. A moderating influence on growth has been the construction of on-dock facilities. When ICTF opened, there were no on-dock intermodal facilities; now there are 10 such facilities situated in the Port Complex. Each time an on-dock terminal has begun operation, volume at ICTF declines for a short while, then begins to grow again. There are no other near-dock intermodal facilities at this time. However, BNSF has proposed the Southern California Intermodal Gateway (SCIG) which is currently developing required environmental documentation and discussed in Section 3.2.8. Also discussed in Section 3.2.8 is the possible expansion of ICTF to double its capacity which would also require environmental clearance.

2.5.2 Goods Movement by Truck

The port-specific cargo movements associated with truck traffic include truck trips made between the port terminals and intermodal facilities and trips made directly from port terminals to inland warehousing, distribution centers, or stores. Truck trips excluding those moving directly from the ports to near-dock and off-dock intermodal terminals, account for the remaining 48% of the international cargo container volumes. Port-related truck traffic utilizes the local and regional roadway and freeway system and is a direct contributing factor to many impacts in the study area including congestion, roadway deterioration, and roadway accidents.

Table 2.2 summarizes the daily vehicle and truck volumes on the I-710 from the preliminary baseline forecast prepared for the I-710 Corridor EIR/EIS. This baseline is for the year 2005 and is based on traffic models prepared by the Port of Long Beach for the Pier S EIR.

Table 2.2 – Existing Truck Volumes on I-710 (2005)

I-710 Segments	Existing Daily Volume	Existing Daily Truck Volume	Existing Daily Port Truck Volume	Total Truck as % of Total Vehicle Volume	Port Trucks as % of Total Truck Volume
PCH to Willow	153,232	22,821	17,162	14.9%	75.2%
Willow to I-405	161,451	23,104	17,146	14.3%	74.2%
I-405 to SR-91	210,253	25,522	15,388	12.1%	60.3%
SR-91 to I-105	327,956	28,398	10,416	8.7%	36.7%
I-105 to I-5	251,554	21,324	6,580	8.5%	30.9%
I-5 to SR-60	249,657	16,063	993	6.4%	6.2%
SR-60 to I-10	180,053	10,777	408	6.0%	3.8%

Source: Year 2005 PORTs Model Run Results, Cambridge Systematics
Note: The percentage of truck traffic shifted to night operations as a result of PierPASS is included in the following section.

2.5.2.1 Truck Trip Reduction – the PierPASS Program

In an effort to alleviate traffic congestion on the roadway systems accessing the Port of Long Beach (POLB) and the Port of Los Angeles (POLA), the marine terminal operators created the non-profit organization named PierPASS to implement the OffPeak program that would shift port related container traffic away from peak commuter hours. The OffPeak program was launched at the Ports of Los Angeles and Long Beach in July of 2005. The OffPeak program provides an incentive for cargo owners and their carriers to move cargo at night time periods and on weekends, as a way of reducing truck traffic during peak day time periods on major highways around the Ports, alleviating Port congestion (for example, at truck gates at marine terminals), and reducing air quality impacts from high peak period truck traffic volumes.

The program is based on a market incentive approach, where all loaded containers entering or exiting the marine terminals at the ports by truck during the day time shifts (Monday through

Friday, 3:00 am to 6:00 pm) are charged a Traffic Mitigation Fee (TMF). (The original TMF of $40 per TEU was increased to $50 per TEU in April 2006 to cover the higher than expected costs of sustaining the OffPeak program). The Beneficial Cargo Owners (shippers, consignees, or their agents) are responsible for the payment of the fee. Neither the trucking community nor the ocean carriers is assessed a fee under this program. In addition to providing an incentive for the shippers to divert cargo to off-peak time periods, the TMF also serves to defray the additional costs incurred by the Marine Terminal Operators (MTOs) to keep terminal gates open at night and on weekends.

Under this program, all the container terminals in the two ports established off-peak shifts, which include four new evening shifts per week (Monday through Thursday 6:00 p.m. to 3:00 a.m.) and one new weekend shift (Saturday 8:00 a.m. to 6:00 p.m.). Cargo entering or exiting by truck during the off-peak shifts is exempt from the TMF, thus providing incentive for truck drayage operations during these time periods. The program exempts from the TMF all intermodal containers departing or arriving via the Alameda Corridor. Also, there is no fee for empty containers, chassis, or truck bobtails moving through the terminal gates.

All the marine terminals at the ports have adopted the same night and weekend operations for improved operational efficiency as part of the program, and the services rendered by the MTOs at the gates during the off-peak shifts are exactly the same as during the day time shifts.

It should be noted that under current labor rules, the longshore workers have a “lunch break” during the night shift at 10 p.m. and the terminal gates are closed during this break. This has resulted in much of the gate activity that has been shifted from day to night occurring before the 10 p.m. break even though this shift actually runs until 3 a.m. This does have some implications on freeway truck volumes which are described below. At some point in the future, it may be possible to gain further p.m. peak period truck traffic reductions on the I-710 corridor by implementing an appointment system for the night shift, spreading some of the activity later into the night. However, these benefits could be offset by the negative impact of growth in late night traffic. The majority of drivers are extending their work day to accommodate night pickups/dropoffs and are aware that during the “lunch break” they will be inactive. If they are able to complete their work by 10 p.m. they are able to leave, as opposed to staying until 3 a.m. The program continues to run until 3 a.m. regardless because the night shift ends by contract at that time (the contract covers workers in addition to those at the gates who are actually working until 3 a.m.). Workers who are brought on for the shift will be paid for the entire shift. As the PierPASS fee is set to cover the costs of the night gate operation, the marine terminal operators have their costs covered and thus are ambivalent to gate operations ceasing at 10 p.m. or continuing until 3 a.m.

The PierPASS OffPeak program has been a success in terms of exceeding objectives of diverting truck traffic from day time to off-peak (night and weekend) time periods. On its first day of operations, more than 1,000 port users registered for the program, and over 7,500 containers were shipped during nighttime rather than daytime periods. The program was aimed

at diverting 15 to 20% of all cargo movements to off-peak shifts by the end of the first full year of operation, but far exceeded expectations by realizing off-peak diversions of the order of 30 to 35% at the end of the first full year. More than 2.5 million truck trips had been diverted to the off-peak shifts at the end of the first year of the program, amounting to an average of 11,000 truck moves per day. According to a *Journal of Commerce* article dated May 07, 2007, around 5 million trucks had been diverted to off-peak hours since the start of the program in July 2005, and around 60,000 truck trips in a normal week moved during the off-peak hours as of spring 2007.

Based on work currently being performed for FHWA[7], some notable trends in time-of-day truck traffic distribution on the I-710 corridor before and after the implementation of the PierPASS OffPeak program are presented here:

- There has been a steady increase in the share of truck traffic in the off-peak 7 p.m. – 6 a.m. time period in the northbound direction, from 16.7% in the month just before the start of the OffPeak program to more than doubling of the share to 35.5% in September 2007 (the latest month for which Caltrans data were available). This is a clear effect of the OffPeak program. A large share of the trucks arriving at the port with loaded export containers or to pick up import containers at the start of the off-peak shift (6 p.m.) typically leave between the 7 p.m. to 10 p.m. time-period (before the start of the lunch break of longshore labor), which is observed in terms of the steady rise of the shares during this time period in the northbound direction of I-710. This diversion of truck traffic from the day time to the off-peak time periods has led to a reduction of share of truck traffic in the 9 a.m. – 3 p.m. time period from 51.4% in May 2005 to 38.9% in September 2007.

- The trends in the southbound direction are also worth noting, where there was a significant increase in the share of off-peak (7 p.m. – 6 a.m.) truck traffic from 17.4% in May 2005 to 28% in February 2006. Average weekday distributions for February 2007 and September 2007 show an interesting shift in the trend, with reductions in share of truck traffic in the 7 pm – 6 am time period (compared to February 2006), and an increase in share of truck traffic in the 3 pm – 7 pm time period. This can be attributed to more trucks arriving at the port before the start of the night off-peak shift (6 p.m.) in order to expedite container pick-up and delivery processes, and try to make additional drayage return truck trips before 10 p.m. The slight increase in the share of truck traffic in the 7 p.m. – 6 a.m. time period between February and September 2007 could be partly explained by some of the carriers being able to make additional return drayage trips to the port in this time period.

[7] Technical Memorandum to FHWA: Task 1 – Summary and Analysis of Ports of Los Angeles and Long Beach Pier PASS Off-Peak Program, Port and Other Freight Gateway Peak Pricing Program Evaluation Project

There is a notable trend observed between February 2007 and September 2007 in the shifting of truck trips from the 6 a.m. – 9 a.m. time period (which is the peak commute time period) to the 3 p.m. – 7 p.m. and the 7 p.m. – 6 a.m. time periods.

2.5.3 Off-Dock Railroad Intermodal Facilities[8]

The off-dock intermodal facilities process a mix of international and domestic containers carried by trucks. Most of the international containers loaded off-dock are concentrated at BNSF's Hobart Yard of BNSF and UP's East Los Angeles Yard. UP's yard is situated in the City of Commerce and BNSF's is in the City of Vernon with both sitting astride from each other along Washington Boulevard. The following provides a summary of these and the other major off-dock intermodal yards.

- **Hobart Yard** – Hobart is the largest intermodal facility in the U.S., dwarfing all other such facilities in terms of throughput. The main terminal site constitutes 285 acres of property. BNSF supports the operation from several remote yards which are situated near the main facility. The *San Pedro Bay Ports Rail Study Update* estimates the capacity of Hobart to be 1.7 million lifts annually.

  As BNSF does not operate a near-dock intermodal facility, Hobart is used to serve its marine customers as support for the on-dock operation. By volume, about 60 percent of all containers passing through Hobart are international containers, with the balance being domestic boxes. The number of international containers processed at Hobart in 2007 was 789,656 units. This makes the throughput of international containers at Hobart greater than ICTF, with more international volume than any intermodal facility in the U.S. The balance of throughput at Hobart was about 584,824 units of domestic containers and trucks.

  The volume of trailers moving by rail has declined in recent years, as the superior economics of double-stack service has made domestic containerized shipping more compelling. Both of the western Class I railroads have been pushing their intermodal service partners strongly towards containers, but for some applications trailers continue to be preferred. During the forecast period through 2035, it is likely that the remaining shipment of trailers by rail will disappear, at least in conventional intermodal service.

- **East Los Angeles (ELA)** – East Los Angeles (ELA) is a UP operated intermodal facility. The facility is situated on approximately 120 acres. The *San Pedro Bay Ports Rail Study Update* estimates the capacity of ELA to be 510,000 lifts annually. Of the 358,769 containers and trucks processed at ELA in 2007, 80,253 were international and the balance, domestic. While ICTF is the primary UP facility utilized for loading international containers, international containers loaded at East LA are combined with domestic containers to make a solid train which is likely destined for small intermodal markets like Salt Lake City and Denver. The UP's operating scheme is to operate a daily train to Denver with domestic, (including UPS service), and international containers. This train sets out traffic destined for Salt Lake City on its route to Denver.

[8] The facilities serve both rail and truck freight.

- Los Angeles Transportation Center (LATC) – Los Angeles Transportation Center (LATC) is situated on the east side of the Los Angeles River across from the Los Angeles Union Passenger Terminal. This facility is the only Basin intermodal terminal from which Pacific Northwest service is operated. LATC is located on about 110 acres of property. The San Pedro Bay Ports Rail Study Update estimates the capacity of LATC to be 340,000 lifts annually.

- **City of Industry (CofI)** – City of Industry (CofI) is another UP operated intermodal facility. It is situated on a 90 acre parcel of property. The *San Pedro Bay Ports Rail Study Update* estimates the capacity to be 220,000. UP has long term plans to expand the terminal to 160 acres by combining two contiguous pieces of property. UP forecasts that the build out will increase the facility's capacity to 600,000 domestic trailers and containers annually. As this is a long term plan with an unknown timeframe it is not included in the assumptions for this analysis.

