Table 4-38. Other Community Facilities within 0.25-mile of the Project (continued)

Map No.[1]	Name	Location	Proximity to Alignment/ (feet)	Proximity to Alignment/ Nearest Station (feet)
Elementary Schools				
1	Today's Fresh Start Charter School	4514 Crenshaw Blvd, Los Angeles	190	125 optional Crenshaw/Vernon
2	Hyde Park Blvd Elementary School	3140 Hyde Park Blvd, Los Angeles	450	2,300 Florence/West
3	Ninety-Eighth St Elementary School	5431 W. 98th St, Los Angeles	500	975 Aviation/Century
Middle Schools				
1	View Park Preparatory Accelerated Charter Middle School	5749 Crenshaw Blvd, Los Angeles	158	158 Crenshaw/Slauson
2	George W Crozier Middle School	210 W Regent St, Inglewood	450	2,100 Florence/La Brea
Senior High Schools				
1	Crenshaw High School	5010 11th Ave, Los Angeles	440	2,300 Crenshaw/Slauson
2	View Park Preparatory Accelerated Charter High School	5701 Crenshaw Blvd, Los Angeles	70	216 Crenshaw/Slauson
3	Animo Venice Charter High School	5431 W 98th St, Los Angeles	500	975 Aviation/Century
4	Animo Leadership Charter High School	1155 W Arbor Vitae St, Inglewood	700	2,700 optional Aviation/Manchester
5	Youth Justice League High School	1137 Redondo Blvd, Inglewood	115	115 Florence/West
Private Schools				
1	Al Madinah School	3510 Exposition Blvd, Los Angeles	235	Adjacent Crenshaw/Exposition
2	Saint John Evangelist Catholic School	530 E Florence Ave, Inglewood	185	975 Florence/La Brea
3	Ascension Lutheran Elementary School	5820 West Blvd, Los Angeles	1,000	1,000 Florence/West
4	Saint John Chrysostom Church School	530 E Florence Ave, Inglewood	185	975 Florence/La Brea
5	Holy Faith Episcopal Church /Slauson Learning Center	260 N Locust St, Inglewood	350	400 Florence/La Brea
6	St. Mary's Academy	701 Grace Ave, Inglewood	450	1,500 Florence/West
7	Westchester Neighborhood School	5520 Arbor Vitae, Westchester	700	2,525 optional Aviation/Manchester

Table 4-38. Other Community Facilities within 0.25-mile of the Project (continued)

Map No.[1]	Name	Location	Proximity to Alignment/ (feet)	Proximity to Alignment/ Nearest Station (feet)
College or Trade Schools				
1	Los Angeles Urban League Youth Training Center	5414 Crenshaw Blvd, Los Angeles	60	1,350 Crenshaw/Slauson
2	Pacific Beauty College	5345 Crenshaw Blvd, Los Angeles	60	1,725 Crenshaw/Slauson
3	Crimson Technical College	8911 Aviation Blvd, Inglewood	40	1,350 optional Aviation/Manchester
4	Fire Training Center (for El Camino College)	206 W Beach St, Inglewood	450	1,450 Florence/La Brea
5	LAPD Ahmanson Training Center	5651 Manchester Ave, Los Angeles	500	500 optional Aviation/Manchester
Religious Facilities				
1	Hope Memorial Lutheran	3401 Somerset Dr, Los Angeles	1,250	1,300 Crenshaw/Exposition
2	West Angeles Church of God in Christ	3045 Crenshaw Blvd, Los Angeles	1,275	1,275 Crenshaw/Exposition
3	West Angeles Cathedral	3600 Crenshaw Blvd, Los Angeles	150	200 Crenshaw/Exposition
4	Masjid Abu Bakr As-Siddiq	3611 Crenshaw Blvd, Los Angeles	450	450 Crenshaw/Exposition
5	Love Lifted Me Missionary Baptist Church	6510 Crenshaw Blvd, Los Angeles	25	2,100 Florence/West
6	St. Mark Baptist Church	5969 Crenshaw Blvd, Los Angeles	50	650 Crenshaw/Slauson
7	Hyde Park Church of God	6501 Crenshaw Blvd, Los Angeles	25	2,000 Florence/West
8	Saint John the Evangelist Roman Catholic Church	6028 S. Victoria Ave, Los Angeles	225	850 Florence/West
9	Christ the Good Shepherd Episcopal Church	3303 Vernon Ave, Los Angeles	550	375 optional Crenshaw/Vernon
10	All Souls Christian Center	5125 Crenshaw Blvd, Los Angeles	75	2,500 optional Crenshaw/Vernon
11	Apostolic Faith Church of Los Angeles	6641 Crenshaw Blvd, Los Angeles	25	1,775 Florence/West
12	Bethel Chapel Community Church	5879 Crenshaw Blvd Los Angeles	65	35 Crenshaw/Slauson
13	Bethesda Temple Apostolic	4909 Crenshaw Blvd, Los Angeles	125	1,550 optional Crenshaw/Vernon
14	Egyptian Temple No. 5 P. H. A.	5324 Crenshaw Blvd, Los Angeles	75	2,000 Crenshaw/Slauson

Table 4-38. Other Community Facilities within 0.25-mile of the Project (continued)

Map No.[1]	Name	Location	Proximity to Alignment/ (feet)	Proximity to Alignment/ Nearest Station (feet)
15	Faith Love Christian Center	5400 11th Ave., Los Angeles	450	1,550 Crenshaw/Slauson
16	First African Presbyterian Church of North America	6825 Crenshaw Blvd, Los Angeles	225	850 Florence/West
17	Galilee Baptist Church	3220 W. 48th St, Los Angeles	450	950 optional Crenshaw/Vernon
18	Great Bethlehem Temple Church #2 Crenshaw Faith Temple	4812 Crenshaw Blvd, Los Angeles	100	900 optional Crenshaw/Vernon
19	Greater Deliverance C.O.G.I.C.	6741 West Blvd, Inglewood	550	600 Florence/West
20	Love and Order Christian Fellowship	5428 Leimert Blvd, Los Angeles	100	75 optional Crenshaw/Vernon
21	Mission Christiana El Amor De	6419 Crenshaw Blvd, Los Angeles	25	2,350 Florence/West
22	Arms of Grace Christian Center	5700 Crenshaw Blvd, Los Angeles	60	650 Crenshaw/Slauson
23	Iglesia De Pentecostal	5460 Crenshaw Blvd, Los Angeles	60	1,000 Crenshaw/Slauson
24	Masjid Bilal Ibn Rabah	5450 Crenshaw Blvd, Los Angeles	60	1,050 Crenshaw/Slauson
25	Church of the Anointing	4343 Crenshaw Blvd, Los Angeles	60	575 optional Crenshaw/Vernon
26	Family of Faith – Faithful Central Bible Church	333 W. Florence Ave, Inglewood	40	3,000 Florence/La Brea
27	Family of Faith – The Tabernacle	321 N. Eucalyptus Ave, Inglewood	100	3,000 Florence/La Brea
28	First United Church of Christ	3511 W. Florence Ave, Inglewood	375	525 Florence/West
29	Kingdom Hall of Jehovah's Witnesses	411 Centinela Ave, Inglewood	650	1,450 Florence/La Brea
30	Trinity Church	1100 W Florence, Inglewood	100	75 optional Aviation/Manchester
31	Committed Christian Life Church	216 W Florence, Inglewood	300	2,250 Florence/La Brea
32	First Evangelical Lutheran Church	600 W. Queen St, Inglewood	850	3,275 optional Aviation/Manchester
33	Soka Gakkai International	8881 Aviation Blvd, Inglewood	200	1,475 optional Aviation/Manchester
34	Church of the Holy Faith	260 N. Locust St, Inglewood	400	350 Florence/La Brea

Table 4-38. Other Community Facilities within 0.25-mile of the Project (continued)

Map No.[1]	Name	Location	Proximity to Alignment/ (feet)	Proximity to Alignment/ Nearest Station (feet)
35	Saint John Chrysostom Roman Catholic Church	530 E. Florence Ave, Inglewood	225	850 Florence/La Brea
36	Church of Jesus Christ of Latter Day Saints	400 W. Centinela Ave, Inglewood	650	1,600 Florence/La Brea
Cemeteries				
1	Inglewood Park Cemetery	720 E Florence Ave, Inglewood	150	400 Florence/West
Hospitals				
2	Airport Urgent Care	1117 W Manchester Blvd, Inglewood	185	185 optional Aviation/Manchester
Convalescent				
1	Briercrest Inglewood Healthcare	301 Centinela Ave, Inglewood	60	1,225 Florence/La Brea
2	Centinela Park Convalescent Hospital	515 Centinela Ave, Inglewood	1,250	2,000 Florence/La Brea
3	Saint Erne Sanitarium (Health Care Center)	527 W. Regent, Inglewood	350	2,700 optional Aviation/Manchester

Source: CDM and TAHA, 2011
[1]Map numbers correspond to Figure 4-57 through Figure 4-59

4.12.2.2 Parklands

No-Build Alternative

The No-Build Alternative would include all existing highway and transit services and facilities, as well as committed highway and transit projects. As such, the corridor would not be affected by the proposed project. In addition, the projects/components under the No-Build Alternative will undergo project-specific environmental review, as appropriate. Due to the various locations and distance from the proposed project and additional project-specific environmental review, the projects/components under the No-Build Alternative are not anticipated to result in direct or indirect adverse effects on parklands.

LPA

Table 4-39 summarizes the impacts to parklands located within 0.25-mile of the LPA. The LPA is located within 0.25-mile of four existing parklands.

Acquisition

Two parks (Edward Vincent Jr. Park and Leimert Park) are located along the LPA alignment. Adjacent to Leimert Park, the LPA would be located below-grade and would have no potential operational impacts on the park. The LPA alignment would extend

Table 4-39. Summary of Impacts to Parklands and Other Recreational Facilities within 0.25-mile of the LPA

Map No[1]	Name	Location	Proximity to Alignment (miles)	Within 0.25 mile of station	Land Acquisition	Loss of supporting street parking	Affect vehicle access	Barrier to Pedestrian Access
Parklands								
1	Leimert Plaza Park	4395 Leimert Blvd, Los Angeles	0.05	Yes[2]	No	No	No	No
2	Grevillea Park	231 S. Grevillea Ave, Inglewood	0.18	No	No	No	No	No
3	Rogers Park Recreation/Community Center	400 W Beach Ave, Inglewood	0.15	No	No	No	No	No
4	Edward Vincent Jr. (Centinela) Park	700 Warren Ln, Inglewood	0.01	Yes	No	No	No	No
Other Recreation								
1	Museum Of African-American Art	4005 Crenshaw Blvd, Los Angeles	0.03	Yes	No	No	No	No

Source: CDM, 2008

1 Map numbers correspond to Figure 4-56.

2 Leimert Plaza Park is within 0.25 mile of the optional station at Vernon, which is a design option

along the southern edge of Edward Vincent Jr. Park at-grade along the existing Harbor Subdivision. The LPA alignment would be within the existing railroad right-of-way and no acquisition of parkland would be required. Similarly, the LPA would be below grade adjacent to Leimert Plaza Park and no acquisition of parkland would be required. Therefore, the LPA would not result in adverse effects on parkland.

Figure 4-60. Edward Vincent Jr. Park

View of Edward Vincent Park from Centinela Avenue with Harbor Subdivision on the right

Access and Use

The LPA is located along Metro right-of-way adjacent to Edward Vincent Jr. Park (Figure 4-60). The LPA would require the closure and reconfiguration of Redondo Boulevard at Florence Avenue because the geometry of the intersection would affect sight distance and vehicular safety.

Access to the park's main entrances and parking areas are along Warren Lane on the north side of the park. Warren Lane can be accessed via Centinela Avenue, Hyde Park Boulevard and West Boulevard. Access to the park via these routes would be maintained throughout construction and operation of the project. There is also an eastern parking lot at Edward Vincent Jr. Park near the alignment that can be accessed through 68th Street or along Redondo Boulevard. Access through the 68th Street eastern entrance would be maintained throughout the construction period for the project. Construction period effects for parklands are discussed in Section 4.15.2.14. Both entrances would remain open during operation of the project. The Redondo Boulevard entrance would be accessed from High Street with the closure of Redondo Boulevard at Florence Avenue. The closure of Redondo Boulevard at Florence Avenue would move the intersection approximately 250 feet to the east to be perpendicular with High Street. This would require a minor route change for eastbound drivers on Florence Avenue who would have to travel an additional 250 feet to access Redondo Boulevard. However, the LPA would not adversely affect pedestrian or vehicle access to Edward Vincent Jr. Park. The Florence/West Station would be located approximately 0.22 miles from the southeastern entry to Edward Vincent Jr. Park, thereby potentially increasing the park's accessibility. Given the size of Edward Vincent Jr. Park (55 acres) and a recreational standard of 2.0 acres/1,000 people, the park can serve over 27,000 people. The Florence/West Station has a daily ridership of over 700 persons and only a portion of some the riders would use the park. The increased accessibility to the park would not create an overuse of this facility. No substantial impairment of the use of the park features would occur.