- **San Bernardino (SB)** – San Bernardino (SB) is operated by BNSF and is the only intermodal facility in the Inland Empire. The *San Pedro Bay Ports Rail Study Update* estimates that the capacity of SB is 660,000 lifts annually. SB is situated on 150 acres of land. Expansion of this facility is unlikely as it would require the taking of residential property. San Bernardino does not process any international containers.

2.5.3.1 Rail System Constraints

The operational performances of freight movements depend largely on the physical as well as operational capacity at the intermodal yards. Each intermodal yard handles various levels of domestic and international containers. **Table 2.3** summarizes the existing rail intermodal facility throughput capacity at the major off-dock yards in the study area[9].

Table 2.3 - Rail Intermodal Facility Throughput Capacity

Facility	Capacity (Lifts)	2006 International Lifts	Percent of Yard International Traffic
BNSF Hobart	1,700,000	808,096	59%
BNSF San Bernardino	660,000	0	0%
UP East Los Angeles	510,000	80,108	24%
UP LATC	340,000	32,912	16%
UP City of Industry	220,000	2,254	1%
Total Off-Dock	3,430,000	923,370	

[9] Draft Technical Memorandum I-710 Railroad Goods Movement Study, 2008

Table 2.4 provides an overview of the railroad intermodal volume through the LA basin intermodal facilities and on-dock facilities of BNSF and UP for the past three years.

Table 2.4 – LA Basin Railroad Intermodal Volume by Railroad and Facility (number of annual lifts) [10]

Year	LATC (Off-Dock)	City of Industry (Off-Dock)	East LA (Off-Dock)	ICTF (Near-Dock)	On-Dock	Total
Union Pacific						
2000	226,424	163,400	407,636	630,636	Not Avail.	**1,428,096**
2001	193,526	193,584	386,209	679,879	366,250	**1,819,448**
2002	188,752	240,592	438,209	689,432	394,240	**1,951,225**
2003	206,532	252,320	470,927	558,993	458,483	**1,947,255**
2004	228,361	242,428	466,540	569,349	507,127	**2,013,805**
2005	207,056	222,245	357,738	640,746	621,704	**2,049,489**
2006	202,384	191,018	340,003	726,622	831,314	**2,291,341**
2007	186,393	191,892	358,769	710,460	873,106	**2,320,620**

Year	Hobart Yard (Off-Dock)*	San Bernardino (Off-Dock)	On-Dock	Total
BNSF				
2001	1,040,601	410,922	421,084	**1,872,607**
2002	1,069,602	449,906	423,404	**1,942,912**
2003	1,216,652	494,777	591,298	**2,302,727**
2004	1,318,583	557,151	783,589	**2,659,323**
2005	1,338,374	554,904	977,954	**2,871,232**
2006	1,366,535	569,047	1,285,115	**3,220,697**
2007	1,374,480	499,974	1,171,647	**3,046,101**

Source: BNSF and UP Railroads.

Note: These numbers are based on operating data. Other reports are based on billing information. For operating convenience, containers may be unloaded at a facility other than the billing address. In this case, the railroad will dray the container to its billed point. There may be a small volume variance in reports because of these disparate data sources.

[10] Draft Technical Memorandum, I-710 Railroad Goods Movement Study, 2008

Based on projected growth in container volumes at the Ports as well as continued but modest growth in domestic intermodal traffic, both railroads anticipate the need to add intermodal terminal capacity and there are limited opportunities to do so. Both railroads have a preference for adding this capacity as near to the ports as is possible. The BNSF has plans to construct a Southern California International Gateway (SCIG) terminal on a site adjacent to the ICTF and the UP has plans to significantly expand the existing ICTF. These projects are discussed in more detail later in this report.

Main line railroad capacity will be strained throughout the LA Basin and both railroads have track construction projects underway. In addition to track expansion, between now and 2030, the railroads will use a combination of management techniques to ensure that there is sufficient main line capacity to transport all containers offered by shippers. For example, the railroads can be expected to operate longer trains. There is evidence of this practice already being employed. Between 2005 and 2006, BNSF had an intermodal increase of about 11 percent. Even with the traffic increase, by building longer trains BNSF was able to haul the additional intermodal traffic with 4 percent fewer trains than the prior year. The goal in 2006 was to operate trains with a minimum of 240 containers. Today that goal is 300 containers per train.

The railroads are also making track investments across their system to eliminate pinch points. These investments have included 2nd and 3rd main tracks and siding expansion where on single track routes trains meet or pass each other.

2.6 INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

Intelligent Transportation System (ITS) consist primarily of operational investments, policies and actions aimed at improving traffic movement, promoting travel safety, and increasing transit usage and rideshare participation. There are a range of applications which can be used to achieve these results on both the freeway and arterial systems. Examples of these applications include auxiliary lanes and minor interchange improvements, signal coordination, bus speed improvements through signal timing and signal preemption, bus turnouts, and other safety and operational improvements. Physical roadway improvements on the freeway and arterial systems are coupled with technology such as closed-circuit television (CCTV), roadway sensors, and changeable message signs to maximize traffic information gathering and sharing to improve system-wide efficiency. These technologies are also used to increase the efficiency of goods movement by improving roadway operations, information dissemination, and fleet management strategies. The greatest benefits can be realized when a corridor or region is able to interconnect these systems to maximize their effectiveness. Listed below are existing ITS projects within the I-710 study area targeted to improve the efficiency of moving people and goods. For more detailed information on these and other planned projects in the I-710 Corridor see the *Gateway Cities ITS Integration Plan for Goods Movement Study.*

Table 2.5 Intelligent Transportation Systems (ITS) and Information Technology Existing Projects

Project	Principle Purpose/Objective
Adaptable Radiation Area Monitor (ARAM)	The ARAM system is an electronic data gathering system capable of indentifying different types of radioactive materials via four ground and one overhead detector.
Automated Identification Verification Technology (Radio Frequency Identification, RFID)	RFID and other smart-tag technologies allow port and terminal operators to verify identification of and authorize clearance for drayage operators and other transportation service providers doing business at the port.
California Commercial Vehicle Inspection System (CCVIS)	The CCVIS is a software system that allows electronic collection of data while an inspection is being performed.
Commercial Vehicle Information Exchange Window system (CVIEW)	The CVIEW system is a state-based electronic data exchange system that provides carrier and vehicle safety and credential information to fixed and mobile roadside inspection stations, state agencies, and other third party users.
Commercial Vehicle Information Systems and Network (CVISN)	The SVISN program was established in the mid-1990's as a means to coordinate deployment of relevant ITS projects focusing on three primary elements: 1) Safety Information Exchange, 2) Credentials Administration, and 3) Electronic Screening.
Commercial Vehicle-Related Communication and Tracking	Nextel cellular telephones feature a two-way radio communication and a Global Position System (GPS) tracking device used mostly as the communication between the dispatch hub and the commercial vehicle operator and to better manage the fleets via geo-locations, origin-destination data, and travel times.
LA County Information Exchange Network (IEN)	The IEN project establishes a common network using Common Object Request Broker Architecture (CORBA) and interface definition language (IDL) to allow the sharing of information and the control of various traffic systems in the Los Angeles County region.
I-710 Installment of Communication System and CCTV System	This project installed facilities for a traffic monitoring system and CCTV system from Pacific Coast Highway to the I-405 on the I-710.
I-710 Pavement Improvement Project in City of Long Beach from northbound Harbor Scenic Drive on ramp to 0.08 km south of Pacific Coast Highway separation (total 2.1 km)	The project includes installation of conduit and loop detectors for future Intelligent Transportation System deployment.
Automated Traffic Surveillance and Control System (ATSAC)	The ATSAC is a traffic signal control system that monitors traffic conditions and system performance and makes real time adjustments to signal timing to maximize traffic flow.
Regional Integration of Intelligent Transportation Systems (RIITS)	The RIITS network is a multi-modal, web-based communications network that supports information exchange in real-time between freeway, traffic, transit and emergency service agencies.

Table 2.6 Intelligent Transportation Systems (ITS) and Information Technology Existing Projects (Continued)

Project	Principle Purpose/Objective
Safety and Fitness Electronic Records system (SAFER)	The SAFER system is a component of ITS and CVISN architecture. It offers company safety data over the internet including carrier, vehicle, and driver safety and supporting credential information to fixed and mobile roadside inspection stations.
Virtual Container Yard (VCY) Implementation	The program uses web-based technology (can also use cell phones or GPS) to allow trucks to identify empty containers for reuse outside the Port areas.

3.0 MULTIMODAL ALTERNATIVES ASSESSMENT

3.1 I-710 CORRIDOR PROJECT EIR/EIS PROJECT ALTERNATIVES

The study is evaluating a range of I-710 project alternatives, including the No Build Alternative, for potential study in the Draft EIR/EIS. Six alternatives have been identified through the formal NEPA/CEQA scoping process. These will be screened down to two alternatives for detailed analysis in the EIS/EIR. The six alternatives are:

- No Build
- Transportation Systems Management/Transportation Demand Management (TSM/TDM) and Transit – may include up to eight new ramp meters, improved signage, parking restrictions on major arterials, empty container management through policies and incentives, implementation of truck emission/safety enforcement facilities, expanded public transportation, and an expanded Intelligent Transportation System (ITS) to include entire study area.
- Goods Movement Enhancement by Rail and/or Advanced Technology
- Arterial Highway and I-710 Congestion Relief Improvements
- Mainline I-710 Improvements
- Option A – 10 general-purpose lanes with no carpool lanes
- Option B – eight general-purpose lanes with one carpool lane in each direction (total of 10)
- Locally Preferred Strategy Hybrid Design (I-710 Mainline Improvements with the addition of a separated four lane freight movement facility) - Includes ten general purpose lanes next to a separated four lane freight movement facility from the Ports of Los Angeles and Long Beach (Ocean Boulevard) to the UP and BNSF intermodal yards southeast of the I-710/I-5 interchange. This alternative is a community-based recommendation from the previous I-710 Major Corridor Study: Major Opportunity/Strategy Recommendations and Conditions.

Alternative 1: No Build

The No Build Alternative consists of those transportation projects that are already planned and committed to be constructed by the year 2035, the planning horizon year for this study. Therefore, Alternative 1 represents future travel conditions in the I-710 Corridor and is the baseline against which other transportation alternatives proposed for the corridor will be assessed. The projects included in this alternative are based on SCAG's 2008 Regional Transportation Plan (RTP) 2035 Baseline Alternative along with the 2008 Regional Transportation Improvement Program (RTIP) project list.

Freeway System:

- I-710 from Ocean Blvd. to I-10 – pavement and median rehabilitation, selected bridge widening (no additional capacity), ITS element addition, landscape restoration
- I-5, Orange County line to I-605 – 10-mixed flow lanes, 2 HOV lanes, selected interchange improvements
- SR-91 (County line to I-110) – 8-mixed flow lanes, 2 HOV lanes
- I-110 (POLA to I-10) – 8-mixed flow lanes, 4 HOV lanes (north of SR-91)
- I-10 (I-110 to SR-60) – 8-mixed flow lanes
- I-10 (Baldwin Ave to I-605) – HOV lanes, TOS Projects
- I-105 (I-710 to I-605) – 6-mixed flow lanes, 2 HOV lanes
- I-605 (Orange County line to SR-91) – 8-mixed flow lanes, 2 HOV lanes
- I-605 (SR-91 to I-5) – 10-mixed flow lanes, 2 HOV lanes
- I-605 (I-5 to I-10) – 8-mixed flow lanes, 2 HOV lanes
- I-405 (I-110 to I-710) – 8-mixed flow lanes and 2 HOV lanes
- SR-60 (I-710 to I-605) –10-mixed flow lanes
- SR-60 (I-605 to I-215) – 10-mixed flow lanes
- SR-47 (at Ocean Blvd.) – interchange improvements
- SR-47/Henry Ford Ave. Extension to Alameda St.
- I-405 (Carson City at Del Amo Blvd.) – new overcrossing
- Implementation of initial Intelligent Transportation System Improvements within the I-710 study area, including POLA/POLB's ATMIS System

Roadway System

- Alameda Street/Henry Ave. - SR-47 ramps to SR-91 ramps – widen to six lanes
- Avalon Blvd (I-405) – interchange improvements
- Existing condition (as defined in SCAG 2007 base mode)
- New Four-Lane Connector Road to Del Amo Blvd. – Avalon Blvd. to Main St. (I-405 freeway)