Leimert Plaza Park is located approximately 0.5 miles to the closest station (King) for the LPA (Figure 4-61). Grevillea and Rogers Park are both located more than 2,000 feet (0.40 mile) from the site of the relocated Florence/La Brea Station. Because of the distance, these parks would not likely experience a significant increase in use from transit ridership at the King or Florence/La Brea Stations. The LPA would not result in direct or indirect adverse effects on parkland.

Figure 4-61. Leimert Plaza Park

View of Leimert Plaza Park from Crenshaw Boulevard

Parking

The LPA has three park-and-ride facilities and none would not require the acquisition of or affect any park-related parking areas. There is on-street parking along Centinela Avenue where one to three spaces would be temporarily disrupted

during construction. These spaces would be fully restored during the operation of the project. The main parking lots for Edward Vincent Jr. Park are located along Warren Lane and along East Park Way. No acquisition of parkland would be required and park-related parking facilities would not be disrupted. Therefore, parking associated with the LPA would not result in adverse effects on park or recreational facility along the alignment; therefore, no adverse effects are anticipated.

The MOSs would have the same effect on parklands as described for the LPA. Therefore, no adverse effects are anticipated.

Design Options

The Partially-Covered LAX Trench Option, the Optional Aviation/Manchester Station and the Alternate Southwest Portal at Crenshaw/King Station would not require acquisition, affect access, or disrupt parking for any parklands. Therefore, no adverse effects are anticipated from these design options.

Although the Below-Grade Crossing at Centinela is adjacent to Edward Vincent Jr. Park, it would not require acquisition of parkland. The grade separation would facilitate traffic flow along Centinela Avenue and these spaces would be fully restored during the operation of the project. The main parking lots for Edward Vincent Jr. Park are located along Warren Lane and along East Park Way. No acquisition of parkland would be required and park-related parking facilities would not be disrupted.

The optional station at Vernon would require a shift in alignment compared to the LPA and a permanent underground easement under the western half of the park where the below-grade tunnel would transition from the Vernon triangle back below the median of Crenshaw Boulevard. The alignment is below-grade at Leimert Park and no substantial impairment of the use of the park features would occur. Similarly, the daily ridership for the optional Crenshaw/Vernon Station was projected to be 841 persons. Given the size of Leimert Plaza Park (1.9 acres) and a recreational standard of 2.0 acres/1,000 people, the park can serve approximately 950 people. Only a portion of the riders would use the park. The increased accessibility to the park would not create an overuse of the facility. This design option would not affect the features, attributes, or access to Leimert Plaza Park and no adverse effects are anticipated.

4.12.2.3 Community Facilities

No-Build Alternative

Community facilities within the corridor would not be affected by the proposed project. In addition, the projects/components under the No-Build Alternative will undergo project-specific environmental review, as appropriate. Due to the various locations and distance from the proposed project and additional project-specific environmental review, the projects/components under the No-Build Alternative are not anticipated to result in adverse impacts on community facilities (including emergency response times or access).

LPA

Table 4-40 summarizes the impacts to community facilities within 0.25-mile of the LPA. The LPA is located within 0.25-mile of numerous public service facilities (3) and community facilities (72). Of these, one public service facility and 39 community facilities are within approximately 0.05 miles of the alignment. Thirty-three of the community facilities and public services are within 0.25-mile of a proposed station location and would benefit from enhanced access to public transit. The public service facilities (police and fire) near the alignment are located near grade separated crossings of the alignment (Century Boulevard and La Brea Avenue) so that the LPA would not result in an adverse effect on response times.

Table 4-40. Summary of Impacts to Public Service and Other Community Facilities within 0.25-mile of the Proposed LPA Alignment

Map No[a]	Name	Location	Proximity to Alignment (miles)	Within 0.25 mile of station	Land Acquisition	Loss of supporting street parking)[b]	Affect vehicle access	Barrier to Pedestrian Access
Police Stations								
3	Inglewood Police Station	1 W Manchester Blvd, Inglewood	0.11	No	No	No	No	No
Fire Stations								
3	LAFD Fire Station Number 95	10010 International Rd, Los Angeles	0.15	Yes	No	No	No	No
4	LACoFD Fire Station Number 171	141 W Regent St, Inglewood	0.05	No	No	No	No	No
Libraries								
2	City of Inglewood Public Library	101 W. Manchester Blvd, Inglewood	0.11	No	No	No	No	No
Day Care/Pre-School								
2	West Angeles Youth Center	3623 Crenshaw Blvd, Los Angeles	0.1	Yes	No	No	No	No
6	Golden Day Pre-School	6420 Crenshaw Blvd, Los Angeles	0.03	No	No	Yes	No	No
7	Hyde Park Early Education Center	6428 11th Ave, Los Angeles	0.10	No	No	No	No	No
8	Crenshaw TOT Academy	5148 Crenshaw Blvd, Los Angeles	0.02	No	No	Yes (a)	No	No

Table 4-40. Summary of Impacts to Public Service and Other Community Facilities within 0.25-mile of the Proposed LPA Alignment (continued)

Map No[a]	Name	Location	Proximity to Alignment (miles)	Within 0.25-mile of station	Land Acquisition	Loss of supporting street parking)[b]	Affect vehicle access	Barrier to Pedestrian Access
9	Golden Day School Inc.	4476 Crenshaw Blvd, Los Angeles	0.09	No	No	No	No	No
10	Crenshaw Montessori Academy	4914 Crenshaw Blvd, Los Angeles	0.02	No	No	Yes (a)	No	No
11	Ivie League Christian Pre-School	4827 Crenshaw Blvd, Los Angeles	0.05	No	No	Yes (a)	No	No
12	Learning Zone Childcare	901 East Redondo Blvd, Inglewood	0.10	Yes	No	No	No	No
13	Nikka Tiffany School and Day Care	7112 S Victoria Ave, Los Angeles	0.07	Yes	No	No	No	No
Elementary Schools								
4	Today's Fresh Start Charter School	4514 Crenshaw Blvd, Los Angeles	0.03	Yes	No	No	No	No
5	Hyde Park Blvd Elementary School	3140 Hyde Park Blvd, Los Angeles	0.19	No	No	No	No	No
6	Ninety-Eighth St Elementary School	5431 W. 98th St, Los Angeles	0.11	No	No	No	No	No
Middle Schools								
2	View Park Preparatory Accelerated Charter Middle School	5749 Crenshaw Blvd, Los Angeles	0.03	Yes	No	Yes (a)	No	No
3	George W Crozier Middle School	210 W Regent St, Inglewood	0.12	Yes	No	No	No	No

Table 4-40. Summary of Impacts to Public Service and Other Community Facilities within 0.25-mile of the Proposed LPA Alignment (continued)

Map No[a]	Name	Location	Proximity to Alignment (miles)	Within 0.25-mile of station	Land Acquisition	Loss of supporting street parking)[b]	Affect vehicle access	Barrier to Pedestrian Access
Senior High Schools								
1	Crenshaw High School	5010 11th Ave, Los Angeles	0.16	No	No	No	No	No
2	View Park Preparatory Accelerated Charter High School	5701 Crenshaw Blvd, Los Angeles	0.03	Yes	No	Yes (a)	No	No
2	Animo Venice Charter High School	5431 W 98th St, Los Angeles	0.16	Yes	No	No	No	No
3	Animo Leadership Charter High School	1155 W Arbor Vitae St, Inglewood	0.06	No	No	No	No	No
Private Schools								
7	Al Madinah School	3510 Exposition Pl, Los Angeles	0.01	Yes (d)	Yes	Yes	Yes	Yes
9	Saint John Evangelist Catholic School	530 E Florence Ave, Inglewood	0.04	No	No	No	No	No
10	Ascension Lutheran Elementary School	5820 West Blvd, Los Angeles	0.24	Yes	No	No	No	No
11	Saint John Chrysostom Church School	530 E Florence Ave, Inglewood	0.02	No	No	No	No	No
12	Holy Faith Episcopal Church /Slauson Learning Center	260 N Locust St, Inglewood	0.08	Yes	No	No	No	No
13	St. Mary's Academy	701 Grace Ave, Inglewood	0.10	No	No	No	No	No
14	Westchester Neighborhood School	5520 Arbor Vitae, Westchester	0.15	No	No	No	No	No

Table 4-40. Summary of Impacts to Public Service and Other Community Facilities within 0.25-mile of the Proposed LPA Alignment (continued)

Map No[a]	Name	Location	Proximity to Alignment (miles)	Within 0.25-mile of station	Land Acquisition	Loss of supporting street parking)[b]	Affect vehicle access	Barrier to Pedestrian Access
College or Trade Schools								
1	Los Angeles Urban League Youth Training Center	5414 Crenshaw Blvd, Los Angeles	0.04	Yes	No	No	No	No
2	Pacific Beauty College	5345 Crenshaw Blvd, Los Angeles	0.03	No	No	Yes	No	No
3	Crimson Technical College	8911 Aviation Blvd, Inglewood	0.03	No	No	No	No	No
4	Fire Training Center (for El Camino College)	206 W Beach St, Inglewood	0.13	No	No	No	No	No
5	Ahmanson Training Center Los Angeles Police Dept	5651 Manchester Ave, Los Angeles	0.15	Yes	No	No	No	No
Religious Facilities								
19	West Angeles Cathedral	3600 Crenshaw Blvd, Los Angeles	0.02	Yes	No	No	No	No
20	Masjid Abu Bakr As-Siddiq	3611 Crenshaw Blvd, Los Angeles	0.02	Yes	No	No	No	No
29	Love Lifted Me Missionary Baptist Church	6510 Crenshaw Blvd, Los Angeles	0.01	No	No	No	No	No
30	St. Mark Baptist Church	5969 Crenshaw Blvd, Los Angeles	0.03	Yes	No	Yes (a)	No	No
31	Hyde Park Church of God	6315 Crenshaw Blvd. Los Angeles	0.03	No	No	No	No	No
32	Saint John the Evangelist Roman Catholic Church	6028 S. Victoria Ave, Los Angeles	0.08	No	No	No	No	No

Table 4-40. Summary of Impacts to Public Service and Other Community Facilities within 0.25-mile of the Proposed LPA Alignment (continued)

Map No[a]	Name	Location	Proximity to Alignment (miles)	Within 0.25-mile of station	Land Acquisition	Loss of supporting street parking)[b]	Affect vehicle access	Barrier to Pedestrian Access
33	Christ the Good Shepherd Episcopal Church	3303 Vernon Ave, Los Angeles	0.14	Yes	No	No	No	No
34	All Souls Christian Center	5125 Crenshaw Blvd, Los Angeles	0.03	No	No	Yes (a)	No	No
35	Apostolic Faith Church of Los Angeles	6641 Crenshaw Blvd, Los Angeles	0.03	No	No	No	No	No
36	Bethel Chapel Community Church	5879 Crenshaw Blvd Los Angeles	0.02	Yes	No	Yes (a)	No	No
37	Bethesda Temple Apostolic	4909 Crenshaw Blvd, Los Angeles	0.03	No	No	Yes (a)	No	No
38	Egyptian Temple No. 5 P. H. A.	5324 Crenshaw Blvd, Los Angeles	0.03	No	No	Yes (a)	No	No
39	Faith Love Christian Center	5400 11th Ave., Los Angeles	0.09	No	No	No	No	No
40	First African Presbyterian Church of North America	6825 Crenshaw Blvd, Los Angeles	0.03	No	No	No	No	No
41	Galilee Baptist Church	3220 W. 48th St, Los Angeles	0.12	No	No	No	No	No
42	Great Bethlehem Temple Church #2 Crenshaw Faith Temple	4812 Crenshaw Blvd, Los Angeles	0.01	No	No	Yes	No	No
43	Greater Deliverance C.O.G.I.C.	6741 West Blvd, Inglewood	0.17	No	No	No	No	No
44	Love and Order Christian Fellowship	5428 Leimert Blvd, Los Angeles	0.07	Yes	No	No	No	No
45	Misión Cristiana El Amor De	6419 Crenshaw Blvd, Los Angeles	0.02	No	No	No	No	No

Table 4-40. Summary of Impacts to Public Service and Other Community Facilities within 0.25-mile of the Proposed LPA Alignment (continued)