- Firestone (at I-710) – ramp improvements
- Firestone (at Rio Hondo Channel Bridge to Garfield) – WB widen to 3 lanes
- Washington Blvd (at Telegraph Rd) – intersection improvements
- Wilmington Ave. / 223rd St. (I-405 Interchange) – Interchange improvements
- Del Amo Blvd., Main Street to Vermont Ave. – widen from two to six lanes
- Sepulveda Blvd., Alameda St. eastward to the Carson city limits – widen from two to four lanes
- Gerald Desmond Bridge Replacement – widen to six lanes
- Atlantic Blvd., Olympic Blvd. to Whittier Blvd. – widen from four lanes to six lanes
- Phase I (31) and Phase II (45) truck-impacted intersections
- I-710 Early Action Plan (Firestone Blvd / Atlantic Ave) – Intersection improvements

ITS/Traffic Control System

- Signal System upgrade and Signal Synchronization for major arterials in the I-710 Study area, including:
  - Telegraph Rd. (currently in implementation phase)
  - Atlantic Blvd. (currently in implementation phase)
  - Del Amo Blvd.
  - Imperial Hwy. (currently in implementation phase)
  - Ocean Blvd.
  - Florence Ave.
  - Carson St. (currently in implementation phase)
  - Pacific Blvd. / Long Beach Blvd. (currently in implementation phase)
  - Artesia Blvd. (currently in implementation phase)
  - Bandini Blvd. (currently in implementation phase)
  - Alameda St.
- Gateway Cities Truck Impacted Intersection Improvements Program (Phases I-IV)
- I-710 Communication System and Closed Circuit TV System
- Ports of Los Angeles and Long Beach Advanced Transportation Management System (ATMS) and Advanced Traveler Information System (ATIS)
- SELAC – Traffic Signal Synchronization
- Wilmington ATSAC/ATCS Project

- Harbor-Gateway ATSAC/ATCS Project
- Gateway Cities Forum Traffic Signal Corridor Projects
- Changeable message signs (at south end of I-710 – POLB/POLA – ATMIS project)

Rail/Transit

- Alameda Corridor, LA/LB Ports to approximately Washington Blvd.
- Los Angeles Blue Line downtown Long Beach to 7th St. / Metro Center in downtown Los Angeles, operational improvements to existing line
- 1st St. parking structure near Blue Line terminus in Long Beach
- Los Angeles Eastside Corridor/ Pasadena Gold Line Eastside Extension, Union Station to Pomona/Atlantic in East Los Angeles
- Green Line, miscellaneous capital and operational improvements to existing line
- Exposition Light Rail – Phase I to Venice-Robertson Station, Phase II to Santa Monica
- Bus Service Improvements, miscellaneous operational improvements to existing system (approx. 20% increase in service levels)
- Atlantic Avenue Metro Rapid Bus: The Atlantic Avenue Metro Rapid service operates along Atlantic Avenue from the Long Beach Transit Mall to east Los Angeles and Pasadena
- Long Beach Boulevard Metro Rapid Bus: This route follows Long Beach Boulevard from the Long Beach Transit Center to downtown Los Angeles
- Bus improvements associated with the Metro and Caltrans HOT lanes demonstration project, Fastlanes, on I-110 and I-10, with implementation planned by the end of 2010.

Goods Movement

- Near dock or on-dock rail yard and line improvements or additions per ports rail Master Plan and the future port cargo demand scenarios developed as part of Initial Feasibility Analysis task
- Ports 24-hour terminal operations (60 percent day shift, 20 percent nigh shift, 20 percent hoot shift)
- Port Roadway Improvements – selected street widening, interchange and intersection improvements, grade separations per Ports Transportation Master Plan
- Ports Clean Truck Programs

Alternative 2: Transportation Systems Management/ Transportation Demand Management (TSM/TDM) and Transit

Alternative 2 includes the projects in Alternative 1 plus operational investments, policies, and actions aimed at improving goods movement, passenger auto and transit travel, as well as reducing the environmental impacts of transportation for cities and operations in the I-710 study area, including improvements to transit in the corridor. Suggested improvements include the following:

I-710 Freeway (Mainline)

- Additional ramp metering (approximately 13 sites)
- Improved signage on I-710 (added overhead signs, advanced notification)
- Freeway ITS on I-710, I-110, and I-605

Interchange/Arterials

- I-710 ramps terminus/arterial improvements
- Parking restrictions on major parallel arterials during peak periods (Atlantic Blvd. (PCH to SR-60); Cherry Ave./Garfield Ave. (PCH to SR-60); Eastern Ave. (Cherry Ave. to Atlantic Blvd); Long Beach Blvd. (San Antonio Dr. to Firestone Blvd.))
- Adaptive Ramp Metering at PCH
- Targeted Arterial ITS on Atlantic, Cherry, Eastern, and Long Beach
- General Arterial ITS on all other arterials on screenlines

Goods Movement

- Empty container management through policies and incentives (including virtual container yard, beyond No Build)
- Expanded drayage truck emission reduction program
- Implementation of Truck Emission/Safety Enforcement Facilities

Transit

- 25% transit service level increase within study area
- Additional bus shuttles to/from the Blue/Green Lines
- Expanded Metrolink service (*if possible*, see Section 3.2.1 for follow-up discussion)
- Expanded high speed bus service between Los Angeles and Orange Counties

- Enhanced community bus service (e.g. local circulators in Long Beach, Norwalk, Montebello, etc.)

Alternative 3: Goods Movement Enhancement by Rail and/or Advanced Technology

Alternative 3 includes all the proposed improvements included for Alternatives 1 through 2 plus an analysis of maximum goods movement by rail. The systems involved include the Alameda Corridor Transportation Corridor and increased (and maximum) rail capacity from the BNSF and UP rail yards in Vernon and Commerce. This alternative also includes expanded or improved on-dock or near-dock rail facilities (existing or contemplated). There are separate reports that analyze these two goods movement options in more detail (Alternative Goods Movement Technology Analysis – Initial Feasibility Study Report (Task 160.10.60) and Initial Feasibility Analysis Report (Task 165.10.09) for the I-710 Corridor Project EIR/EIS.

Alternative 3 will include a feasibility analysis of non-polluting alternative goods movement technologies (other than rail or heavy duty truck) that could be used to move container cargo to and from the ports to the Commerce and Vernon rail road yards.

The two families of alternative technologies identified for the Ports that appear to respond to the Port's needs and to the goals of the I-170 Corridor Project are magnetic levitation and exclusive contact guideway systems. These two families of alternative technologies share technical characteristics that can be represented by a single generalized alternative technology surrogate – one that can be evaluated as an alternative for the I-710 Corridor Project as the automated fixed-guideway alternative. The shared characteristics that enable the two families of alternative technologies to be represented as a generalized surrogate include:

- **Aerial (elevated) guideway**, typically using spans and columns for structural support. An underground configuration may be possible, but the guideway is *always* physically separated from conventional rail, street, highway or pedestrian traffic.

- **Fixed guideway** that both carries all vertical vehicle and payloads and provides lateral stability and guidance. This function may be met directly by physical contact or indirectly by electromagnetic forces. Contact surfaces and structural elements may be steel, concrete, or other suitable durable materials. Vehicles will therefore never operate outside a definable 'dynamic envelope' as they move along the guideway.

- **Automated operation**, controlled by a central operating algorithm or algorithms (a step-by-step problem-solving procedure for solving a problem in a finite number of steps).

- **Electric power** for propulsion and all auxiliary purposes will be delivered to the guideway or vehicle from an outside (typically commercial) source, via a powered rail, wire or surface.

- **Zero Emission Trucks** are able to operate on truckways or conventional highways with traction power delivered via overhead catenary, third rail or other power source. Although these trucks would be manually controlled, there is potential to increase their capacity through implementation of an ITS application on a dedicated truckway.

Six potential alignments have been identified for the alternative technology system within the study area. All of the potential alignments start in the vicinity of the Ports and proceed north to the existing Hobart Yard. Each alignment has its own advantages and limitations, including the width available for system right-of-way, the amount of property that would need to be taken for guideway and wayside structures, the proximity of existing and planned development, environmental sensitivities, circuitousness and gradients, and the compatibility of other existing and planned transportation uses.

For purposes of the EIS/EIR one alignment has been assumed along the I-710 freeway in the freight movement corridor envelope defined in Alternative 6, the Hybrid LPS.

Alternative 4: Arterial Highway and I-710 Congestion Relief Improvements

Alternative 4 focuses on arterial highway and specific I-710 congestion relief projects which identify and improve existing freeway deficiencies causing the greatest congestion and safety impacts. Alternative 4 includes all the components of Alternatives 1 and 2 as well as the maximum arterial highway improvements that could be feasibly implemented in advance of any I-710 freeway improvements. This would cover all of the major north/south and east/west arterial highways within the study area.

Alternative 4 also intends to address congestion relief projects on I-710 by identifying existing freeway deficiencies which cause bottlenecks on the freeway, increased (and unnecessary) congestion, and safety problems.

These initial congestion relief projects include:

- Shoemaker Bridge replacement (including modifications to downtown Long Beach ramps (and input to Cesar Chavez park) includes proposed connections to improvements to Gerald Desmond Bridge proposed by the Port of Long Beach

- PCH and Anaheim Blvd. Interchange Improvements

- Firestone Blvd. Interchange Improvements

- Atlantic Blvd./Bandini Blvd. Interchange Improvements
- In addition to the preceding, the Consultant(s) shall work with Caltrans and the local cities to identify and develop other congestion relief improvement projects at the local interchanges (or other freeway locations). These would include, for example, the following:
- Addition of auxiliary lanes
- Ramp widening (e. g., Olympic Blvd. and 3rd St. in East LA)
- Ramp/Arterial Highway intersection improvements (including street widening)
- Miscellaneous ramp modifications for local interchanges.
- During the initial phase of preliminary alternatives review, prior to detailed study in the Draft EIR/EIS, the Consultant(s) will develop and analyze potential congestion relief projects for possible inclusion in Alternative 4 using geometric layouts from the Hybrid design of the locally preferred strategy (LPS).

Alternative 5: Ten General Purpose Lane Facility

The intent of Alternative 5 is to enhance the I-710 mainline freeway to include ten lanes throughout the length of the project (including through the freeway-to-freeway interchanges). Two design options of this alternative are: A) ten general purpose lanes or B) eight general purpose lane plus two HOV lanes.

Alternative 6: Alternative 5 with Addition of Freight Movement Corridor

Alternative 6 includes all the improvements from Alternative 5A (10 general purpose lanes) with the addition of four separated freight movement lanes from the ports (Ocean Blvd.) to the intermodal rail yards in Commerce and Vernon. This is the Locally Preferred Strategy (LPS) that resulted from the Major Corridor Study. Alternative 6 entails the following proposed transportation improvements based on the Hybrid Design Concept I-710 MCS, March 2005.

Hybrid Design Concept

The community participation phase of the development of the Hybrid Strategy generated a significant number of comments on those physical features that were viewed as providing future improvement on I-710. These physical features were combined and coordinated to develop the I-710 Draft Hybrid Design Concept. As described above, the GCCOG engaged an engineering consultant to work with the Tier 1 CACs to develop a design concept for the I-710 that meets the Purpose and Need for the I-710 Corridor as well as address community issues and concerns and meets the MTA Board's and OPC's guiding principles. The summary information on the

Draft Hybrid Design Concept provided throughout this report is drawn from the *I-710 Major Corridor Study "Hybrid" Mainline Alternative of Locally Preferred Strategy Technical Report* (Gateway Cities Council of Governments, April 2004).

The purpose of the I-710 Draft Hybrid Design Concept is to provide infrastructure improvements to I-710 focused on improving safety; increasing capacity for growing heavy duty truck demand; increasing capacity for high general-purpose traffic demand; improving reliability of travel times; and separating autos and trucks to the greatest extent possible while limiting direct and indirect right-of-way impacts.

Based on the Draft Hybrid Design Concept, Alternative 6 is comprised of 10 general-purpose traffic lanes, a freight movement corridor, and interchange improvements from Ocean Boulevard in Long Beach to the intermodal railroad yards in Commerce and Vernon. Specific improvements include:

Freight Movement Corridor on I-710

- At-grade or elevated between Ocean Boulevard and the intermodal rail-yards in Vernon and Commerce
- Dedicated ingress/egress points for trucks at selected locations

General Purpose Traffic Improvements on I-710

- One to two additional general purpose lanes (varies by segment) in each direction throughout the corridor
- Shift the freeway centerline at various locations to attempt to minimize right-of-way impacts

Interchange Improvements – Truck-Related

- Add an interchange on the freight movement corridor providing direct access to/from the UP and BNSF rail yards

Interchange Improvements – General Purpose Traffic

- Eliminate some of the design deficiencies at I-405/I-710 and SR-91/I-710 interchanges
- Reconfigure local access interchanges throughout the corridor
- Eliminate freeway access at various locations

Note that the process to reach consensus on the I-710 Draft Hybrid Design Concept north of Washington Boulevard is currently being studied in a separate EIS/EIR for Interstate 5 from north of I-605 to north of the I-5/I-710 interchange and therefore proposed improvements to this segment are yet to be defined.

3.2 POTENTIAL FOR ALTERNATIVE MODES TO ATTRACT AND CARRY MORE PASSENGERS AND CARGO

The following section will describe the potential of the alternative transportation modes to attract and carry more passengers or cargo by each mode and hence help meet the need and purpose for transportation system improvements in the I-710 study area and more specifically reduce future auto and truck traffic on I-710. The ability for bus transit, rail transit, non-motorized, high occupancy vehicle (HOV) lanes, and Transportation Systems Management (TSM) strategies to reduce auto trips was assessed in terms of person trips. Freight strategies proposed to reduce truck trips or enhance overall operations reviewed in this section include demand management, TSM, rail service/infrastructure improvements, and new alternative technologies. The effect of improvements to freight rail and implementation of alternative technology on traffic are studied in separate reports and tested as a separate alternative in the Initial Feasibility Analysis. Although presented and summarized in this section, the resultant impacts on I-710 traffic volumes of freight rail service/infrastructure improvements and new alternative goods movement technologies are not discussed at length in this report.

HOV facility improvements were qualitatively assessed later in this section to provide estimates of potential peak period auto vehicle trip reductions. The potential implementation of High Occupancy Toll (HOT) lanes on the I-710 is also investigated. The traffic improvements of HOV lanes on I-710 will be assessed in greater detail during alternatives screening.

The SCAG 2008 RTP Travel Demand Model provided a forecast of year 2035 travel from which I-710 study area work person trips were broken down by mode. This model is the basis of the I-710 corridor travel forecasting model being developed for the I-710 Corridor Project EIR/EIS. The work person trips are used as a surrogate for peak period trips in the study area, as the preponderance of work trips occur in the peak period. The generalized breakdown of forecast 2035 study area work person trips by mode is as follows:

- Auto person trips: 83% (94% single-occupancy vehicles, 6% HOV)
- Transit person trips: 10%
- Non-motorized trips: 7%

Understanding the potential for affecting the mode share of trips begins with an understanding of the baseline mode shares for the study area. The SCAG model forecasts a high relatively high work trip transit mode share of 10%, compared to a 4% work trip transit share for the overall SCAG region. Even so, 83% of work trips are still forecast to use autos. Based on the ratio of these shares, to produce a 1% reduction in work auto person trips requires a 9% increase in transit work person trips. Thus, the high ratio of auto share to transit share in the study area means that large increases in transit usage would yield small decreases in auto trips.

The increase in mode shares for each alternative mode and subsequent reduction in auto trips will be discussed in greater detail in the following sections.

3.2.1 Rail Transit

Improvements to existing rail transit services described in Section 3.1 under the Alternatives 2-6 will result in increased rail ridership in the study area. Operational improvements including increases in service levels are planned both for the Metro Blue Line and Green Line which should attract more riders. Planned capital improvements including platform extensions on the Blue Line and miscellaneous improvements on the Green Line will improve comfort and security on these lines and consequently increase their attractiveness. Operational and capital improvements will also increase overall system capacity to accommodate the additional ridership attracted by these improvements. Improvements resulting in increased service are also planned to the Metrolink system that passes through the far north end of the I-710 study area, though does not directly serve the corridor. Increases in intermodal container train volumes however, may negatively impact these planned increases in Metrolink services as described further in the "Proposed Metrolink Improvements" section below. In addition, the Orangeline fixed guideway transit line is under consideration in the former Pacific Electric right-of-way and would extend from Santa Ana in Orange County through the I-710 corridor to downtown Los Angeles and beyond.

Improvements to existing bus transit services described in Section 3.1 under the No Build and TSM/TDM Alternatives include plans to expand long haul and short haul bus and shuttle services serving rail transit stations that will enhance intermodal connectivity and improve overall rail transit attractiveness. Service improvements on the Blue Line will likely shift a small percentage of commuters away from the congested parallel I-710 freeway.

Table 3.1 provides a list of unfunded rail transit improvements priorities in the Gateway Cities subregion as identified in the Metro 2008 Long Range Transportation Plan (LRTP). These proposed improvements are not included in the No Build nor TSM/TDM Alternatives described in Section 3.1.

Table 3.1 – I-710 Gateway Cities Area Proposed Rail Transit Improvements - Metro 2008 Draft Long Range Transportation Plan (LRTP)

Agency	Route	Project Limits/Description
SCCRA	I-5	Increase Metrolink service and add capacity to existing trains in Orange County, Riverside, and 91 Lines
Artesia, Bell, Bellflower, Cerritos, Cudahy, Downey, Huntington Park, Maywood, Paramount, South Gate, Vernon	Gateway, Central Los Angeles	Construct environmentally-friendly high-speed transit (Orangeline) along "Santa Ana West Branch" ROW from Union Station to Orange County

Potential Blue Line Improvements

The Blue Line currently operates with peak headways of six minutes and off-peak headways with an average of 15 minutes. MTA staff has indicated that the maximum improvement to existing operations would result in five minute peak period headways and 10 minute off-peak headways[11]. Increases beyond this are not feasible due to various system operational restrictions. The primary restriction exists at Los Angeles Metro Center Station, the northern terminus of the Blue Line, where train turnaround times of less than five minutes are not achievable due to track constraints, resulting in minimum peak headways of five minutes. The Blue Line currently operates 228 daily trains with 84,000 average daily boardings (an average of 370 boardings per train).

Blue Line system improvements resulting in five minute peak headways would result in an increase in boardings of approximately 8 percent or 6,700 average daily boardings[12]. This increase in Blue Line ridership would decrease study area auto trips by less than one half percent (assuming every new passenger is a single occupant driver). This reduction is equivalent to approximately 3,350 auto trips in the peak period in the study area. These estimates are based upon Blue Line ridership and forecast study area work person trips by mode from the SCAG 2008 RTP model. If operational restrictions could be overcome, and four minute headways achieved, this would result in an increase in boardings of approximately 17 percent or 14,000 average daily boardings (39 additional trains daily). This increase in Blue Line ridership would decrease study area auto vehicle trips by less than one percent (using the forecast work trip study area average auto occupancy of 1.07 persons per vehicle). This reduction is equivalent to approximately 7,000 auto trips in the peak period in the study area.

Decreasing headways on the Blue Line would result in a reduction in auto trips that would occur across the study area on both arterials and freeway facilities. It is expected that a greater percentage of the trips would be removed from freeway facilities versus arterials.

Potential Green Line Improvements

The Green Line currently operates with peak headways of seven minutes and off-peak headways with an average of 15 minutes. The Green Line currently has over 45,000 average daily boardings. Proposed improvements to the Green Line included in the No Build and TSM/TDM Alternatives are increased feeder bus service and miscellaneous capital and operational improvements. A list of unfunded Green Line improvements identified in the Metro 2008 Draft Long Range Plan are listed below. These proposed improvements are not included in the I-710 No Build and TSM/TDM Alternatives.

- New transit route connecting CSULB/VA Hospital to Metro Green Line Lakewood Station
- Extend Metro Green Line from Marine/Redondo to South Bay Galleria

[11] Robert Farley, MTA, October 2008

[12] Based on a service elasticity of +0.5 indicating a 0.5 percent increase in ridership in response to each 1 percent service frequency increase. [*Traveler Response to Transportation System Changes*, Interim Handbook, Transit Cooperative Research Program, Transportation Research Board, National Research Council, TCRP Project B-12, March 2000]

The improvements described above will enhance the attractiveness of the Green Line by providing greater system connectivity, accessibility, and parking capacity. Transit trips originating in the I-710 corridor that have a destination to the east or west of the corridor will be attracted to the Green Line by utilizing the Blue Line, connecting bus service, or park and ride via the Lakewood, Long Beach Blvd., Imperial/Wilmington, and Avalon stations that all currently provide free parking. While not serving the primary north-south travel demand on the I-710, the Green Line provides a vital link to communities to the east and west and to LAX and its surrounding employees.

Noting these improvements, the Green Line is not projected to attract a significant number of new trips in the study area beyond what is already forecast. Improvements to peak headways would result in increases in boardings and hence ridership similar to that described in the previous section on Blue Line improvements. This increase in ridership and related reduction in auto trips would come predominantly from current east-west trips made along the I-105 corridor and not from north-south trips made in the I-710 corridor. A small number of trips originating in the travel shed surrounding the four Green Line stations in the I-710 study area would potentially shift from auto to transit to utilize the improved service. However, as shown in the prior discussion on the Blue Line, even significant improvements to service on the Blue Line, which parallels the I-710 would result in an auto trip reduction of less than one percent. There are currently approximately 2,000 daily boardings at Green Line stations within the I-710 study area. Improvements to the Green Line that would result in an 8% increase in ridership will result in an increase of less than 200 additional daily boardings at these locations. This would result in the reduction of less than 200 daily peak period auto trips from the study area with the likelihood that a negligible amount would be removed from the I-710.

Orangeline

The Orangeline fixed guideway transit line is under consideration in the former Pacific Electric right-of-way and would extend from Santa Ana in Orange County through the I-710 corridor to downtown Los Angeles and beyond. The *Orangeline Feasibility Study* completed in April 2002 estimated a daily ridership of 46,000 by 2025. More recent analysis indicates that future average daily ridership may be considerably less (an average daily ridership of approximately 15,000). In addition, it is estimated that approximately 65% of ridership would come from the study area. Based on this information we have conservatively estimated that the Orangeline service could result in a daily auto trip reduction during the peak periods of approximately 3,200 trips.

Potential Metrolink Improvements

There are three Metrolink routes operating at the very north edge of the I-710 corridor, the Riverside Line and Orange County / 91 Lines. The Riverside Line, operating on UP and BNSF tracks, currently has 12 trains operating on it daily with over 5,600 daily riders daily. The nearest station to the study area is the Montebello/Commerce station in Montebello with 250 parking spaces and connections to Montebello and Metro transit routes. The Orange County Line operates on the BNSF Main Line with 14 round trip trains daily between Los Angeles and

Fullerton with 8,000 daily riders. The 91 Line currently has 9 round trip trains daily between Los Angeles and Fullerton with 2,400 riders daily. The nearest station to the study area is the Commerce station in Commerce with 225 parking spaces and connections to Montebello, Metro, and Commerce transit routes

Proposed improvements to these three routes include increased service, upgrading the Commerce Station to 100% of 91 Line service (current service ~ 75%), and a new connection between the Green Line Norwalk station and the Metrolink Norwalk station.

While these improvements are significant from a regional perspective, Metrolink is not projected to attract a significant number of new trips from the I-710 study area beyond what is already forecast. There are no Metrolink stations in the study area and no high speed transit connections from the study area to Metrolink service. Although a potential connection between the Green Line and Metrolink is being considered, the demand for trips with an origin in the I-710 corridor that would be willing to travel east to the end of the Green Line to transfer to Metrolink for destinations to the north, south, or east is not likely to be significant. Thus, improvements to Metrolink service are likely to have little or no potential to reduce demand for auto trips in the I-710 corridor.