Map No[a]	Name	Location	Proximity to Alignment (miles)	Within 0.25-mile of station	Land Acquisition	Loss of supporting street parking)[b]	Affect vehicle access	Barrier to Pedestrian Access
46	Arms of Grace Christian Center	5700 Crenshaw Blvd, Los Angeles	0.02	Yes	No	Yes (a)	No	No
47	Iglesia De Pentecostal	5460 Crenshaw Blvd, Los Angeles	0.02	Yes	No	Yes (a)	No	No
48	Masjid Bilal Ibn Rabah	5450 Crenshaw Blvd, Los Angeles	0.02	No	No	Yes (a)	No	No
49	Church of the Anointing	4343 Crenshaw Blvd, Los Angeles	0.02	Yes	No	No	No	No
50	Family of Faith - Faithful Central Bible Church	333 W. Florence Ave, Inglewood	0.02	No	Yes (parking area only)	Yes	No	No
51	Family of Faith - Faithful Central The Tabernacle	321 N. Eucalyptus Ave, Inglewood	0.03	No	No	No	No	No
52	First United Church of Christ	3511 W. Florence Ave, Inglewood	0.09	Yes	No	No	No	No
53	Kingdom Hall of Jehovah's Witnesses	411 Centinela Ave, Inglewood	0.17	No	No	No	No	No
54	Trinity Church	1100 W Florence, Inglewood	0.03	Yes	No	No	No	No
55	Committed Christian Life Church	216 W Florence, Inglewood	0.06	No	No	No	No	No
56	First Evangelical Lutheran Church	600 W. Queen St, Inglewood	0.16	No	No	No	No	No
57	Soka Gakkai International	8881 Aviation Blvd, Inglewood	0.05	Yes	No	No	No	No
58	Church of the Holy Faith	260 N. Locust St, Inglewood	0.05	Yes	No	No	No	No
59	Saint John Chrysostom Roman Catholic Church	530 E. Florence Ave, Inglewood	0.04	No	No	No	No	No

Table 4-40. Summary of Impacts to Public Service and Other Community Facilities within 0.25-mile of the Proposed LPA Alignment (continued)

Map No[/a/]	Name	Location	Proximity to Alignment (miles)	Within 0.25-mile of station	Land Acquisition	Loss of supporting street parking)[/b/]	Affect vehicle access	Barrier to Pedestrian Access
60	Church of Jesus Christ of Latter Day Saints	400 W. Centinela Ave, Inglewood	0.15	No	No	No	No	No
Cemetery								
1	Inglewood Park Cemetery	720 E Florence Ave, Inglewood	0.07	Yes	No	No	No	No
Hospitals								
2	Airport Urgent Care	1117 W Manchester Blvd, Inglewood	0.04	Yes	No	No	No	No
Convalescent Homes								
2	Hyde Park Convalescent Hospital	3737 Don Felipe Dr, Los Angeles	0.23	No	No	No	No	No
3	Centinela Park Convalescent Hospital	515 Centinela Ave, Inglewood	0.08	No	No	No	No	No
4	Saint Erne Sanitarium (Health Care Center)	527 W. Regent, Inglewood	0.02	No	No	No	No	No

Source: CDM, 2008
/a/Map numbers correspond to Figure 4-56 through Figure 4-59
(a)Parking is reduced from both sides of the Crenshaw Boulevard frontage road to only one side.

Acquisition

The Al Madinah School, located at 3510 Exposition Boulevard, would be displaced by the proposed project. The school focuses on Islamic education serving the grades K through 11 and has been at its current location since 1979. The school has an enrollment of approximately 60 students and a small teaching staff. The school site is approximately 17,000 square feet (0.39 acres) and includes a classroom building and a playfield. The classroom building is approximately 6,300 square feet. The school serves the central Los Angeles subregion, as well as the Crenshaw Corridor.

Metro recognizes that the school will have specific relocation requirements, including a classroom building and playfield. A future location for the school will be constrained by local zoning and land use requirements. Because of the large service area of the school, replacement facilities within the Crenshaw/LAX Corridor, or within a short distance of the existing school location are not anticipated to be a specific relocation requirement. Appropriately zoned commercial properties or industrial properties with adjacent vacant

or underutilized land uses are not uncommon in Central and South Central Los Angeles. In this context, Metro expects that relocation of the school will pose a moderate level of difficulty in assisting the school in identifying a suitable replacement site. Because there are no summer classes at Al Madinah, Metro's objective would be to relocate the school during the summer months to minimize the effects from displacement. As discussed further in Section 4.2, Displacement and Relocation of Existing Uses, property acquisition would occur with all Federal, State, and local requirements, including the Federal Uniform Relocation Assistance and Real Property Acquisition Act of 1070 and California Relocation Act and no adverse effects are anticipated.

A portion of one community facility, the Family of Faith – Faithful Central Bible Church building, would be required along the Harbor Subdivision of the alignment. This would consist of approximately 7,100 square feet in a linear strip at the rear of the property, resulting in the elimination of approximately 25 parking spaces and other pavement area. This parking lot would still have an additional 100 parking spaces. The facility has an additional larger surface parking lot containing approximately 200 spaces and a seven-story parking garage with approximately 1,000 parking spaces. While this acquisition would eliminate a portion of the existing parking on-site, the proposed acquisition would not adversely affect the off-street parking nor preclude continuation of the existing use of the site, nor would it obstruct access to the site. As discussed further in Section 4.2, Displacement and Relocation of Existing Uses, property acquisition would occur with all Federal, State, and local requirements, including the Federal Uniform Relocation Assistance and Real Property Acquisition Act of 1070 and California Relocation Act and no adverse effects are anticipated.

Access and Use

The LPA would be within the existing street system and along the existing Harbor Subdivision and would not affect vehicle or pedestrian access to community facilities. Sidewalks impacted (i.e., sidewalks just south of the Crenshaw/Exposition Station, on the east side of the street) as part of the project will be reconstructed and reconfigured, thereby continuing to provide access for pedestrians.

The existing grade crossings associated with the Harbor Subdivision currently have railroad gates and flashing lights. Under the LPA, the existing railroad tracks, as well as the gates and lights, would be relocated. The LRT tracks would be operated within the Harbor Subdivision, adjacent to the relocated railroad (freight train) tracks, with railroad gates and flashing lights. The Hyde Park Boulevard Elementary School has a walk route that crosses the LPA at-grade along West Boulevard.[2] The pedestrian safety modifications at the West Boulevard crossing to accommodate the LPA would ensure safe crossing for pedestrians.

There are two locations along the LPA alignment where high pedestrian activity would occur on sidewalks that are currently narrow when compared with potential pedestrian volumes. The first is adjacent to Faithful Central Bible church, where pedestrians who

[2]Los Angeles Unified School District, Office of Environmental Health and Safety, *Safe Routes to Schools*. Available at http://www.lausd-oehs.org/maps_srts/4658.pdf. No other pedestrian route maps for schools within 0.25-mile of the alignment were available.

attend services have to walk along a narrow sidewalk (6 feet) along Eucalyptus Avenue and cross the LPA tracks to reach the secondary parking lot and associated church facilities that are located on the north side of the Harbor Subdivision. The second location where the existing sidewalks (also six feet) are not wide occurs along Florence Avenue adjacent to the Florence/La Brea Station. Transit riders would be funneled onto this narrow sidewalk along Florence as they proceed to cross either at Locust Avenue, Market Street, or La Brea. Implementation of Mitigation Measure **PCF-1** will reduce impacts to less than significant.

Parking

As discussed in Chapter 3.0 Transportation Impacts, the proposed project would not obstruct access to or remove on-site parking for adjacent community facilities. The community facilities along the at-grade portion of Crenshaw Boulevard from 60th to 48th Streets have off-street parking and the removal of one row of parking would not adversely affect these facilities.

It is anticipated that the park-and-ride lot at Exposition would require the acquisition of one community facility, the Al-Madinah private school. The acquisition of this facility would comply with all Federal, State, and local requirements, including the Federal Uniform Relocation Assistance and Real Property Acquisition Act of 1070 and California Relocation Act. No adverse effects are anticipated.

Design Options

The design options would not result in an effect on vehicle or pedestrian access to community facilities; therefore, no impact to emergency response times for police and fire stations or access to their stations is anticipated. In addition, similar to the LPA, these design options are not anticipated to have a direct or indirect adverse effect on potential acquisition, access or use, and parking to community facilities.

4.12.2.4 Mitigation Measures

Potential adverse impacts to parking and associated mitigation are detailed in Section 3.0 Transportation Impacts. The following mitigation measure will ensure that sidewalks adjacent to community facilities in Inglewood are of adequate width to safely circulate the high volume of pedestrians.

PCF-1 The project shall incorporate Metro Design Criteria standards for sidewalks to ensure the safe flow of pedestrians. Metro shall coordinate with the City of Inglewood Public Works Department and CPUC for the approval of final design features.

4.12.3 CEQA Determination

4.12.3.1 Parklands and Community Facilities

The CEQA determination compares the effects of the proposed project, design options and MOSs with the existing conditions described in the affected environment/existing conditions section. The *CEQA Thresholds* state that a project would normally have a significant impact on recreational or public facilities if it could:

- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated;
- Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect of the environment;
- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for police protection;
- For a project located within an airport land use plan or where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area;
- For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working within the project area;
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan;
- Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands;
- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection;
- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for schools;
- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for other public facilities.

No-Build Alternative

The No-Build Alternative would include all existing highway and transit services and facilities, as well as committed highway and transit projects. As such, the corridor would not be affected by the No-Build Alternative. In addition, the projects/components under the No-Build Alternative will undergo project-specific environmental review, as appropriate. Due to the various locations and distance from the proposed project and additional project-specific environmental review, the projects/components under the No-Build Alternative are not

anticipated to result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for parks. In addition, the No-Build Alternative would not increase the use of existing neighborhood and regional parks or other community facilities such that substantial physical deterioration of the facility would occur or be accelerated. The No-Build Alternative does not include recreational facilities or require the construction or expansion of recreational facilities, which might have a physical effect on the environment.

LPA

The proposed LPA would have the beneficial impact of situating public transit adjacent to parks, and thereby, potentially increasing the public's ability to visit them. Figure 4-56 through Figure 4-59, show the parks and community facilities within 0.25-mile of the proposed alignment. Although the LPA would potentially make these parklands and community facilities more accessible, this accessibility would not create a demand of such magnitude that would lead to substantial deterioration of facilities, nor would they would need to be expanded or have new facilities constructed. Therefore, the LPA would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for parks. The LPA would not increase the use of existing neighborhood and regional parks or other community facilities such that substantial physical deterioration of the facility would occur or be accelerated. Finally, the LPA does not include recreational facilities or require the construction or expansion of recreational facilities, which might have a physical effect on the environment.

As described previously, there are two locations along the LPA alignment where high pedestrian activity would occur on sidewalks that are currently not wide enough compared to the potential pedestrian volumes accessing community facilities and significant impacts would occur without the implementation of mitigation measures.

The MOSs would result in the same impacts on parklands and community facilities as described for the LPA; therefore, no significant impacts would result.

Design Options

The design options would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for parks. In addition, as with the LPA, these options would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. Finally, similar to the LPA, these options do not include recreational facilities or require the construction or expansion of recreational facilities, which might have a

physical effect on the environment. In conclusion, no significant impact to parklands is anticipated from these design options.

4.12.4 Impacts Remaining After Mitigation

Implementation of Mitigation Measure **PCF-1** would ensure that the pedestrian circulation for persons using community facilities adjacent to the Harbor Subdivision alignment would be safe and without significant delay. Less-than-significant impacts would result after implementation of mitigation.

4.13 Economic and Fiscal Impacts

This section describes the potential for economic and fiscal impacts that could arise from the construction and long-term operation of the proposed transit improvements in the Crenshaw/LAX Transit Corridor study area. Topics discussed include the regional economy, employment and unemployment trends, government revenues, and local business districts.

Information used to conduct this analysis comes from a wide variety of sources. Statistics include those published by the U.S. Census Bureau, U.S. Department of Labor – Bureau of Labor Statistics, California Employment Development Department, and the SCAG. Local government web pages for the Cities of Los Angeles, Hawthorne, Inglewood, and El Segundo, as well as Los Angeles County were consulted to obtain general economic information and copies of current 2009-2010 adopted budgets. Tax assessment information was obtained from the Los Angeles County Office of the Assessor. The number of direct, indirect, and induced jobs generated by the proposed alternatives as a result of both capital and operation and maintenance (O &M) expenditures was estimated using employment multipliers provided by the SCAG Input-Output Model (2004). This model also estimates economic output and household income impacts.

4.13.1 Existing Conditions/Affected Environment

4.13.1.1 Regional Economy
Geographic Context

The Crenshaw/LAX Transit Corridor study area is located in one of the country's largest metropolitan areas, Los Angeles. The corridor encompasses portions of the cities of Los Angeles, Hawthorne, and El Segundo as well as portions of unincorporated Los Angeles County. The City of Inglewood lies entirely within the study area.

Specifically, the study area extends approximately ten miles between Wilshire Boulevard and El Segundo Boulevard. Three major highways cross the study area, as well as three railroads. It is a relatively dense mixed-use urban environment with little undeveloped land remaining. However, there are many properties that are underused based on existing comprehensive plan and zoning designations. These properties provide opportunities for redevelopment to higher densities and/or different land uses. At the north end, the study area is about two miles in width that is approximately centered on Crenshaw Boulevard. At the southern end, the study area is about 5 miles wide and is approximately centered on La Brea Avenue and Hawthorne Boulevard.

4.13.1.2 Employment and Unemployment Trends
Recent Employment Trends

Table 4-41 shows recent average annual employment in Los Angeles County and the four cities partially or entirely encompassed in the study area. Total employment for the county, as well as the four cities has decreased slightly between 2004 and 2010. Employment increased until 2007, but declined during the following three years to 2010. Average annual employment growth declined over the period and was nearly uniform at approximately -0.8 percent.

Table 4-41. Local Government Employment and Unemployment Trends

Jurisdiction	2004 Employment (Unempl %)	2005 Employment (Unempl %)	2006 Employment (Unempl %)	2007 Employment (Unempl %)	2008 Employment (Unempl %)	2009 Employment (Unempl %)	2010 Employment (Unempl %)	2004-2010 Average. Annual Employment Growth
Los Angeles	1,731,251 (7.2%)	1,771,146 (5.9%)	1,790,669 (5.2%)	1,785,100 (5.6%)	1,761,900 (8.3%)	1,673,500 (12.8%)	1,642,500 (13.8%)	-(0.8)%
Inglewood	48,145 (8.2%)	49,255 (6.7%)	49,797 (6.0%)	49,600 (6.4%)	49,000 (9.4%)	46,100 (15.5%)	45,100 (16.3%)	-(0.9)%
Hawthorne	37,394 (8.6%)	38,256 (7.0%)	38,678 (6.3%)	38,600 (6.7%)	38,100 (9.8%)	36,100 (15.0%)	35,700 (16.4%)	-(0.7)%
El Segundo*	10,400 (2.9%)	10,700 (2.4%)	10,800 (2.1%)	10,800 (2.4%)	10,700 (3.6%)	10,200 (5.7%)	10,000 (6.1%)	-(0.6)%
Los Angeles County	4,477,937 (6.5%)	4,581,129 (5.3%)	4,631,626 (4.7%)	4,658,400 (5.5%)	4,557,300 (7.5%)	4,258,500 (11.9%)	4,197,600 (13.1%)	-(0.9)%

Source: U.S. Department of Labor, Bureau of Labor Statistics, 2010; U.S. Census Bureau, 2000; and California Employment Development Department, 2010.

Note: * Statistics are not available from the U.S. Department of Labor, Bureau of Labor Statistics for El Segundo as the total population of this city does not exceed 25,000 – the threshold for data publication by this federal agency. The employment statistics for El Segundo for 2001-2006 are those published by the California Employment Development Department, Labor Market Information Division; and these statistics are estimates based on proportional county share based on the 2000 census. El Segundo statistics for 2000 are those published by the U.S. Census Bureau.

Unemployment trends for these jurisdictions show more variability. The 2004 unemployment rates ranged between 2.9 percent in El Segundo and 8.2 percent in Inglewood. Unemployment rates declined from 2004 to 2006 before job growth decreased and unemployment rates increased again. In 2010, the Bureau of Labor Statistics unemployment rates for the cities of Hawthorne, Inglewood, and Los Angeles were all more than the county's overall rate of 13.1 percent. El Segundo was well below the county overall rate at 6.1 percent.

Forecast Employment

Employment growth in the study area is expected to continue. Small area forecasts have been prepared by SCAG. In 2010, the agency estimated total employment in the study area to be approximately 170,583 and projected employment to reach 184,673 by 2030 (Table 4-42). This represents an increase of approximately 8 percent, which is higher than Los Angeles County's projected employment growth during the same time period.

Table 4-42. Forecast Employment, 2030

District Name	2010 Employment	2010 Employment Density	2030 Employment	2030 Employment Density	Percent Change	Average Annual Increase
Crenshaw	38,304	3,218	41,571	3,493	8 %	0.4%
Hawthorne	13,286	3,178	15,777	3,774	18%	1%
Inglewood	32,480	3,530	34,648	3,766	7%	0.3%
LAX	81,321	7,685	87,078	8,230	7%	0.3%
Lennox	3,911	3,232	4,273	3,531	9%	0.5%
View Park	1,281	712	1,296	720	1%	0.05%
Study Area Total	170,583	4,690	184,643	5,077	8%	0.4%

Source: SCAG, 2008.
Notes:
1 Employment Density is measured in number of jobs per square mile.
2 The Crenshaw District is the City of Los Angeles jurisdiction and extends slightly west of the study area boundary.
3 The Hawthorne District encompasses the portion of Hawthorne in the study area and the remainder of the City's jurisdictional lands to the south.
4 The Inglewood District boundaries are the same as those of the city, and are entirely within the study area.
5 The LAX District encompasses the airport, the El Segundo light industrial park and corporate offices area south of the airport, as well as the portion of the City of Los Angeles north of the airport. A substantial portion of this district extends west of the study area boundary (the airport runways), but almost all of the jobs are located within the study area.
6 The Lennox District is in the unincorporated County of Los Angeles.
7 The View Park District is the portion of the unincorporated County of Los Angeles and extends slightly west of the study area boundary.

Economic Revitalization Efforts

To support and encourage employment growth, local governments have developed specific plans to revitalize the economic base of communities located in the study area. A majority of the study area encompasses redevelopment areas designated by the Cities of Los Angeles, Inglewood, and Hawthorne. The purpose of designating redevelopment areas is to attract new private investment into economically depressed areas and to eliminate slums, blight, and abandoned or unsafe properties. This can happen by development of vacant properties or redevelopment of underused properties to different land uses or higher densities.

Research has shown that there is a strong connection between redevelopment and revitalization associated with transportation system improvements. Increased accessibility, mobility, and links to transit provide opportunity for new development. Some improvements and strategies being implemented focus on increasing pedestrian amenities and reducing or eliminating vehicular traffic, which increases demand on transit access and on the level of transit service, to help support existing and future land use development.

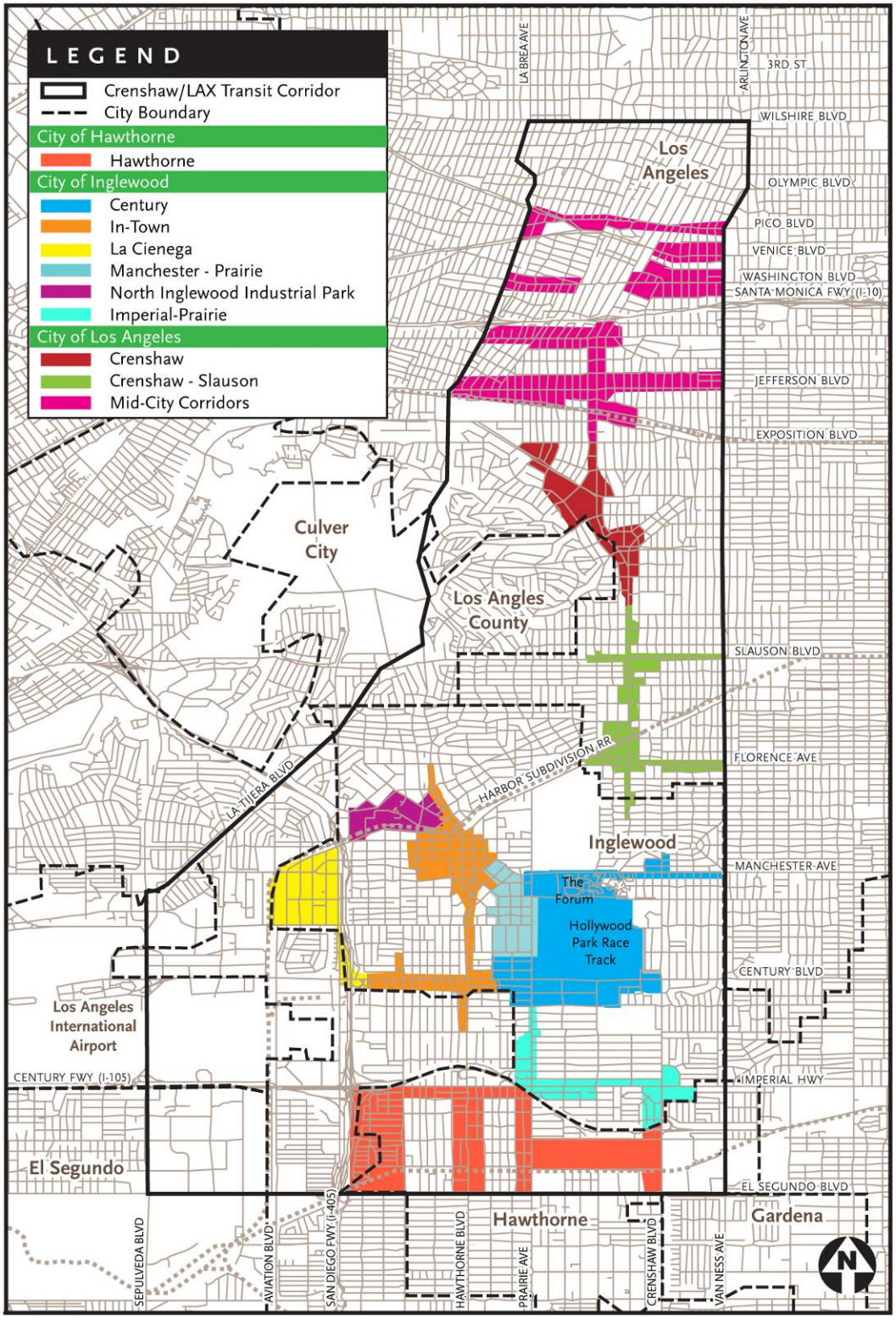
All or portions of nine redevelopment plan areas are located within the study area (Figure 4-62). These include the following:

- City of Los Angeles – Mid-City, Crenshaw, and Crenshaw-Slauson
- City of Inglewood – Century, Manchester-Prairie, In-Town, North Inglewood Industrial Park, and La Cienega
- City of Hawthorne – Hawthorne

In addition, the study area includes a portion of the Los Angeles State Enterprise Zone and is directly adjacent to a U.S. Department of Housing and Urban Development (HUD) Empowerment Zone and Renewal Community. Within these areas, businesses can take advantage of State and/or federal tax credits and deductions not available to businesses elsewhere. The goal of these incentives is to stimulate business attraction, encourage growth, and increase employment opportunities within economically challenged areas. The goal of these incentives is to stimulate business attraction, encourage growth, and increase employment opportunities within economically challenged areas.

The revenue supporting local government operations and programs in the study area comes from many sources typical to local governments. These sources include business licenses, recreation facility user fees, sales tax, hotel room tax, and property taxes. Some revenues can only be spent on certain projects or types of programs. For example, revenues raised via property taxes for a special tax district such as the Metropolitan Water District or the Los Angeles Unified Schools District can only be used for those purposes and cannot be used to support other local government activities. Other local government revenue can be spent on a broad range of government activities. For example, revenues collected by sales tax support a local government's General Fund. Typically, a substantial share of government revenue for the General Fund is from property taxes. For the four cities and Los Angeles County, property taxes comprise approximately 9 to 33 percent of these jurisdictions' General Funds (Table 4-43).

Figure 4-62. Redevelopment Areas in the Study Area



Source: Parsons Brinckerhoff, 2008

Table 4-43. Local Government Revenues, 2009-2010 Budgets

Jurisdiction	Property Tax Revenues	%	General Fund Revenues	%	Total Adopted Budget
Los Angeles	$1,396,870,000	20%	$4,444,204,000	63%	$7,048,297,201
Inglewood	$15,915,000	5%	$88,161,948	27%	$324,122,972
Hawthorne	$4,850,000	9%	$52,473,650	36%	$146,754,768
El Segundo	$6,350,000	10%	$62,328,400	52%	$118,494,300
Los Angeles Co.	$3,856,306,000	15%	$16,847,147,000	65%	$25,635,295,000

Source: City of El Segundo, 2009; City of Hawthorne, 2009; City of Inglewood, 2009; City of Los Angeles, 2009; and County of Los Angeles, 2009.

Review of recently adopted budgets for the local governments in the study area reveals several major budgeting issues. As mentioned above, several local governments have established redevelopment areas within their jurisdictional boundaries. Within these areas, increases in property tax revenues from the base year in which the redevelopment/enterprise area is established are set-aside for special uses. The incremental tax revenue is used to make public investments, leverage public resources through bonding and revolving funds, attract private investment, and partner with members of the community. The purpose is to bring housing, jobs, and economic development to the designated project areas. Because property tax revenues allocated for the general fund are essentially frozen in time, properties within the project area contribute less and less of their "share" of total jurisdictional property tax revenues. To make up the difference, the unmet share of the property tax burden is spread across the entire city's tax base.

Past years of economic expansion has also led several local governments to adopt budgets where expenditures have exceeded revenues. In part, this has been possible because rapidly increasing property values resulted in revenues exceeding conservative revenue forecasts. But, more recently the expenditures have exceeded incoming revenues. In response to this deficit spending, several of the study area local governments have established "rainy-day" funds to save local government revenues during boom times for those times when revenues may fluctuate downward and may not meet local government expenditure needs. These funds permit the local governments to balance expected expenditures with revenues.

As a matter of course, local government revenues always experience some fluctuations due to the ups and downs of the regional and national economy, which presents a challenge in forecasting local government revenues. After several years of substantial increases in local housing prices in Southern California, housing prices are now leveling off and even falling in some communities. A lack-luster national economy tends to hamper regional economic growth, both employment and wages, which, then tends to generally reduce the overall demand for housing and commercial real estate and potentially reduce property values. This, in turn, affects the assessed value of housing and property tax revenues to governments.