In addition to problems with low new ridership projections, increased Metrolink service raises potential conflicts with increased UP and BNSF intermodal container train volumes which would share the same rail corridor under Alternative 3. With increased rail cargo levels, the ability to expand Metrolink and Amtrak service would be negatively impacted as railroad utilization approaches maximum track capability. This would ultimately result in a reduction of passenger train operation safety and travel time reliability even if extra mainline track were added. For more detail see the *I-710 Railroads Goods Movement Study Technical Memorandum*.

In summary, the potential rail transit improvements in the study area include:

- 16% increase in Blue Line and Green Line peak period service (service frequency)
- New “Orangeline” service (Orange County to Los Angeles) – ridership estimates vary widely
- Increased Metrolink Service (increased service may not be possible due to increased freight traffic)
- Associated increases in station parking capacity (an estimated 2,500 new park and ride spaces would be needed) and bus feeder service

The projected ridership response based on these improvements:

- 20% overall increase in study area rail ridership

The projected reduction in daily peak period auto trips based on increased rail transit in the study area:

- 6,700 reduction in auto trips in the peak period in the study area

3.2.2 Bus Transit

Improvements to existing bus transit services described in Section 3.1 under the No Build and TSM/TDM Alternatives will result in increased bus transit ridership and service utilization. Planned bus operational improvements including a 20 percent increase in service levels will result in improved accessibility and increased system capacity. Arterial and freeway widening, interchange improvements, and signal synchronization on arterials will reduce congestion on affected roadways resulting in improved safety, shorter travel time and more reliable bus transit service (with the trade off of better auto travel times). The combined increase in bus service level and improved bus travel times will provide an incentive to current auto commuters to switch to the bus system.

Table 3.2 provides a list of unfunded subregional bus transit improvements priorities identified at the Gateway Cities subarea in the 2008 Metro LRTP. These proposed improvements are not included in the No Build and TSM/TDM Alternatives described in Section 3.1.

Table 3.2 – I-710 Gateway Cities Area Proposed Bus Transit Improvements - Metro 2008 Draft Long Range Transportation Plan (LRTP)

Agency	Route/ Location	Project Limits/Description
Los Angeles, Long Beach, Redondo Beach, Torrance	I-405	Add express bus service to downtown Long Beach from South Bay Galleria
Long Beach Transit	I-405	Increase service frequency on bus routes connection Long Beach to the CSULB campus
Long Beach Transit	I-405	Increase service frequency on bus routes connecting downtown Long Beach to Orange County
Downey, Los Angeles, Los Angeles County, Lynwood, Norwalk, Paramount	I-405	Increase feeder bus service to Metro Green Line (Lines 439, 561, 232, 40), Harbor Transitway (Lines 442, 444, 445, 447, 448, 550)
Commerce	I-5	Upgrade Commerce Metrolink Station to 100% of 91 Line service (current service ~ 75%)
	I-5	Reduce bus service headways Corridor-wide
	I-5	Add reverse commute service to OCTA express bus lines Corridor-wide
	I-5	Increase Metro Bus service (up to 10%) Corridor-wide
	I-5	Improve coordination of service between local bus service and longer-haul service Corridor-wide
Cerritos, Downey, Los Angeles Mirada, Norwalk, Santa Fe Springs	I-5	Procure and install transit systems equipment to implement transit vehicle priority capability to Lakewood/Rosemead Blvd and Orange County Line
	I-5	Increase transit services throughout the I-5 corridor
La Mirada, Santa Fe Springs, Norwalk, La Mirada	I-5	Establish TMA, enhance local circulator service and connectivity
	Gateway	Implement results of Metro Connections recommendations – Bus service adjustments and improvements
Long Beach Transit	I-605	New transit route connecting CSULB/VA Hospital to Metro Green Line Lakewood Station

The bus transit improvements listed above in **Table 3.2** and those described below would result in an increase in daily study area bus transit ridership of approximately 27%.

For illustrative purposes, to achieve a daily study area bus transit ridership increase of 27%, additional transit improvements could include the following:

- Reduce peak period headways – For bus routes in the study area (both Metro and Long Beach Transit) with an existing headway of greater than 20 minutes the headway would be reduced by 50%. For bus routes with an existing headway of less than 20 minutes the headway would be reduced to 10 minutes. Metro Rapid route headways would be reduced by 50% from 10 minutes to 5 minutes on all routes in the study area. Table 3.5

lists the current Metro Rapid routes in the study area (Routes 762 and 760 will be extended to downtown Long Beach under Alternative 1 conditions).

Table 3.3 - Metro Rapid Transit Bus Routes Operating the I-710 Corridor

Route Number	Primary Roadway	Primary Direction
Route 770	Cesar Chavez Ave.	East-West
Route 711	Florence Ave.	East-West
Route 715	Firestone Blvd.	East-West
Route 762	Atlantic Ave./Artesia Blvd.	North-South
Route 760	Long Beach Blvd.	North-South
Route 720	Whittier Blvd	East-West

The reduced headways would result in an average cumulative increase in bus service frequency of 68% throughout the I-710 study area. This would result in an increase in bus ridership of approximately 27% on average across the study area (using an elasticity of 0.46 for all non Metro Rapid transit routes and an elasticity of 0.22 for Metro Rapid routes)[13]. Note that this increase in bus service would require significant additional operating funds for both Metro and Long Beach Transit.

The I-710 future Baseline model forecasts that 10% of all study area work trips will be made by transit. The bus transit improvements listed in Table 3.4 and those described above would result in an overall approximate increase in bus transit ridership of 27%, or a total of about 20,000 additional daily peak period transit trips in the study area. This increase in bus transit ridership would decrease study area auto vehicle trips by less than two percent (using the forecast work trip study area average auto occupancy of 1.07 persons per vehicle). This reduction is equivalent to approximately 18,500 auto trips daily in the study area.

In summary, the potential bus transit improvements in the study area include:

- 68% increase in corridor local bus services (service frequency)
- 33% increase in corridor Metro Rapid service (frequency and speed)

The projected ridership response based on these improvements:

- 27% increase in local bus ridership
- 8% increase in express bus ridership

The projected reduction in auto trips based on increased bus transit in the study area:

[13] *Traveler Response to Transportation System Changes*, Interim Handbook, Transit Cooperative Research Program, Transportation Research Board, National Research Council, TCRP Project B-12, March 2000

- 18,500 daily peak period auto trips in the in the study area

3.2.3 Pedestrian and Bicycle

Improvements to pedestrian and bicycle facilities, freeway, roadway, and transit systems described in Section 3.1 under the No Build and TSM/TDM Alternatives will result in increased utilization on pedestrian and bicycle facilities in the study area. Roadway improvements planned will likely incorporate pedestrian and bicycle facility enhancements during reconstruction activities which will increase attractiveness for those facilities once construction is complete. Improved transit service will result in incremental increase in transit ridership of which a portion will likely utilize bicycle or pedestrian facilities to access transit stations and bus stops.

Table 3.4 provides a list of unfunded subregional pedestrian and bicycle improvements priorities identified in the Metro 2008 Draft LRTP. These proposed improvements are not included in the No Build and TSM/TDM Alternatives described in Section 3.1.

Table 3.4 – I-710 Gateway Cities Area Proposed Pedestrian and Bicycle Improvements - Metro 2008 Draft Long Range Transportation Plan (LRTP)

Agency	Route	Project Limits/Description
Cerritos, Artesia, Paramount, Bellflower	I-105	Construct class 1 Bikeway within "Santa Ana West Branch" ROW
	various	Incorporate other elements of Bicycle Transportation Strategic Plan upon completion
	I-405	Implement bikeway projects throughout the I-405 corridor (approx. 24 miles of Class II and 1.6 miles of Class I) Corridor-wide

A significant investment in pedestrian and bicycle facilities in the study area could result in improved system connectivity and attractiveness and an increase of 10% of non-motorized trips[14].

According to national surveys the average pedestrian trip length is 1.2 miles[15]. This suggests that a significant number of trips made by other travel modes could be made on foot, if conditions were safer and included more pedestrian amenities. The SCAG 2008 RTP model estimates that 7 percent of year 2035 daily work trips in the study area are non-motorized.

Table 3.5 summarizes the travel impacts of various strategies to encourage non-motorized travel. Some strategies only affect a portion of total travel (for example, Commute Trip Reduction programs only affect commute travel at participating worksites). A combination of these strategies can have significant impacts, improving non-motorized travel conditions,

[14] *Quantifying the Benefits of Non-motorized Transportation For Achieving Mobility Management Objectives,* Victoria Transport Policy Institute, 10/30/04
[15] FHWA, 2001; NHTSA, 2002

increasing non-motorized travel, and shifting 10-30% of motorized travel to non-motorized modes[16].

Table 3.5 - Travel Impacts of Strategies to Encourage Non-Motorized Travel[17]

Strategy	Improves Nonmotorized Conditions	Increases NMT Travel	Reduces Automobile Travel
Pedestrian & Bicycle Facilities	Significant	Significant	Moderate
Roadway Improvements	Moderate	Moderate	Small
Bicycle Parking & Showers	Significant	Moderate	Small
Traffic Calming	Significant	Moderate	Small
Encouragement & Safety Programs	Moderate	Moderate	Small
Bicycle-Transit Integration	Moderate	Small	Small
Transit Improvements	Small	Moderate	Significant
Commute Trip Reduction	Moderate	Moderate	Significant
Transportation Price Reforms	Small	Moderate	Significant
Land Use Policy Reform	Significant	Significant	Significant

("Moderate" = 1-5% "Significant" = greater than 5%)
This table summarizes the potential impacts of various mobility management strategies.
Although many strategies have modest individual impacts, their effects are cumulative and often synergistic (total impacts are greater than the sum of individual impacts). An integrated program that combines several appropriate strategies can significantly improve non-motorized conditions, increase non-motorized travel and reduce automobile travel.

Currently, the I-710 baseline model forecasts that in the study area 55,000 non-motorized trips are made for trips to and from work, equal to a seven percent mode share. A shift of 10 percent in motorized travel to non-motorized modes (considering the land use patterns, roadway network, and socio-economic makeup of the study area) would result in a 7.7 percent non-motorized mode share in the study area. This would result in 7,600 more non-motorized trips daily, less than a one percent reduction in auto and transit trips. Some of these trips would shift from auto to non-motorized and some from transit to non-motorized. Due to the fact that the majority of pedestrian and bicycle trips are short in nature, the vast majority of this auto trip reduction would take place on the arterial system and since the trips are short they would have a lesser affect on reducing traffic congestion.

In summary, an increase in non-motorized trips by 10% would reduce study area auto trips by 0.7%. This reduction is equivalent to approximately 7,600 auto trips daily in the study area. However, due to the short average trip length of non-motorized trips (1.2 miles on average), there is no assumed reduction in auto trips on the I-710 as a result of increase in bicycle and pedestrian trips.

3.2.4 Park and Ride Facilities

As described in Section 3.1 increased park-and-ride utilization is anticipated based on operational improvements on the Blue Line and the Green Line. Increased ridership on these Metro Lines due to service improvements will likely increase demand at the park-and-ride lots at several stations.

[16] Table 3.5 and related discussion was taken from *Quantifying the Benefits of Non-motorized Transportation For Achieving Mobility Management Objectives,* Victoria Transport Policy Institute, 10/30/04
[17] Ibid.

According to a July 2008 Chief Operating Officers Report to the Metro Operations Committee, many stations, including the Norwalk Green Line station, are currently exceeding their capacity in terms of parking. The Norwalk Green Line station currently has 1,600 free parking spaces. The report also states that there is no funding for parking structures, satellite parking, or leasing spaces from nearby businesses. Current efforts include restriping, a survey of station users, coordination with local agencies, and coordination with other Metro departments. Adding parking at this location via a parking structure would provide additional capacity and potentially reduce auto trips on the I-105.

The addition of carpool lanes on I-710 would provide a time-saving incentive for drive-alone commuters to carpool, also increasing demand for the park-and-ride facilities along I-710 interchanges.

For reference, **Table 3.6** lists the planned park-and-ride facilities improvements in the study area that were adopted from the 2006 Regional Transportation Improvement Program (RTIP) into the 2008 SCAG Regional Transportation Plan and are included in Alternative 1.