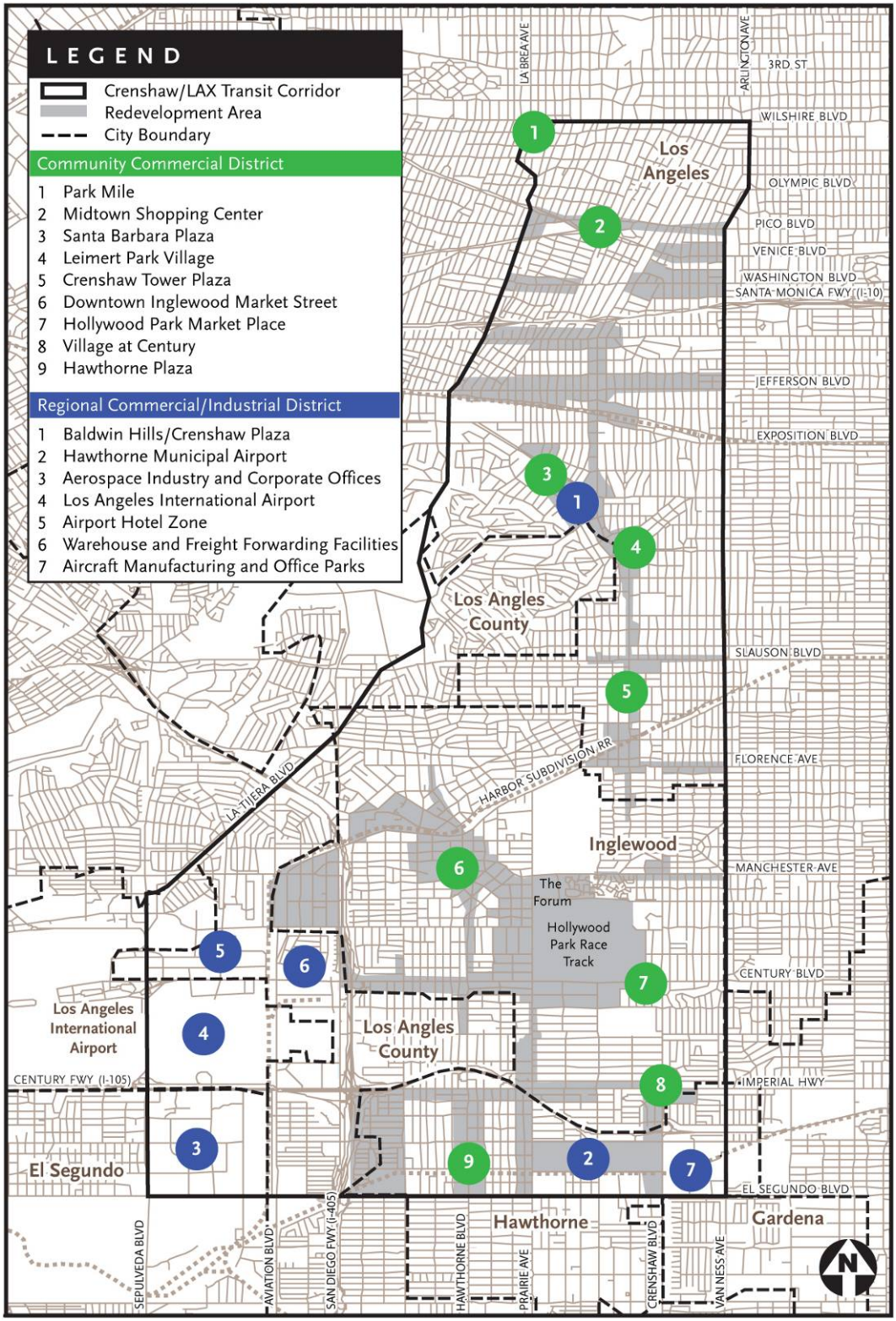
Currently, local governments in Southern California are facing an even more serious downturn in property tax revenues. The region has seen increasing numbers of foreclosures on homeowners due to the sub-prime mortgage crisis. Prior to actual foreclosure, there may be a period during which property owners fall behind in paying their property taxes and overdue payments become a lien on the property and interest is accrued. The taxes are defaulted after six months and subject to sale after five years of non-payment. Ultimately, the back taxes will be paid on properties when the property sells. In the meantime, local government property tax revenues may fall substantially below past collection rates and may potentially affect overall local government operations. In the long term, however, local government fiscal restraint, efforts to keep government expenditures balanced with anticipated revenues including property taxes, and access to "rainy-day" reserve funds will support ongoing local government operations.

4.13.1.3 Study Area Commercial Districts

The study area contains a number of employment destinations, regional and community shopping districts, and active retail businesses. The following sections describe these local economic activity centers in the project area. There are a number of commercial district corridors as well as several major shopping districts in the southern portion of the study area (Figure 4-63). The commercial district corridors line most of the major arterials. The north-south commercial corridors include La Brea Avenue and Hawthorne Boulevard, as well as portions of Crenshaw Boulevard and Prairie Avenue. East-west commercial corridors extend along portions of Florence Avenue, Century Boulevard (especially at the southeast corner of Hollywood Park Race Track and Casino), and Imperial Highway. Major commercial activity occurs in downtown Inglewood (Market Street) near Manchester Avenue and Hawthorne Boulevard and in downtown Hawthorne on Hawthorne Boulevard south of the I-105 Freeway.

In addition, the project area includes several industrial areas. There is a mix of commercial and industrial development south and east of the Hawthorne Airport, west of the I-405 Freeway, as well as north and south of LAX. Light industrial, mixed use, and corporate office developments are located in El Segundo south of LAX. Further to the north, commercial business activities are focused on Crenshaw Boulevard. The Baldwin Hills-Crenshaw Plaza regional shopping district is located at the Crenshaw Boulevard/Martin Luther King Jr. Boulevard intersection. The Santa Barbara Plaza community commercial district is immediately to the north and commercial businesses extend to the south to Leimert Park Village, several commercial blocks north of historic Leimert Park. These commercial districts are located in "the heart of Los Angeles' finest African-American community." Commercial businesses also line the minor east-west arterials west of Crenshaw Boulevard and the entire length of Slauson Avenue. This business district also includes the Crenshaw Tower Plaza community shopping district.

Figure 4-63. Economic Activity Centers in the Study Area



Source: Parsons Brinckerhoff, 2008

4.13.2 Environmental Impact/Environmental Consequences

4.13.2.1 Regional Economy

The SCAG Input-Output Model is used to translate the direct operation and maintenance (O&M) cost expenditures into total direct, indirect, and induced economic impacts on the region. As such, the annual O&M expenditures would lead to additional labor and materials purchases by firms in the production of their outputs, and consumer spending of additional earnings by households across all economic sectors. To assess the differences between the project alternatives, the net difference between total estimated O&M cost estimates (March 26, 2009) through 2030 was calculated for each major element of the Metro's transit system – heavy rail transit (HRT), LRT and buses (Table 4-44).

Table 4-44. O&M Estimated Costs ($2008 millions)

	No-Build	LPA
Total System Cost Estimate		
HRT	$114.2M	$114.2M
LRT	$242.7M	$284.9M
Bus	$1,227.2M	$1,228.7M
Total	**$1,584.1M**	**$1,627.8M**
Changed Services to System Cost Estimate		
HRT	$0	$0
LRT	$0	$42.2M
Bus	$0	$1.5M
Total	**$0**	**$43.7M**

Source: March 26, 2009 project O&M cost estimates; SCAG 2004.
Note: Figures may not sum due to rounding.

It is assumed that all operations and maintenance services would be procured from firms and suppliers within the SCAG region. Considering that much of the operating and maintenance costs are anticipated to be funded by local or regional sources, the net total impacts arising from the increase in O&M expenditures of the project alternatives would generally not be expected to substantially affect the regional economy.

No-Build Alternative

The No-Build Alternative O&M costs are estimated to be about $1,584.1 million ($2008) through 2030. The overall gross economic impact from these O&M expenditures on the region would be about $2,907.9 million per year. The average annual direct, indirect, and induced jobs would total an estimated 26,500, 3,300, and 5,000, respectively. The total number of jobs would be about 34,800. The total average annual household income earnings from these jobs would be about $1,684.7 million. As this does not include increases in transit services other than those already planned, there would be no additional economic impacts to the region from the implementation of this alternative.

Table 4-45. Additional O&M Estimated Economic Impacts ($2008 millions)

	No-Build	LPA
Additional O&M	$0	$43.7M
Output	$0	$73.2M
Employment	0	880
Income	$0	$42.4M

Source: SCAG 2004.

LPA

Total economic output would be about 73.2 million for the operation of the LPA. Additional direct, indirect, and induced employment would be about 880. The total estimated household earnings would be about $42.4 million. These effects, however, would be less than three percent greater than the No-Build Alternative and would not be a substantial change.

The MOSs would not add costs compared to the LPA. Similar to the LPA, these effects would not be adverse.

Design Options

The Cut-and-Cover Crossing at Centinela, and the optional stations at Crenshaw/Vernon and Aviation/Manchester would add costs compared to the LPA. The Partially-Covered LAX Trench and Alternate Southwest Portal at Crenshaw/King would reduce costs compared to the LPA. Similar to the LPA, these effects would not be adverse.

4.13.2.2 Employment

This section discusses the anticipated employment loss from displacement and acquisition and the long-term annual increase in employment associated with operation of the project alternatives. These estimates are presented for operations, vehicle and other maintenance, and general administration jobs. They are broken out for HRT, light rail, and bus sectors of the transit agency's services. The estimates are based on estimated labor hours for each of the alternatives and assume one Full Time Equivalent (FTE) is equal to 2080 hours per year (Metro, 2007).

No-Build Alternative

Table 4-46 provides a complete breakdown of planned employment by category for each sector of Metro's transit services for the No-Build Alternative. Based on the specific O&M plan estimated labor hours for this alternative, a total of 13,069 workers would be employed by Metro. Approximately 68 percent are with the operations sector, an estimated 24 percent are maintenance, and an additional 8 percent are general administration. The average wage for all jobs is estimated to be approximately $85,300 ($2008).

As this is the planned employment, no additional employees would be required under the No-Build Alternative.

Table 4-46. New Transit Operations Employment (FTE)

Employment	Planned Employment	No-Build Alternative	LPA
Operations			
HRT	245	0	0
LRT	655	0	+132
Bus	7,961	0	+19
Vehicle Maintenance			
HRT	187	0	0
LRT	369	0	+57
Bus	1,944	0	-3
Non-Vehicle Maintenance			
HRT	148	0	0
LRT	241	0	+29
Bus	295	0	0
General Administration			
HRT	81	0	0
LRT	211	0	+36
Bus	730	0	+2
TOTAL	**13,069**	**0**	**+272**
Percent Increase		0%	2%

Source: Engineering Plan Sets, Preliminary Operation and Maintenance Cost Estimates and Metro Adopted Budget, 2008.
Note: Total may not sum due to rounding.

LPA

The LPA would result in the loss of approximately 350,000 square feet of existing commercial uses and approximately 450,000 square feet of industrial uses. This would result in the loss of approximately 1,375 jobs. The LPA would require an additional 272 workers to operate the expanded LRT system. The total number of additional workers required for the LPA, however, would remain very small compared to the total regional employment. The effects could be lessened if Metro would cross-train local workers, e.g., bus maintenance workers and light rail maintenance workers.

The MOSs would not require substantial numbers of additional workers compared to the number of additional workers under the LPA. Similar to the LPA, the not have an adverse impact on employment.

Design Options

The design options would not require substantial numbers of additional workers compared to the number of additional workers under the LPA. Similar to the LPA, these design options would not have an adverse impact on employment.

4.13.2.3 Government Revenues

The acquisition of private property for construction of the project alternatives would result in a long-term reduction in the tax base for taxing districts in the project area. The loss of tax base means the revenue previously paid by acquired properties would need to be re-distributed across the tax base. The reduction in property tax revenue to local tax districts was estimated using the advanced conceptual engineering plans and 2010-2011 Los Angeles County Tax Assessor records.

No-Build Alternative

The No-Build Alternative includes all existing highway and transit services, as well as committed highway and transit projects. These projects may or may not include acquisition of properties and the majority of these properties are not located within or near the Crenshaw/LAX Transit Corridor. As there would be minimal required acquisition of property within or near the corridor under the No-Build Alternative, there would be no effects on local government property tax revenues.

LPA

Table 4-47 shows the anticipated reduction in annual property tax revenues for the proposed project. The reduction to the six local government tax districts (exclusive of local government debt service) totals an estimated $1,498,426. This reduction in property tax revenues would be less than 0.05 percent and would not be substantial, especially considering the several million dollars in property tax revenues that annually are collected by project area local governments and the more than $3.6 billion collected by Los Angeles County.

Table 4-47. Property Tax Losses for Alternatives

Tax Districts	No-Build Alternative	LPA
City of Inglewood	$0	$332,652
City of Los Angeles	$0	$511,839
Schools	$0	$77,190
Community College	$0	$11,464
Metro Water District	$0	$2,287
General Tax Levy	$0	$562,994
Total[1]	**$0**	**$1,498,426**

Source: Engineering Plan Sets and Property Acquisition Table in Appendix A, Los Angeles County Tax Assessor Web Page February 2011.

Note:

1. Totals may not sum due to rounding. In addition, the totals exclude loss of property tax revenue for local government debt service. As such, the totals are slightly less than the actual amount that would be affected.

The MOSs would require less property acquisition than that required under the LPA. The reduction in property tax revenues would not be substantial in comparison to the regional revenues.

Design Options

Design options would require the acquisition of more property than that required under the LPA. The additional property would result in the loss of more property tax revenue. However, the reduction in property tax revenues would not be substantial in comparison to the regional revenues.

4.13.2.4 Study Area Commercial Districts and Economic Revitalization

This section discusses the long-term effects of property acquisition on neighborhood business districts as well as potential economic revitalization as a result of the several project alternatives.

No-Build Alternative

Under the No-Build Alternative, there would be no improvements to transit services other than those already planned for the study area, including improved transit bus services in the project corridor. Construction and property acquisition may or may not be required. Over time, however, congestion on study area roadways would increase, thus reducing the level of service on roadways for all vehicles. Travel times would increase for all modes of travel. Access to project corridor businesses would adversely be affected. But increased traffic would also mean a potential increase in customers for existing and future businesses in the project corridor.

LPA

Under the LPA, substantial new transit infrastructure would be constructed that would potentially attract either new development or redevelopment of existing properties along most of the project corridor. Properties would be acquired for roadway widening, construction of LRT stations, as well as associated park-and-ride lots. Few parcels, however, would be fully acquired. The acquisition of this property would be expected to displace a total of about seven commercial or industrial building structures. It is not expected that the acquisition of property or the displacement of these buildings and business occupants would be a substantial adverse effect within the eight-mile project corridor considering that these acquisitions and displacements would be dispersed along the length of the corridor.

Construction of substantial new transit infrastructure would occur along the entire eight miles of the proposed LRT line. These improvements may potentially attract new development or redevelopment along this portion of the project corridor. In particular, the transit improvements may stimulate development in the following five redevelopment areas: La Cienega, In-Town, North Inglewood Industrial Park, Crenshaw-Slauson, and Crenshaw. An aerial station at Century may attract either new development or redevelopment of existing properties along Century and Aviation Boulevards primarily due to the proximity of LAX. In addition, the potential joint development of this area, including Metro's Crenshaw/LAX Transit Corridor and the LAX PeopleMover, would have a beneficial impact on the economic revitalization of the area. This station would not require the displacement of properties or businesses. The below-grade segment from 39th Street to Exposition Boulevard with a below-grade station at Exposition may contribute to the attraction of either new development or redevelopment of existing

properties near the intersection of Crenshaw and Exposition Boulevard. The properties and businesses at the southeast corner of this intersection would be displaced for the station, park-and-ride lot, and station facilities.

The MOSs would both result in shorter segments than the LPA. The shorter alignments would result in less property acquisition, but would reduce the potential for new development because the regional connectivity of the line would be reduced.

Design Options

The Partially-Covered LAX Trench and Below-Grade Crossing at Centinela Option are not anticipated to attract either new development or redevelopment of existing properties in the corridor because the design options do not include a station. Under these design options, no properties would be acquired and no businesses displaced. The Below-Grade Crenshaw/Vernon Station Option may contribute to the attraction of either new development or redevelopment of existing properties in the community of Leimert Park, which is a significant cultural center along the corridor. Under this design option, the neighborhood commercial business within the Vernon Triangle (area encompassed by Crenshaw Boulevard, Leimert Boulevard and Vernon Avenue) would be displaced. The removal of these businesses would not impact the economic development of the area. The proximity of this station to Leimert Park Village would be an economic benefit to the community. The optional Aviation/Manchester Station may contribute to the attraction of either new development or redevelopment of the limited existing commercial frontage along Manchester Avenue/Boulevard. No properties or businesses would be required for this optional station. However, since the area is primarily industrial, this design option would have a neutral economic effect. The alternate southwest portal at the Crenshaw/King Station would increase accessibility to the Baldwin Hill Crenshaw Mall. No businesses would be acquired for this alternate portal location. Similar to the LPA, these design options would not have an adverse effect on commercial districts and economic revitalization.

4.13.3 Mitigation Measures

As none of the anticipated long-term operational economic and fiscal impacts of the project alternatives would be substantial adverse effects, no mitigation would be required.

4.13.3.1 CEQA Determination

The CEQA determination compares the effects of the proposed project, design options and MOSs with the existing conditions described in the affected environment/existing conditions section. According to CEQA, economic effects of a project shall not be treated as significant effects on the environment; however, an environmental analysis may use economic effects to determine that a physical change is significant. The economic and fiscal effects discussed above address regional economic activity, long-term operations employment, government revenues, and likely long-term effects on adjacent businesses and business districts. Only the later effect would result from physical changes in the environment – primarily the acquisition of property, displacement of building structures, and potentially the construction of the rail tracks for the LRT line. The project would provide transit infrastructure in a transit dependent community, providing for the future

sustainability of the area. No urban decay would result from implementation of the project. As discussed above, these effects are anticipated to be less-than-significant for the LPA, design options, and MOSs. More analysis is also presented in Section 4.2 Displacement and Relocation of Existing Uses, which discusses land use and displacement effects, and in Section 4.16 Growth Inducing Impacts, which discusses effects from indirect development.

4.13.3.2 Impact Remaining After Mitigation

The effects of the LPA, design options and MOSs discussed above also address regional economic activity, long-term operations employment, government revenues, and the potential contribution to the long-term effects on adjacent businesses and business districts. None of the alternatives would displace a substantial number of properties or businesses. As discussed above, these effects are anticipated to be less-than-significant.

4.14 Safety and Security

This section presents the information about existing safety and security within the study area, especially as it pertains to pedestrians, motorists, and communities that may be impacted by the proposed project alignments.

The safety issues include station accidents, boarding and disembarking accidents, and right-of-way accidents and visibility obstructions for operators, motorists and pedestrians due to landscaping. Another aspect of safety is security, particularly the evaluation of station location, layout, and parking design, which must be evaluated to determine if the safety of transit passengers, or the safety of surrounding communities, is compromised and made more susceptible to criminal activity.

Department of Airports Police also have policing responsibilities for the south western portion of the corridor southwest of Manchester (Westchester Community) and in the vicinity of the LAX. LACSD provides services to two unincorporated areas within the corridor, including the View Park/Windsor Hills area west of Crenshaw Boulevard, and the Lennox area located south of the City of Inglewood. The Inglewood, Hawthorne and El Segundo Police Departments provide services to portions of the corridor within their respective jurisdictions.

Crime within the Project Corridor

Table 4-48 identifies the crime within the corridor relative to Part I crimes in 2008. Part I crimes include violent crimes, such as homicide, rape, and robbery, and property crimes, such as burglary and grand theft auto. Data is shown for the various divisions of LAPD, patrol areas for the LACSD, and the other jurisdictions within the corridor. In general the data indicate that the crime rate (measured in offences per each 10,000 persons of population) for Part I crimes within the corridor is higher than the overall crime rate for LAPD and LACSD jurisdictions.

4.14.1 Environmental Impacts/Environmental Consequences

4.14.1.1 Methodology

Pedestrian and motorist safety along the LPA and design options is considered in this document are evaluated on a qualitative level based on the experience of LRT systems throughout North America with similar alignment types. Research conducted on pedestrian and motorist safety referenced in this section include Transit Cooperative Research Program (TCRP) Report 17 – Integration of LRT into City Streets and TCRP Report 69 – Light Rail Service: Vehicular and Pedestrian Safety. Figure 4-64 displays typical safety devices use to alert motorists and pedestrians of light rail transit. The assessment of security concerns addresses crime prevention and potential for crime against persons, property theft, and vandalism. This analysis reviews project design features in the context of Metro procedures and prior experience of other rail systems to assess impacts.

Table 4-48. Crime Statistics within Project Corridor

Jurisdiction / Area	Total Population	Part I Crime Rate per 10,000 Persons [1]
City of El Segundo (2008)	16,700	408.38
City of Hawthorne (2007)	90,057	365.44
City of Inglewood (2007)	129,900	294.77
City of Los Angeles (2008)		
77th St Area	184,637	80.59
Wilshire Area	272,903	38.18
Pacific Area	217,867	58.75
Southwest Area	189,723	89.66
LAPD Jurisdiction (Total) [2]	4,003,694	66.29
Los Angeles County (2007)		
Lennox Station	94,522	293.16
Marina Del Rey	25,047	437.58
LACSD Jurisdiction (Total) [3]	2,944,422	309.20

Source: Los Angeles Police Department; Los Angeles County Sheriff's Department; Inglewood Police Department, 2008.
[1] Part I crimes includes total violent and property crimes.
[2] City of Los Angeles population totals based on LAPD 2007 Statistical Digest.
[3] Los Angeles County Sheriff's Department population total based on LASD total population within jurisdictional area as reported by LACSD, not total population for Los Angeles County.

4.14.1.2 Safety

This section discusses impacts to pedestrian and motorist safety related to the alternatives considered in this document. Table 4-49 provides the results of the preliminary safety analysis prepared for this document for both pedestrian and motorist safety for the LPA.

Pedestrian and Motorist Safety

No-Build Alternative

The No-Build Alternative would not result in pedestrian safety impacts, since it will maintain transit service and roadway infrastructure as it is at present within the project corridor. However, it is expected that increased traffic congestion within the corridor in future years would be a contributing factor to unsafe behavior from vehicles and pedestrians in overloaded intersections.

Figure 4-64. Pedestrian and Motorist Safety Devices

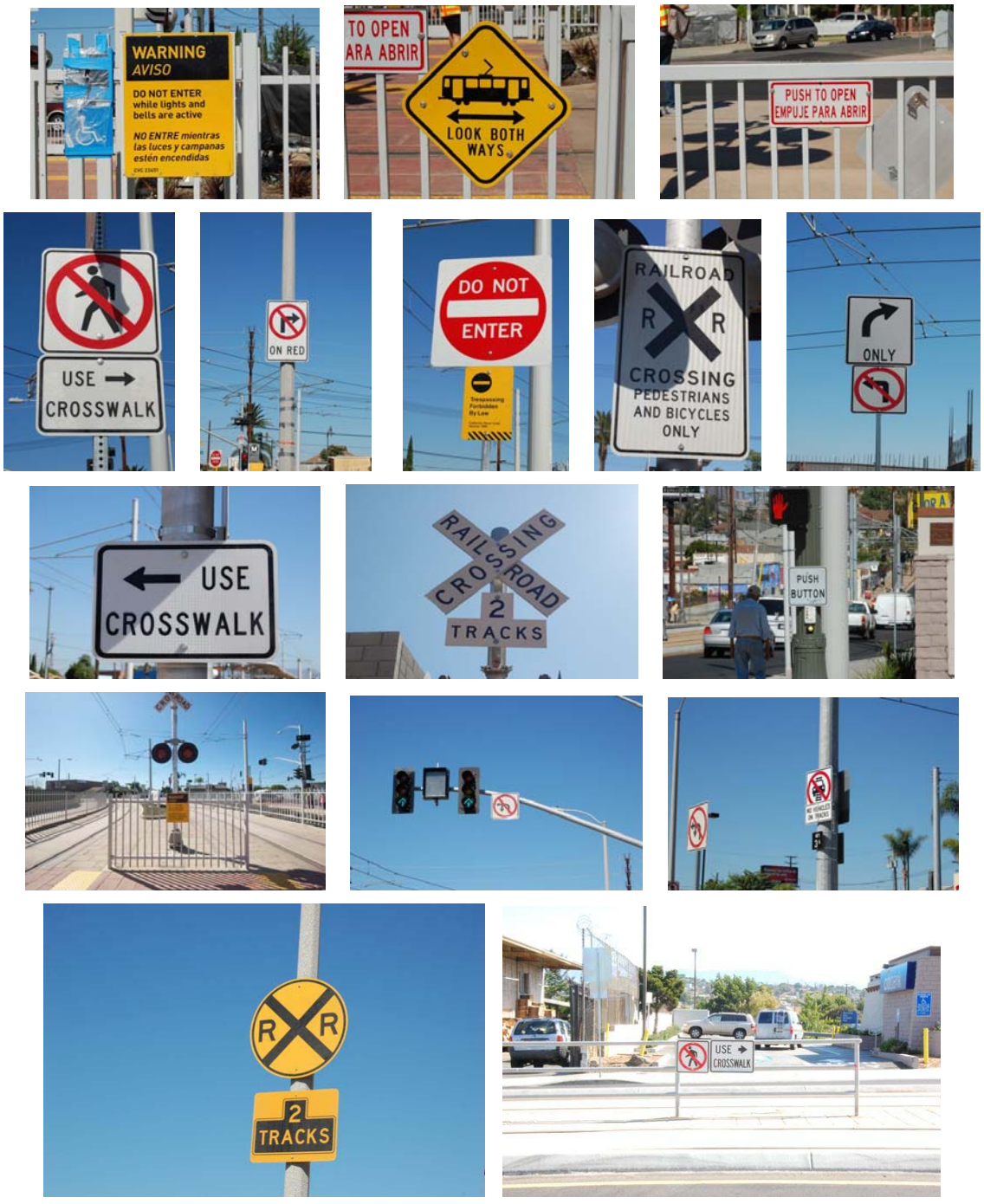


Table 4-49. Crenshaw/LAX Transit Corridor LRT Safety Analysis

Pedestrian Activity Segment	Preliminary Evaluation Factor				
	Pedestrian Generators	Pedestrian Activity Level	Pedestrian Sight Distance	Motorist Sight Distance	Thru Traffic
Exposition Line Crossing	Exposition Line and the West Angeles Church of God in Christ	High	OK	OK	Consistent
Baldwin Hills / Leimert Park	Baldwin Hills Crenshaw Plaza and Leimert Park	High	OK	OK	Consistent
Slauson Ave.	Community shopping areas, multiple churches, local post office, and schools	Moderate to High	OK	OK	Consistent
Hyde Park	Multiple motels and some residences; Hyde Park Elementary School	Moderate; recommended school pedestrian routes cross Crenshaw	OK	OK	Low to moderate
Inglewood	Downtown Inglewood, Market Street	Moderate	OK	OK	Consistent
Harbor Subdivision	Edward Vincent Jr. Park, residences, a church, and medical facilities	Limited	OK	OK with reconfiguration at Redondo because of intersection geometry	Consistent
Inglewood	Faithful Central Bible Church	High on Sundays; moderate weekdays	OK	OK	Low to moderate
Manchester Area	Commercial and industrial uses	Limited	Limited	Limited sight distance at Manchester/Florence because of intersection geometry	Moderate truck traffic
LAX	Schools and hotels; proposed station would provide access to planned LAX automated people mover system	Limited; Century/Florence is moderate	OK	OK	Moderate truck traffic

Source: Parsons Brinckerhoff, 2008.