Table 3.6 – Planned Park-and-Ride Facility Improvement Programs[18]

Description
First St Parking Structure - Long Beach Redevelopment Agency. Build a parking structure near southerly terminus of the Long Beach Blue Line in Downtown Long Beach
Bell Gardens: Transit center and park-and-ride; consist of bus stop amenities including new bus shelter, benches, landscaping etc. The transit center will be supported by a 283 space park-and-ride
Museum of Latin American Art, Long Beach: Build an intermodal park-and-ride facility
Long Beach park-and-ride facility at 3rd Street and Pacific Ave. south of the MTA Blue Line Pacific Station. 300 to 500 spaces and include residential and commercial development

Expanding the park and ride system and its capacity would by nature be closely tied to the increases described in sections 3.3.1 and 3.3.2 for rail and bus transit. The ridership increases resulting from proposed improvements to rail and bus system capacity could be restrained by less than proportional increases to park and ride facilities. The forecast demand for parking would be determined through the use of a regional travel demand model for estimating park-and-ride demand within the context of the overall transportation demand forecasting process. The I-710 EIR/EIS corridor mode choice model is based upon the SCAG 2008 RTP model. This model forecasts the rail transit ridership by mode of access: those who drive to a station and those who walk to a station. Based on the preliminary forecast study area auto share mode of access and the projected increase in rail ridership described in section 3.3.1, it is estimated that approximately 2,500 new parking spaces would be required in the I-710 study area to support the potential increase in rail ridership. This increase in rail transit ridership would decrease study area auto vehicle trips if accompanied by this increase in rail station parking spaces. The increase in station parking supply will not in and of itself reduce auto trips in the study area.

[18] SCAG 2008 Regional Transportation Plan: Project Listing Draft Report, December 2007.

3.2.5 High Occupancy Vehicle Lanes

Alternative 5b which includes one HOV lane per direction along with four general purpose lanes would lead to increases in HOV lane utilization on the I-710, as there are no existing HOV lanes on I-710. If new HOV lanes were constructed on I-710 they may capture a percentage of the existing users of the HOV lanes on parallel freeways (I-110 and I-605) as those freeways' HOV lanes reach capacity, resulting in a slight decrease in HOV use on I-110 and I-605. In addition, many of the I-710 vehicles with two or more occupants would shift from the general purpose lanes to new HOV lanes improving the general purpose lane performance. Since I-710 main-line capacity is not sufficient to meet future demand, drive-alone users will be attracted to shift to the new HOV lanes through ride-sharing opportunities thus further increasing the use of these lanes.

In addition to potential new HOV lanes on the I-710, HOV improvements on other freeway facilities in the study area beyond those already planned and identified in Section 2.4, as well as congestion pricing strategies, could have a potentially significant positive effect on traffic conditions in the I-710 corridor. These potential additional improvements to HOV facilities and operations include, but are not limited to:

- Direct HOV connectors
- Congestion Pricing

An expanded HOV system would provide an attractive incentive for users of the I-710 to carpool and/or participate in a rideshare program to be able to take advantage of the travel time savings it could provide. These improvements would attract some of the existing single occupant drivers of the I-710 to utilize such a system. **Table 3.7** describes HOV elements included in the Draft LRTP.

Table 3.7 – I-710 Gateway Cities Area Proposed High Occupancy Vehicle Lane Improvements - Metro 2008 Draft Long Range Transportation Plan (LRTP)

Agency/Location	Freeway	Project Limits/Description
Commerce, Downey, Montebello	I-5	Add 1 HOV lane each direction from I-605 to SR-60
Norwalk	I-605	HOV connector at I-105 and I-605 (partial connector – from west to south and from west to north)
Cerritos	I-605	HOV connector at SR-91 and I-605 (all)
Downey, La Mirada, Norwalk, Santa Fe Springs	I-5	Orange County Line to I-605: add two HOV lanes and two mixed-flow lanes
Caltrans	SR-91	HOV connector at SR-91 and I-110 (partial connector – from east to south and from east to north)

Potential locations for additional direct HOV connectors not discussed in the Draft LRTP include[19]:

- I-710/I-405 Interchange
- I-710/SR-91 Interchange
- I-710/I-105 Interchange
- I-710/I-5 Interchange
- I-110/I-405 Interchange

According to Caltrans, on average, each HOV lane in Los Angeles County carries 1,350 vehicles per hour (3,200 people per hour) during peak hours. Additionally, the average person-trip volume of an HOV lane is two (2) times greater than that of a mixed-flow lane during peak hours[20].

An area wide HOV system with direct connectors would offer additional travel time savings to carpoolers by reducing or eliminating the time required to transition between freeways. Direct HOV-to-HOV connectors provide congestion relief for both carpoolers and solo drivers, reduce accident rates in the vicinity of congested interchanges, provide additional time savings for carpoolers, and contribute to the continuity of the HOV network.[21]

> *It has been concluded that a significant growth in carpools occurred only on freeways that added HOV lanes, with the number of carpools remaining relatively constant or decreasing for those freeways without HOV lanes. Freeways in Los Angeles which have added HOV lanes have shown a significant increase in the number of 2+ vehicles, with some HOV lanes carrying as much as 1,600 vehicles in the peak hour. On average, HOV lane users save approximately 1 minute per mile, compared to mixed flow traffic during peak hours.*[22]

At the time this Multimodal Review Technical Memorandum was produced screenline traffic forecasting of the I-710 Corridor EIR/EIS Alternatives for alternatives screening was not completed. The SCAG 2008 RTP baseline model does not include HOV lanes on the I-710. However, the model does show that for every 10% increase in study area HOV peak period users there will be a corresponding 0.7% reduction in peak period auto vehicle trips. Also, the

[19] To the extent Alternative 5B is considered further direct HOV connectors on the I-710 may be studied
[20] Caltrans 2007 HOV Annual Report for District 7
[21] Regional High-Occupancy Vehicle (HOV) Lane System Performance Study, Caltrans, July 2007
[22] Caltrans 2007 HOV Annual Report for District 7

previous I-710 Major Corridor Study found that one HOV lane in each direction on the I-710 would reduce traffic by 15% on the I-710 general purpose lanes. The traffic reduction impacts of implementing HOV lanes on the I-710 will be assessed in more detail during the alternatives screening process. Based on the information presented in this section however, it can be generalized that one HOV lane on the I-710 would reduce traffic on the I-710 general purpose lanes by 15% or approximately 1,350 peak hour auto trips that would shift from to the proposed HOV lane.

3.2.6 High Occupancy Toll Lanes

The second opportunity is a congestion pricing strategy involving toll facilities and/or High Occupancy Toll (HOT) lanes that would create a regionally connected system utilizing the SR-91, I-710, and I-110 facilities.

A regional toll system utilizing these three freeways could potentially connect the Inland Empire (via the SR-91) with the two largest cities in Los Angeles County (Los Angeles via the I-110 and Long Beach via the I-710). One potential congestion pricing strategy for this system is HOT lanes. HOT lanes require single-occupant vehicles to pay a toll that varies based on the current level of traffic demand while carpools continue to use the lanes for free. The tolls change throughout the day according to real-time traffic conditions to manage the number of cars in the lanes and keep them free of congestion, even during peak hours. The concept is an expansion of HOV lanes and an attempt to maximize their efficiency in moving vehicles. It should be noted that HOT lanes require two lanes per direction to operationally function.

Additional benefit may be seen for non-users as well from having a HOT lane fully utilized (and thus taking more traffic) out of the general purpose lanes, in contrast to possibly underutilized HOV lanes. Also, by linking together disconnected HOV networks, HOT lanes can allow public transportation vehicles (such as buses) to more reliably get to more destinations on time.

This HOT lane system could potentially improve efficiency over an HOV system by allowing single-occupancy users to “buy” the unused capacity (where available) while still ensuring a travel time advantage over the adjacent general purpose lanes through pricing. Based on the information previously stated, an HOV lane will carry anywhere from 1,350 to 1,600 vehicles in the peak hour and on average two times as many people. Metro and Caltrans are currently developing a HOT lanes demonstration project, Fastlanes, on I-110 and I-10, with implementation planned by the end of 2010.

According to the federal highway design standards, the maximum capacity of the average mixed-flow lane is approximately 2,200 vehicles per hour (vph), under ideal conditions, including good weather, good pavement conditions, and standard freeway configuration. However, according to Caltrans, traffic tends to flow safely and smoothly at 55 mph up to about 1,800 vehicles per hour.

In order to ensure that HOV lanes continue to offer a time-savings incentive to carpool, the California Air Resources Board (CARB) and Caltrans have determined 1,650 vph as the optimal capacity of HOV lanes, or 75 percent of the maximum capacity of mixed-flow lanes. Based on this, the potential capacity for a HOT lane (HOT lanes need 2 lanes per direction) is at least 1,650 vph and as much as 1,800 vph, or 3,600 people per hour on average (based on figures previously discussed in this section). Conservatively, using an occupancy rate of 1.10 persons per vehicle for a mixed-flow lane, the equivalent number of mixed-flow lanes needed to carry the equivalent number of HOV/HOT lane users would be 1.82 lanes (assuming every passenger is a former single occupant auto driver). Based on this, two HOT lanes in each direction on the I-710 would carry approximately as many people per hour as seven general purpose lanes.

3.2.7 Goods Movement by Rail

Based on review of the various goods movement alternative improvements, the amount of port cargo moved by rail will continue to increase in the study area. Dependent on the configuration of improvements and the level of overall port cargo growth, these increases in cargo containers carried by rail will result in a decrease in containers moved by trucks on the I-710[23]. Improvements that result in the former will improve operations on the freeway and arterials beyond Alternative 1 No Build conditions.

Increased on-dock rail facilities, increased freight train throughput on the Alameda Corridor, modernization of the UP Intermodal Container Transfer Facility (ICTF) intermodal yard, implementation of the BNSF Southern California International Gateway (SCIG) near-dock intermodal yard, improved operational capacity at the intermodal yards in Vernon and Commerce, and implementation of advanced container movement technologies will provide for a less time consuming, more reliable, efficient, and overall more attractive goods movement operations than exists today. Section 3.2.8 below discusses potential future freight rail system developments, their ability to carry more cargo and the potential effect, if any, on reducing traffic volumes in the study area.

3.2.8 Potential Future Railroad System Developments[24]

The following planned projects are expected to have a significant impact upon future rail intermodal cargo transfers in the LA basin.

- **Intermodal Container Transfer Facility (ICTF) Modernization** – A currently proposed modernization plan by the Union Pacific (UP) for the ICTF would increase the capacity of ICTF to handle 1.5 million containers annually compared with total lifts in 2007 of

[23] Draft Technical Memorandum, I-710 Initial Feasibility Analysis, October 31st 2008

[24] The information in this section was derived in part or whole from two related studies, the I-710 Railroad Goods Movement Study and the Alternative Goods Movement Technology Analysis – Initial Feasibility Report.

710,000. The project is designed to convert the overhead straddle cranes from diesel to electric, eliminate hostler activity, reduce congestion on the Terminal Island Freeway, and actually shrink the operational size from 233 to 177 acres. The key to the UP plan is to employ overhead rail mounted wide span lift cranes. ICTF is a wheeled operation at this time. By this, it is meant that all containers are loaded onto a truck chassis and are stored on the chassis. None of the containers is grounded or stacked vertically. The modernization plan will convert the facility from a wheeled operation to one where the containers are stacked vertically. This operational change greatly reduces the land required for the operation. Additionally, the need to have chassis stored on site is eliminated. However, the modernization of ICTF faces a great deal of community opposition and its future is by no means assured.