LPA

The introduction of the LPA along the Crenshaw/LAX Transit Corridor would have various safety impacts. A review of data from prior research, safety oversight authorities and direct surveys of LRT system staff in the western United States conducted in recent years reveals that collisions between pedestrians and light rail vehicles (LRV) are divided into two general location types. The first location type is along the LRT right-of-way.

This location type includes crossings at intersections where pedestrians cross over the light rail tracks, and intrude on the right-of-way (trespassing).

Although the low number and unique circumstances of historic pedestrian collisions do not allow a valid quantitative projection for the LRT alignment, some trends are apparent in the background data of collision causes. For example, collisions with pedestrians are more likely to occur near station areas where large numbers of persons cross the tracks. Inattention to pedestrian warning devices, whether due to distractions present in the environment or other causes, is a factor in many collisions, including "second train accidents". Achieving a low number of pedestrian involved collisions with LRVs is a result of several conditions, including safety orientated design, light rail operator training, and public education that warns pedestrians of potential hazards involved with LRT.

LRT Crossings

At locations where pedestrian crossings are provided across the Harbor Subdivision alignment, there may be potential for motorist and pedestrian confusion when freight train and LRT vehicles come in sequence. At locations where pedestrian crossings are not provided across the Harbor Subdivision alignment, pedestrians are likely to attempt to cross the LRT trackway. Trespassing is a concern because pedestrian warning devices are not provided between designated crossings. In adherence to CPUC guidelines, the Harbor Subdivision will include fencing where pedestrians and motorists are not allowed to cross. This additional fencing along the corridor would reduce the likelihood of pedestrians crossing the trackway at locations other than designated pedestrian crossings.

Motorist safety along the LRT alignment has been evaluated using the methodology described in the Metro Grade Crossing Policy for Light Rail Transit. When the LPA is at grade, it would operate in a semi-exclusive right-of-way separated from automobile traffic by a raised curb and would not result in vehicular and pedestrian safety impacts. As discussed in Section 3.0 Transportation Impacts, the signal phasing at intersections would be changed to accommodate the LRT operations. When LRT vehicles are present, movements that would conflict with LRT vehicles are prohibited. Pedestrians are permitted to cross the street during phases in which the LRT vehicles are not present. Along the Harbor Subdivision Busway, there would be nine at-grade crossings of the LRT trackway at existing railroad crossings. Pedestrian safety along the Harbor Subdivision is evaluated and separated into three categories: (1) pedestrian safety near the trackway (2) pedestrian safety at the designated grade crossings; and (3) pedestrian safety at station locations.

There is potential for motorist confusion at the crossings along the Harbor Subdivision segment caused by multiple modes of transportation, including bus, freight rail, LRVs, and other automobiles. Traffic going eastbound or westbound at the Centinela Avenue and Florence intersection must contend with limited sight distance caused by a hill just east of the railroad tracks. For this reason, the intersection is designed to prevent motorists from entering the area of limited visibility along Centinela Avenue before the crossing before the movement is allowed. The aerial crossing at Manchester Avenue would create a decrease in sight distance for vehicles traveling east on Manchester Avenue approaching Aviation Boulevard. However, because the aerial crossing occurs west of the Manchester Avenue and Aviation Boulevard/Florence Avenue intersection, motorist sight distance would be fully restored before vehicles begin entering the queuing lanes for the intersection. Vehicles

traveling west on Manchester Avenue and on Aviation Boulevard/Florence Avenue are not anticipated to experience decrease in sight distance.

Designated Grade Crossings

Pedestrian and motorist safety at designated grade crossings is a key factor to be considered in the design of Harbor Subdivision LRT trackwork. All of existing 16 at-grade crossings would allow for pedestrian crossings. One pedestrian crossing along Crenshaw Boulevard between 54th and 57th Streets would be removed, requiring pedestrians to walk longer distances to cross streets, but a greater degree of pedestrian safety would result at the designated crosswalks due to the installation of signals and pedestrian treatments. All of these pedestrian crossings would be located at motorist crossings of the tracks. The treatments pedestrian and motorist safety devices at grade-crossings for the portion of the alignment operating along the Harbor Subdivision are listed in Table 4-50 and the pedestrian and motorist safety devices at grade crossings for the street-running portion of the alignment are shown in Table 4-51. The type of treatments and warning devices provided at the grade crossings are based on the LRT alignment type, grade crossing geometry, LRV operating speed and pedestrian volumes. Each grade crossing is evaluated for pedestrian safety based on a site visit and review of the preliminary engineering design. The evaluation is conducted using the Metro Grade Crossing Policy for Light Rail Transit and is part of an overall safety evaluation which includes pedestrian and motorist safety. The evaluation results in a list of recommended design modifications as well as mitigation measures to improve the level of safety at the crossings.

There are 29 schools within 0.25 mile of the project alignment, 17 of these are within one mile of the Harbor Subdivision alignment. At designated pedestrian crossings along the Harbor Subdivision where the LRT alignment is located within a school zone, pedestrian automatic gates could be utilized to increase student safety. The final determination of safety measures will require approval by the CPUC. Figure 4-65 provides an example of an at-grade LRT crossing with safety features incorporated.

Figure 4-65. At-Grade LRT Crossing with Safety Features

Table 4-50. Harbor Sudivision At-Grade Crossing Safety Treatments

Safety Improvement	Intersection							
	Arbor Vitae St	Hindry Ave	Oak St	Cedar Ave	Eucalyptus Ave	Ivy Ave	Centinela Ave	West Blvd
Pedestrian Safety Improvements								
Pedestrian Gate Arm	●		●			●	●	●
Emergency Pedestrian Swing Gate			●		●	●	●	●
Tactile Warning Device	●	●	●	●	●	●	●	●
Handicap Ramps	●		●			●	●	●
Raised Median Islands			●				•	
Steel Pipe Hand Railing as a Barrier	●		●				•	
Outside Fencing	●	●	●	●	●	●	●	●
Special Pavers							●	
Countdown to Pedestrian Signals w/Audible Feature		●	●	●		●	●	●

Table 4-50. Harbor Sudivision At-Grade Crossing Safety Treatments (continued)

Safety Improvement	Intersection							
	Arbor Vitae St	Hindry Ave	Oak St	Cedar Ave	Eucalyptus Ave	Ivy Ave	Centinela Ave	West Blvd
Motorist Safety Improvements								
Upgraded Traffic Signal Equipment		●	●	●		●	●	
Quad Gates	●	●	●	●	●	●	●	●
Flashing Lights and Audible Devices	●	●	●	●	●	●	●	●
Railroad Pre-emption Operation	●	●	●	●	●	●	●	●
Median Islands for Gates and Turn Restrictions	●						●	
Blankout Turn Restriction LED Signs		●	●				●	●
Protected Left Turn Signal		●	●	●			●	
Upgraded Street Lighting		●	●	●		●	●	●
Upgraded Channelization in Thermal Plastic and Pavement Markings				●	●	●	●	●
Near-side Signal Head		●	●	●		●	●	
Upgraded Reflective Signs	●	●	●	●	●	●	●	●
Raised Reflective Markers	●	●	●	●	●	●	●	●
Appropriate Signage Consistent with CA MUTCD	●	●	●	●	●	●	●	●

Source; Hatch Mott McDonald, 2011.

Table 4-51. Crenshaw Boulevard At-Grade Crossing Safety Treatments

Safety Improvement	Intersection						
	59th St	Slauson Ave	57th St	54th St	52nd St	50th St	48th St
Pedestrian Safety Improvements							
Near Side LRT Signal	●	●	●	●	●	●	●
Tactile Warning Devices	●	●	●	●	●	●	●
Handicap Ramps	●	●	●	●	●	●	●
Raised Median Island	●	●	●	●	●	●	●
Steel Pipe Hand Railing		●					
Outside Fencing	●	●	●	●	●	●	●
Blankout LED Signs		●					
Special Pavers or Other Treatment		●					
Countdown Pedestrian Signals w/ Audible Features	●	●	●	●	●	●	●
Active “Look Both Ways” Signs		●					

Table 4-51. Crenshaw Boulevard At-Grade Crossing Safety Treatments (continued)

Safety Improvement	Intersection						
	59th St	Slauson Ave	57th St	54th St	52nd St	50th St	48th St
Motorist Safety Improvements							
Upgraded Traffic Signal Equipment	●	●	●	●	●	●	●
Left Turn Signal	●	●	●	●	●	●	●
Upgraded Street Lighting	●	●	●	●	●	●	●
Upgraded Channelization in Thermal Plastic and Pavement Markings	●	●	●	●	●	●	●
Program Visibility Signal Heads	●	●	●	●	●	●	●
Upgraded Reflective Signs	●	●	●	●	●	●	●
Raised Reflective Markers	●	●	●	●	●	●	●
Blankout "Train Coming" LED Signs	●	●	●	●	●	●	●
Photo Red Light Cameras	●	●	●	●	●	●	●
All Appropriate Signage Consistent with CA MUTCD	●	●	●	●	●	●	●
LRT Signal Priority	●	●	●	●	●	●	●
ATSAC Video Surveillance Cameras		●					

Source: Hatch Mott McDonald, 2011.

For the purposes of this report, the alignment was reviewed in segments of pedestrian activity areas to determine the impact on pedestrian safety. Areas of pedestrian activity near at grade crossings are listed in Table 4-52.

Table 4-52. Summary of Pedestrian Activity

Segment, Location	Pedestrian Activity	Pedestrian Generators	At-Grade Crossings	Notes on Pedestrian Crossings
LAX, along the Harbor Subdivision from the Metro Green Line to Hillcrest Blvd	Limited, with the exception of moderate activity at the Aviation/ Century Blvds	Amino Charter School, Redstone College, hotels	Arbor Vitae St	Pedestrian crossings would be located at motorist crossings of the tracks
Manchester Area, along Harbor Subdivision from W Hillcrest Blvd to the I-405 Fwy	Very limited	Commercial and industrial uses	Hindry Ave	Pedestrian crossings would be located at motorist crossings of the tracks
Faithful Central Bible Church/Inglewood, along the Harbor Subdivision from the I-405 Fwy to La Brea Ave	High on Sundays; moderate during the remainder of the week	Faithful Central Bible Church	Oak St Cedar Ave Eucalyptus Ave Ivy Ave	Pedestrian crossings located at motorist crossings, fencing would be provided along either side of the alignment between the parking lot and church building in the vicinity of the Faithful Central Bible Church
Downtown Inglewood, along Florence Ave from La Brea Ave to Centinela Ave	Moderate	Commercial and civic uses	Centinela Ave	Pedestrian crossings at the Florence/La Brea Station and Centinela Ave
Harbor Subdivision, along the Harbor Subdivision from Centinela Ave to Crenshaw Blvd	Limited	Edward Vincent Jr. Park, residences, St. John Chrysostom Church, medical facilities	West Blvd High St	Pedestrian crossings located at motorist crossings
Hyde Park, Along Crenshaw Blvd from Crenshaw Blvd/Florence Ave intersection to 60th St	Moderate	Motels, residences	All existing	Alignment is below-grade along this segment, all existing crossings would be maintained
Slauson Avenue, Along Crenshaw Blvd from 60th St to 49th St	High	Community shopping areas, multiple churches, post office, schools, including Crenshaw High School and View Park Preparatory and Middle Schools	Slauson Ave 59th St 57th St 54th St 52nd St 50th St	Pedestrian crossings would be located at motorist crossings of the tracks as well as the at the Crenshaw/Slauson Station just south of Slauson Ave;
Baldwin Hills Crenshaw Plaza/Leimert Park, Along Crenshaw Blvd from north of 50th St to 39th St	High	Baldwin Hills Crenshaw Plaza, Leimert Park, schools	W 48th St	Adequate pedestrian queuing areas at the intersection corners of the Crenshaw Blvd/48th St grade crossing; wide crosswalks to facilitate pedestrian mobility
Exposition Line Crossing, along Crenshaw Blvd from W 39th St to the Exposition Line	High on Sundays, moderate during the rest of the week	Connection to the Exposition Line, West Angeles Church of God in Christ	All existing	Alignment is below-grade along this segment, all existing crossings would be maintained