- **Southern California International Gateway, (SCIG)** – The SCIG is a proposed near-dock BNSF railroad intermodal facility that would be developed on Port of Los Angeles (POLA) property situated approximately 4 miles north of the Ports, and immediately south of ICTF. Access to the facility will be from the Terminal Island Freeway at Pacific Coast Highway. The POLA has designated BNSF as the exclusive operator and user of the facility. BNSF estimates SCIG capacity at 1.5 million containers annually. The design plan is to construct two clusters of 6 working tracks, with each track being about 4000 feet in length. The working tracks will be connected to a lead track which in turn will connect to the Alameda Corridor. The facility will be "green" and as with ICTF, use wide span electric lift cranes, and eliminate hostler activity. BNSF has pledged to purchase a clean fleet of diesel trucks for the dray between the Ports and SCIG. BNSF has stated that the SCIG operation will eliminate the need to use Hobart Yard, situated in Commerce, as a container loading facility for international cargo. When at full capacity, SCIG has the potential to eliminate more than 2 million truck trips annually from the I-710 corridor. However, community opposition to the SCIG project is expected to be intense, and there is considerable risk that the facility will not be constructed.

- **New Port On-Dock Rail Facilities** – The Ports have plans to construct additional new on-dock rail terminals and to enlarge several existing terminals. Two such projects are described in the Draft LRTP. The Ports estimate that the expansion of on-dock rail facilities will increase the on-dock rail share percentage of containers from 20% without port terminal expansion to 30% of total container traffic with additional on-dock rail facilities that would be built along with proposed marine terminal expansion projects.

The potential effect of these proposed freight railroad improvements on future I-710 traffic are being assessed in a companion report the Initial Feasibility Analysis. Initial findings from the Initial Feasibility Analysis indicate that new near-dock railroad port cargo facilities have the potential to reduce total daily trips on the I-710 by 9-12% depending on screenline location and time of day which averages to reduction of approximately 14,000 truck trips daily.

3.2.9 Goods Movement by Truck: Truck Trip Reduction Strategies

This section discusses the potential truck trip reduction strategies and their ability to carry more cargo and the potential effect, if any, on reducing vehicular congestion in the study area.

3.2.10 Truck Trip Reduction Strategies

Truck Trip Reduction Baseline

Truck trip reduction programs have been implemented and are being planned by the ports and the Alameda Corridor Transportation Authority (ACTA) to relieve congestion on local and regional roadway systems and intermodal facilities heavily impacted by port truck traffic.

The ports have implemented various measures to reduce peak period truck traffic and continue to investigate a variety of strategies in addition to increasing use of on-dock and near-dock rail. These include the following three strategies:

- Shift peak period port terminal traffic to off-peak periods
- Improve empty container management and develop a virtual container yard system
- Implement zero emission container movement systems (ZECMS).

Based on the most current information and analysis of these programs available a brief description and assessment of the first two strategies is presented. Analyses of the ZECMS alternative is provided in other related I-710 Corridor Project reports (Alternative Goods Movement Technology Analysis – Initial Feasibility Study Report (Task 160.10.60) and Initial Feasibility Analysis Report (Task 165.10.09) for the I-710 Corridor Project EIR/EIS.

Empty Container Management (ECM): This would involve internet-based systems to match importers and exporters so that empty containers could be moved directly between the two without the need for additional trips to store the empty containers at the marine terminals. Though the ports' initial experiment with an ECM program has been largely unsuccessful, there is some reason to believe that this was caused by institutional (rather than technical) problems. Assuming that these institutional issues can be addressed in the future, ECM could be considered as part of the TSM/TDM. However, the baseline assumptions provided by the ports for all cargo growth scenarios already provide for a very aggressive ECM strategy (20 percent reuse levels for empty containers as compared to 5-10% today). Prior studies for the ports suggest that this is the maximum practical limit for this strategy. Therefore, no additional future truck trips are assumed to be eliminated over the No Build alternative.

Expanded Off Peak Program (PierPASS): With significant forecast growth in port truck traffic volumes in the future, the ability of night time terminal gates to handle this growth would necessitate expansion of the existing PierPASS, Inc. program, Off Peak, to allow for greater use of gates for both of the night shifts (2nd shift from 6 PM to 3 AM, and Hoot shift from 3 AM to 8 AM), through mechanisms such as appointment systems. The baseline assumptions provided

by the ports already assume a very aggressive use of night gates (60% for the Day shift, 20% for the 2nd shift, and 20% for the Hoot shift as compared to 30-35% in the 2nd and Hoot shifts today). Since the 2nd shift is the same duration as the Day shift, it is theoretically possible to handle as much traffic in the 2nd shift as in the Day shift. The ports believe that they may not have the legal authority at present to require this type of operation as a condition of their lease agreements and there are questions as to whether or not there are any programs that could be implemented by PierPASS, Inc. that would be effective in increasing the share of night gate operations beyond what is assumed in the baseline. Nonetheless, a sensitivity analysis was conducted to determine the traffic impact of a future operation of 40% in the Day shift, 40% in the 2nd shift, and 20% in the Hoot shift. Assuming no appointment system to shift traffic into the later parts of the night shift, this adjustment tends to put the higher shares of night gate activity in the earlier parts of the night shift (in the hours from 6 pm – 10 pm) and takes the largest share of these trips from the mid-day period. This is consistent with the way in which the current PierPASS program affects I-710 traffic.

Based on the sensitivity analysis in the Initial Feasibility Analysis Report the expanded PierPASS program would reduce truck trips by approximately 12% in the AM peak, 33% in the Midday, and 3% in the PM peak periods. However, expanded PierPASS will not reduce total daily truck trips on the I-710, it results in shifting the time of day truck trips occur.

3.2.11 I-710 ITS Implementation

This section discusses the potential ITS reduction strategies and their ability to carry more cargo and vehicular traffic and the potential effect, if any, on reducing vehicular congestion in the study area.

The Gateway Cities Council of Governments has developed an ITS Strategic Plan and ITS Integration Plan for Goods Movement that is focused on providing cleaner air and reduced congestion within the I-710 corridor. As part of the I-710 Corridor Alternative 2 – TSM/TDM Alternative, URS has identified a detailed list of ITS elements that will allow for more efficient use of study area roadway capacity. These improvements include the elements described below.

Alternative 2 proposes implementation of ramp metering systems that will provide for more efficient operations along the I-710 mainline corridor, provided adequate design storage is available at the interchanges. These ramp metering systems will be located at the following 13 locations:

1. E/B Anaheim St. to N/B 710.

2. W/B Anaheim St. to N/B 710
3. E/B Willow St. to N/B 710
4. W/B Willow St. to N/B 710
5. E/B PCH to N/B 710
6. W/B PCH to N/B 710
7. Wardlow Road to N/B 710
8. E/B Anaheim St. to S/B 710
9. W/B Anaheim St. to S/B 710
10. E/B Willow St. to S/B 710
11. W/B Willow St. to S/B 710
12. E/B PCH to S/B 710
13. W/B PCH to S/B 710.

Alternative 2 proposes to make capacity improvements along four major arterials that provide an alternate parallel route to the freeway. These projects will add peak hour capacity to the arterial street system by increasing capacity by one lane in each direction during peak periods. Implemented in conjunction with additional ITS elements, these corridors will provide a more efficient movement of vehicles.

Expanded ITS along the I-710 corridor will include the entire study area and will provide real time information to motorists on traffic conditions and alternative routes to avoid congestion resulting from traffic incidents. This strategy includes elements such as Advanced Traveler Information System (ATIS), Closed-circuit television (CCTV), and incident management systems. The ITS component will include upgraded 2070 traffic signal controllers, CCTV, system detection and updated communications on arterial streets and Traffic Monitoring Stations (TMS), CCTV, Changeable Message Signs (CMS) and Fiber Optic Communications on the I-710 freeway mainline. It will also include the Transportation Management Center (TMC) upgrades and inter-ties necessary to control and monitor the system.

There are at least 45 intersections in the study area on that have deficient level of service (LOS) and will be the focus of ITS operational improvements. ITS elements can be implemented to improve operations of these intersections. In addition, consideration is being given to the installation of Traffic Operation Systems TOS elements (CCTV, Highway Advisory Radio, CMS, etc.) every half mile along the freeway based on the TOS Master Plan prepared by Caltrans.

For arterial systems that include central control and monitoring capabilities, benefits range as follows:

- 6% - 42% reduction in stops;
- 16% increase in speed;
- 3% - 44% reduction in delay;
- 9% to 18% reduction in travel time;
- 9% to 13% reduction in fuel consumption;
- 5% to 22% reduction in emissions.

The project consists of integrated freeway-arterial ITS systems such as an Integrated Corridor Traffic Management (ICTM) system implemented along the entire I-710 freeway. Studies indicate that when used in combination, capacity was increased 6% on the freeway, 23% on arterial street diversion routes, and 6% on arterial streets overall, relative to a baseline condition. Travel times were found to increase by only one percent on arterial diversion routes but were reduced 15% on arterials overall.

The combination of the ITS elements being planned for the Ports Advanced Traffic Management and Information Systems (ATMIS), Gateway Cities COG's ITS Plan and the ITS elements proposed in Alternative 2 of the I-710 Corridor EIR/EIS will provide improved operational efficiency and an increase in capacity on all freeway and arterial segments within the corridor.

3.3 SUMMARY

This technical memorandum has established the existing condition of multimodal facilities in the I-710 corridor. In addition, it reviewed the impacts and benefits of the six proposed transportation alternatives on these facilities. The primary purpose of the report was to examine the potential for the various alternative modes incorporated in these alternatives to relieve traffic congestion in the study area and on I-710.

The impact of TSM/TDM strategies and transit improvements on future I-710 traffic conditions can potentially add up to measurable levels if they were combined. These modes and strategies have been tested in the Initial Feasibility Analysis with similar findings. These improvements to alternative modes would not eliminate the need for capacity additions on I-710 but they can potentially affect the amount of additional capacity needed.

Table 3.8 summarizes the principle conclusions of this analysis.

Table 3.8 - Alternative Mode Vehicle Trip Reduction Potential Summary

Alternative Mode	Improvements	Percent Reduction in Peak Period Study Area Vehicle Trips	Number of Vehicle Trips Reduced	Notes
Rail Transit	• 16% increase in Blue Line and Green Line peak period service (service frequency) • New "Orangeline" service (Orange County to Los Angeles) – ridership estimates vary widely • Increased Metrolink Service o Results in 20% overall increase in rail ridership	Less than 1%	6,700	Associated increases in station parking capacity (2,500 new park and ride spaces would be needed) and bus feeder service
Bus Transit	• 68% increase in corridor local bus services (service frequency) results in 27% increase in ridership • 33% increase in corridor Metro Rapid service (frequency and speed) results in 8% increase in ridership	Less than 2%	18,500	
Non-Motorized	• A significant investment in pedestrian and bicycle facilities in the study area could result in improved system connectivity and attractiveness and an increase of 10% of non-motorized trips	Less than 1%	7,600	Due to the short average trip length of non-motorized trips (1.2 miles on average) there is no assumed reduction in auto trips on the I-710.

Alternative Mode	Improvements	Percent Reduction in Peak Period Study Area Vehicle Trips	Number of Vehicle Trips Reduced	Notes
Park and Ride	• 2,500 new rail station parking spaces would be required in the I-710 study area to support the forecast increase in rail ridership.	0%	∅	The increase in parking supply will not in and of itself reduce trips in the study area but is required for rail transit to meet its project trip reduction level.
High Occupancy Vehicle (HOV)	• HOV lane on the I-710 • Direct HOV Connectors • Congestion Pricing • For every 10% increase in study area HOV peak period users there will be a corresponding 0.7% reduction in peak period auto vehicle trips. The previous I-710 Major Corridor Study found that one HOV lane in each direction on the I-710 would reduce traffic by 15% on the I-710 general purpose lanes.	15% reduction in auto trips on the I-710 general purpose lanes.	1,350 auto trips shifted from general purpose to HOV	The traffic reduction impacts of implementing HOV lanes on the I-710 will be assessed in more detail during the alternatives screening process. A similar affect would result with the implementation of HOT lanes, see Section 3.2.6 describing HOT lane functionality and potential carrying capacity.
Goods Movement	• Increased near-dock Intermodal yard capacity (SCIG and expanded ICTF)	• Expanded ICTF and SCIG would reduce total daily traffic on	• ICTF and SCIG will reduce total daily truck trips	• I-710 Railroad Goods Movement Study and the Alternative Goods

Alternative Mode	Improvements	Percent Reduction in Peak Period Study Area Vehicle Trips	Number of Vehicle Trips Reduced	Notes
Goods Movement (Continued)	• Empty Container Management (ECM) • Expanded PierPASS	the I-710 by 9-12% • ECM will have no impact over Baseline • Expanded PierPASS would reduce forecast trucks trips by 12% in the AM, 33% in the Midday, and 3% in the PM	on the I-710 by approximately 14,000 daily truck trips. • Expanded PierPASS would not reduce total daily truck trips on the I-710. It results in shifting the time of day of these trips, not a reduction in these trips.	Movement Technology Analysis – Initial Feasibility Report provides more detail on the impacts of these potential strategies
ITS Implementation	• Ramp metering systems • Arterial capacity improvements • Advanced Traveler Information System (ATIS), Closed-circuit television (CCTV), incident management systems, upgraded 2070 traffic signal controllers, CCTV, system detection and updated communications on arterial streets • Traffic Monitoring Stations (TMS), CCTV,	N/A	N/A	• 6% - 42% reduction in stops; • 16% increase in speed; • 3% - 44% reduction in delay; • 9% to 18% reduction in travel time; • 9% to 13% reduction in fuel consumption;

Alternative Mode	Improvements	Percent Reduction in Peak Period Study Area Vehicle Trips	Number of Vehicle Trips Reduced	Notes
ITS Implementation (Continued)	Changeable Message Signs (CMS) and Fiber Optic Communications on the freeway mainline. • Transportation Management Center (TMC) upgrades and interties necessary to control and monitor the system. • Traffic Operation Systems TOS elements (CCTV, Highway Advisory Radio, CMS, etc.) every half mile along the freeway • Intersection operation improvements			• 5% to 22% reduction in emissions. • When implemented along the entire freeway and used in combination roadway capacity increases studies indicate roadway capacity was increased: 6% on the freeway, 23% on arterial street diversion routes, and 6% on arterial streets overall • Travel times were found to increase by 1% on arterial diversion routes and were reduced 15% on arterials overall.

I-710 Corridor Project EIR/EIS
Document: TECHNICAL MEMORANDUM – MULTIMODAL REVIEW (WBS TASK ID: 165.10.05-010)

#	Commenter / Affiliation	Comment Date	Page #	Comment	Response/Action
1	K. Wanda/Caltrans	02/16/09	15	Re: Middle Harbor Terminal Rail Yard expansion: isn't this project going to increase car and truck trips onto I-710? Do not see this accounted for.	This will be addressed in traffic forecasts for the EIS
2	K. Wanda/Caltrans	02/16/09	51-52	On pages 46 and 47 it is noted that the modernization of ICTF and the new SCIG is under considerable risk of not being completed due to community opposition. Yet on page 51-52 full credit is given for a reduction of 14,000 truck trips daily. Shouldn't there be a caveat stated on page 51-52 that the 14,000 trips are at considerable risk of not being actualized?	The summary table at the end of the document seeks to summarize and quantify all of the potential reductions in trips that can be realized from various multimodal improvement elements. Their potential or lack thereof for implementation was not a factor that was considered in this analysis.
3	E. Chaves/Metro	02/10/09	26	From the list of signal synchronization projects listed under the first bullet, the following are in the implementation phase already: Telegraph Rd., Atlantic Blvd., Imperial Hwy, Carson St., Pacific Blvd./Long Beach Blvd., Artesia Blvd. and Bandini Blvd.	This has been noted in the report.
4	C. Fung/Caltans	02/17/09		*From 5/30/2008 review response:* It appears that the recommendations in the I-710 expansion draft report will impact existing fiber optic communication system. A preliminary cost estimate to relocate and replace the elements in the fiber optic communication system can be determined if required at this stage.	Thank you for this estimate.
5	C. Fung/Caltans	02/17/09		The preliminary cost estimate to relocate and replace the ITS elements and fiber optic communication system along this corridor (PM 4.9 to 24.9) is approximately $18,000,000. [We have not yet seen in any of the subsequent documents any response or actions taken as a result of our comments on 5-30-2008. Since we haven't seen a response, we would like to give a cost estimate as a place holder.	Thank you for this estimate.

#	Commenter / Affiliation	Comment Date	Page #	Comment	Response/Action
6	G. Chammas/ Caltans	02/18/09		I concur with the draft report summary that the implementation of the analyzed six alternative modes can potentially have benefit of relieving traffic congestion in the study area and on I-710. The impact of TSM/TDM strategies and transit improvements on future I-710 traffic conditions can potentially add up to measurable levels if they were combined. These improvements to alternative modes would not (I believe this was a typing mistake (not is missing)-see report summary) eliminate the need for capacity additions on I-710 but they can potentially affect the amount of additional capacity needed.	Sentence Corrected.
7	G. Chammas/ Caltans	02/18/09		We agree with the above statement that with the implementation of the analyzed alternative modes, would not be sufficient to eliminate the need for the capacity additions. the previous report "TASK ID: 165.10.09 Initial Feasibility Analysis" indicated that the various cargo growth scenarios and alternatives will impact significantly the I-710 and the lane requirements ranges from 12 to 14 lanes of capacity at north end of I-710.	Addressed in the Initial Feasibility Analysis Report.
8	G. Chammas/ Caltans	02/18/09		We have suggested in our previous review comments for "TASK ID: 165.10.09 Initial Feasibility Analysis" that the analysis should expand the MAXIMUM RAIL AND ALTERNATIVE GOODS MOVEMENT TECHNOLOGY by: enhancing and adding rail capacity, relocation of warehouses to reduce the port truck trip generation onto I-710 and state highway system, thus, additional lane capacity will not be required.	Addressed in the Initial Feasibility Analysis Report.
9	J. Wood/COG	02/04/09		This revised report now addresses how other modes of transportation may reduce the traffic demands on I-710 and is a good document to figure out how Alternative 2 will ultimately be applied for the study area. Appreciate the changes in the report.	No response needed.

#	Commenter / Affiliation	Comment Date	Page #	Comment	Response/Action
10	J. Wood/COG	02/04/09		ITS is not described at all in this report and needs to be as it is an important objective for GCCOG. The results of both ITS Strategic Plan that was developed for GCCOG and the ITS Integration Plan need to be included in the multi-modal report. I believe ITS improvements can be implemented quicker than any other means to better manage traffic in the short-term and could provide a significant reduction in peak hour traffic volumes (maybe by as much as 10%). At any rate these two ITS Plans need to be referenced as a resource documents and included in the final report.	The two ITS plans have been referenced. A more detailed description of ITS is provided in response to comment number 11. See Sections 2.6 and 3.2.11.
11	J. Wood/COG	02/04/09		Section 2.0 Existing Multimodal Systems – Add a summary of the discussions on existing ITS projects from the ITS Integration Plan into this section as a separate subsection.	Added Section 2.6 Intelligent Transportation System (ITS) which includes a summary of the existing ITS projects from the ITS Integration Plan. Also added Section 3.2.11 that includes a discussion on the impact of ITS on I-710 capacity.
12	J. Wood/COG	02/04/09	16	At the top of the page add a note that the possible expansion of the ICTF to double its capacity is discussed in Section 3.2.8 and that it also needs environmental clearance as discussed for SCIG.	Added sentence to the end of the first paragraph stating, "Also discussed in Section 3.2.8 is the possible expansion of ICTF to double its capacity which would also require environmental clearance."
13	J. Wood/COG	02/04/09	19	Section 2.5.3 – Now that the gate survey is probably completed at the two rail yards, the final version of that effort should be added into this report in this section (along with any relevant discussions). I think those discussions should include the effectiveness of the freight corridor providing direct truck access into the two rail yards based on this new information.	This survey information analysis will be included in a separate technical memo on the railyard survey.
14	J. Wood/COG	02/04/09	28	Under "Transit" there is bullet for expanded Metrolink service, would request a qualifier be added, like "if possible" and refer to a later section for a follow-up discussion.	Added "(if possible, see Section 3.2.1 for follow-up discussion)". Also see comment 9.
15	J. Wood/COG	02/04/09	29	Page 29 lists the possible alternative technology types and needs to be updated for zero emission trucks, with a discussion.	Updated list to include a short summary of zero emission trucks.

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16	J. Wood/COG	02/04/09	33	First full paragraph discusses the breakdown from the SCAG 2035 forecast study. The percentages don't seem to really apply to the I-710 freeway as the truck volumes are so much higher than other freeways in Southern California. Would recommend adding the word "generalized" in the last sentence in front of the word breakdown to acknowledge this.	Added the word "generalized".
17	J. Wood/COG	02/04/09	33	Section 3.2.1 – Rail Transit – This discusses Metrolink service but needs to be edited to discuss the potential problem of increasing Metrolink service with increasing freight train traffic. This section needs to highlight this problem and the problems and conflicts between wanting to increase Metrolink service with increasing freight traffic (even if additional mainline track is added). Would recommend a reference to the Railroad Goods Movement Study for more detail.	Added sentence to the first paragraph under Section 3.2.1 which states, "Increases in intermodal container train volumes however, may negatively impact these planned increases in Metrolink services as described further in the "Proposed Metrolink Improvements" section below". Also see response to comment 10
18	J. Wood/COG	02/04/09	37	The paragraph at the top of the page discusses Metrolink and should be edited with my comments from 9. above.	Added paragraph to the end of the "Potential Metrolink Improvements" Section which states, "In addition to problems with low new ridership projections, increased Metrolink service raises potential conflicts with increased UP and BNSF intermodal container train volumes which would share the same rail corridor under Alternative 3. With increased rail cargo levels, the ability to expand Metrolink and Amtrak service would be negatively impacted as freight railroad utilization approaches maximum track capability. This would ultimately result in a reduction of passenger train operations safety and travel time reliability even if extra mainline track were added. For more detail see the *I-710 Railroad Goods Movement Study Technical Memorandum*.

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19	J. Wood/COG	02/04/09	37	The middle of the page summarizes the potential rail transit improvements and includes “Increased Metrolink Service”. A qualifier should be added following this as to the fact this may not be possible.	Added qualifier stating, "(increased service may not be possible due to increased freight railroad traffic)".
20	J. Wood/COG	02/04/09	46	Section 3.2.7, second paragraph – Recommend starting off the second paragraph with "Increased on-dock rail facilities"	Revised sentence to include comment.
21	J. Wood/COG	02/04/09	49	Page 49 has a summary but does not include a set of strong conclusions and recommendations. This was probably better summarized in the recent power point presentations and that is the type of conclusions that I think needs to be added. For example, the power point stated that TSM/TDM stuff could reduce the number of general purpose lanes at the north end of the project by 2 lanes. That is a significant conclusion and information. Also, slide 33 from the power point given to the PC has some conclusions that don’t show up in the report and need to be added. This would include the ITS recommendations from the GCCOG’s ITS Integration Plan. Also, along with specific recommendations, need some capital and O&M costs for multi-modal improvements. I know these costs sort of showed up in some presentations but the report does not contain that information. These are the types of improvements that can begin to be pursued sooner than later but need specific recommendations and costs to do that.	The TSM/TDM is discussed in the IFA report which is referred to in the Multimodal report. The GCCOG's ITS Integration Plan is a summary of the percent capacity increase on I-710 (6%) as a result of ITS measures and will not be included in the Multimodal report. The cost estimates referred to are being reported in the Alternatives Screening Report.
22	P. Law/SCAG	02/23/09	26	Please clarify whether the transit improvements in Alternative 1 include the programmed & committed bus improvements on I-110 as part of the FastLanes demonstration project that Metro is implementing.	Yes, a bullet has been added to note these improvements
23	P. Law/SCAG	02/23/09	49	In the 2nd-to-last sentence on page, insert the word "not" between "would" and "eliminate" so that sentence will read "These improvements to alternative modes would not eliminate the need for capacity additions on I-710 but they can potentially affect the amount of additional capacity needed."	Added the word "not" to correct previously noted mistake.

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24	P. Law/SCAG	02/23/09	51	Table 3.8 - please clarify the impacts of potential HOT lanes in the study area. The numbers presented are only for HOV lanes.	Section 3.2.6 describes the potential improvements based on HOT lane implementation. This information is not included in Table 3.8 however because HOT lanes require two lanes to function and current I-710 alternatives are analyzing a single HOV lane.