Although the City of Los Angeles recommended pedestrian route for Crenshaw High School does not include crossing Crenshaw Boulevard, the crossing at West 50th Street experiences heavy activity from area youth coming to and from the high school. Field observations were conducted on June 2, 2009 at 50th street and Crenshaw Boulevard during peak pedestrian activity which occurred over a twenty-five minute period after the close of school. Approximately 50 percent of the 90 students observed walking west along 50th Street crossed Crenshaw Boulevard and continued heading west. Many of these students (approximately 30 to 40 percent) were observed to cross Crenshaw Boulevard against the flow of oncoming traffic. The majority of the remaining pedestrians boarded three local bus lines (Route 40, Route 210, and the DASH Crenshaw). Additional traffic analysis and pedestrian counts were conducted along this segment in the vicinity of Slauson Avenue near View Park Prep and Crenshaw High School and are included in the Traffic Appendix of the FEIS/FEIR (Appendix G). Additional traffic and pedestrian counts were conducted for the following four signalized intersections along Crenshaw Boulevard:

- Crenshaw Boulevard and 50th Street (Crenshaw High School)
- Crenshaw Boulevard and 52nd Street (Crenshaw High School)
- Crenshaw Boulevard and 57th Street (View Park Preparatory/Middle Schools)
- Crenshaw Boulevard and Slauson Avenue (View Park Preparatory/Middle Schools)

New traffic and pedestrian counts were collected on Crenshaw Boulevard at 50th Street, 52nd Street, and 57th Street from 7:00 to 9:00 a.m. and 2:00 to 6:00 p.m. on a normal school day. The pedestrian and LRT effects on Crenshaw Boulevard and Slauson Avenue were analyzed in the DEIS/DEIR for the AM and PM peak hours; therefore, only new midday traffic and pedestrian count data was collected from 2:00 to 4:00 p.m. to capture school dismissal activity at this location.

Station Locations

In addition to the pedestrian safety measures described above for pedestrian crossings of the tracks, pedestrian safety would also be taken into account at pedestrian station locations due to the pedestrian traffic generated by stations. Pedestrian queuing and refuge areas would be provided as well as wide crosswalks to accommodate passengers and facilitate pedestrian mobility. Parking and bus circulation within or around the station would also be considered to determine if pedestrian conflicts arise. Stations would be designed to meet Metro's Fire/Life Safety Criteria, which establish minimum requirements to provide a reasonable degree of safety from fire and related hazards.

The shorter alignments that would result from the MOSs would not result in different impacts than those identified for the LPA. No adverse effects would occur to motorist and pedestrian safety with implementation of Mitigation Measures **SS1** through **SS9**.

Design Options

Partially-Covered LAX Trench Option. This design option would continue to be located in a trench and no additional impacts to vehicular and pedestrian safety would occur. Lights from within the train would not be visible to airline pilots on approach since the depth of

the trench walls would shield the lights from the line of sight. The proposed mesh would shield debris from the path of train travel. For a discussion of potential safety hazards at LAX, refer to Section 4.8.2.9.

Below-Grade Crossing at Centinela. The Below-Grade Crossing at Centinela Option would travel beneath Centinela Avenue and eliminate potential collisions from light rail vehicles and pedestrians or motorists at this crossing. The BNSF freight rail tracks would remain at grade. The decision to include this option would be based on the results of Metro's Grade Separation Analysis. This design option would result in improved pedestrian and motorist safety over the LPA and a less-than-significant impact is anticipated.

Optional Aerial Aviation/Manchester Station. Pedestrian queuing and refuge areas would be provided as well as wide crosswalks to accommodate passengers and facilitate pedestrian mobility. No impacts to safety are anticipated under this design option.

Optional Below-Grade Crenshaw/Vernon Station. The Below-Grade Crenshaw/Vernon Station Option would be located in the Leimert Park triangle, which is bordered by three busy streets (Crenshaw Boulevard, Leimert Boulevard, and Vernon Avenue). This station would provide pedestrian refuge areas to accommodate passengers and would be designed to direct the flow of pedestrian traffic to the widened crosswalks across Vernon Avenue, Crenshaw Boulevard, and Leimert Boulevard. Therefore, a less-than-significant impact is anticipated.

Alternate Southwest Portal at Crenshaw/King Station. Pedestrian queuing and refuge areas would be provided as well as wide crosswalks to accommodate passengers and facilitate pedestrian mobility. The provision of the queuing and refuge areas would require the relocation of the existing bus lane/stop to move farther to the south.

These design options would be similar to the LPA in all other areas of the alignment, and no adverse effects are anticipated for pedestrian safety.

4.14.1.3 Security

No-Build Alternative

The No-Build Alternative would not result in security impacts within the project corridor, since it would maintain present conditions within this corridor.

LPA

The design of rail facilities (including vehicles, stations, parking lots, etc.) would provide a safe, secure, and comfortable transit system. Transit patrons along the Crenshaw/LAX Transit Corridor Project would be provided with station and platform amenities such as covered waiting platforms and secure lighting. Fencing along the Harbor Subdivision would be maintained to prevent access to or through the transit corridor. In addition, the Metro would include security related design features designed for the Project such as emergency telephones, PA systems, and closed circuit monitoring systems.

The LPA would pass through lower-density residential areas as well as industrial and commercial areas. During evening and nighttime hours adjacent land uses may be less

populated, creating an "isolated environment" at some of the stations. Discussions were held with local police departments to determine crime activity near proposed station locations. The La Brea proposed station was identified as having moderate to high crime activity in the surrounding area, including robbery, larceny, burglary, and automobile theft. Although the crime activities around the proposed station at Martin Luther King Boulevard were identified as low intensity, the residential area to the west, which is within walking distance to the station, contains violent gang activity. These conditions, combined with a higher existing crime rate than the City of Los Angeles as a whole, as shown in Table 4-48, raise security concerns for both station areas and for proposed parking facilities. Mitigation would be necessary to address security concerns along the alignment. A large degree of due diligence would be required to ensure the safety and security of transit patrons. Implementation of the LPA would incorporate crime preventative measures including, but not limited to lighting pedestrian areas and maintaining visible areas to deter criminal acts and protect passengers, employees, and the community from crime. The aerial station at Century Boulevard and below-grade stations at King and Exposition would limit the visibility of transit riders from street level and could result in an increased risk for crime activity. The stations would include stairwells, ramps and elevators and would increase the difficulty of maintaining a secure environment for rail patrons. This would require additional resources for preventative efforts identified in the mitigation measures.

The shorter alignments that would result from the MOSs would not result in different impacts than identified for the LPA. No adverse effects would occur to security with implementation of Mitigation Measures **SS1** through **SS9**.

Design Options

The Partially-Covered LAX Trench would continue to be located below grade and would not create any additional security impacts from what was described for the LPA. The Below-Grade Crossing at Centinela Option would include a trench, which may not be visible from ground level. This would increase the difficulty of maintaining a secure environment for rail patrons and would require preventative efforts identified in the mitigation measures.

The Below-Grade Crenshaw/Vernon Station Option would include a below-grade station area, where persons could potentially enter the below-grade station and not be visible from ground level. The station would include stairwells, ramps and elevators and would increase the difficulty of maintaining a secure environment for rail patrons. This would require preventative efforts identified in the mitigation measures.

4.14.2 Mitigation Measures

SS1 All stations and parking facilities shall be equipped with monitoring equipment and/or be monitored by Metro security personnel on a regular basis.

SS2 Metro shall implement a security plan for LRT operations that shall include both in-car and station surveillance by Metro security or other local jurisdiction security personnel and establish well lit pedestrian station and parking areas that

minimize shadows and provide visibility for security personnel to monitor activity.

SS3 All stations shall be lit to a standard of no less than two footcandles to minimize shadows and ensure that all pedestrian pathways leading to/from sidewalks and parking facilities shall be well illuminated.

SS4 Metro shall coordinate and consult with the LAPD, the LA County Sheriff's Department, the Inglewood Police Department, and the LAX Police to develop safety and security plans for the alignment, parking facilities, and station areas which satisfy the requirements necessary for the appropriate policing jurisdiction to effectively patrol the area.

SS5 The station design shall be undertaken to avoid obstructions to visibility or observation and discrete locations favorable to crime; pedestrian access to at-grade, below-grade, and above-grade station entrances/exits shall be accessible at ground-level with clear sight lines.

SS6 Metro shall implement appropriate measures to ensure pedestrian crossing safety at all locations with adjacent schools, churches, and high pedestrian areas to satisfy the requirements determined by the CPUC.

SS7 Metro shall conduct a Hazard Analysis that establishes a design basis for warning devices that satisfies the requirements set forth by the California Public Utilities Commission.

SS8 Vehicular and pedestrian warning measures, such as signage, shall be provided along the length of the platforms of the LRT Stations. Gates shall be provided at pedestrian crossings of the LRT and/or BNSF tracks within the Harbor Subdivision. These markings will be provided to alert motorists and pedestrians to potential conflict in the area.

SS9 To discourage crossing the alignment and enhance safety, such as near the Faithful Central Bible Church, Metro shall provide fencing along either side of the alignment, between the parking lot and church buildings and provide pedestrian safety devices at designated crossings.

4.14.3 CEQA Determination

The CEQA determination compares the effects of the proposed project, design options and MOSs with the existing conditions described in the affected environment/existing conditions section. CEQA does not require discussion of socioeconomic effects, such as safety and security impacts, except where they would result in physical changes, and states that social or economic effects shall not be treated as significant effects.

4.14.3.1 Safety

No-Build Alternative

The No-Build Alternative would not result in safety impacts.

LPA

As described above in the NEPA safety analysis, safety, around the trackway would be ensured through implementation of appropriate warning devices based on comprehensive hazard analysis and field diagnostic reviews with the affected parties as part of the legally required CPUC grade crossing application process. Either the speed of the train would not exceed 35 mph when it is running at-grade in the center of the street and crossing would occur with traffic signals, or the train speed would exceed 35 mph and barriers would impede access to the tracks. At designated crossings, pedestrian and motorist gates and visual and audible warning devices would be provided. Through safety-oriented Project design and Mitigation Measures **SS1** through **SS9**, the LPA and MOSs would not result in adverse safety impacts as discussed in the NEPA safety analysis. The LPA's potential safety impacts would not lead to physical adverse changes in the environment. Therefore, no-significant impacts associated with safety would occur.

Design Options

The impacts to safety would be similar to those describe under the NEPA analysis. The design options would not create any safety issues that would lead to physical adverse changes in the environment. Therefore, no-significant impacts associated with safety would occur.

4.14.3.2 Security

No-Build Alternative

The No-Build Alternative would not result in security impacts.

LPA

The design of existing bus and rail facilities (including vehicles, stations, parking facilities, etc.) would provide a safe, secure, and comfortable transit system. Transit patrons along the LPA would be provided with station and platform amenities, such as covered waiting platforms and secure lighting. In addition, Metro would include security related design features specifically for the Project such as emergency telephones, PA systems, and closed circuit monitoring systems.

The LPA would pass through lower-density residential areas as well as industrial and commercial areas which are less populated during evening and nighttime hours. Along the Harbor Subdivision, these conditions, combined with the fact that traffic and pedestrian volumes are relatively low and the existing crime rate is somewhat higher than the City of Los Angeles as a whole, raise security concerns for station areas. Without mitigation, security concerns along the alignment would be considered significant. A large degree of due diligence is required to ensure the safety and security of transit patrons. Security for the LPA and MOSs would not lead to physical adverse changes in the environment. Therefore, less-than-significant impacts associated with security would occur.

Design Options

The impacts to security would be similar to those describe under the NEPA analysis. The design options would not create any security requirements that would lead to physical adverse changes in the environment. Therefore, less-than-significant impacts associated with security would occur.

4.14.3.3 Impacts Remaining After Mitigation

Implementation of Mitigation Measures SS1 through SS9 would ensure that potential safety and security impacts remain at less-than-significant levels.

4.15 Construction Impacts

4.15.1 Affected Environment

This section examines the affected environment as it relates to construction activities for the proposed alternatives. The conditions described in this section would only occur during construction and would be temporary and short-term, as opposed to ongoing during the operational phase of the proposed alternatives. During construction activity, Metro adheres to Best Management Practices (BMPs), identified in Appendix F Regulatory Setting, which minimize any environmental effects.

4.15.1.1 General Construction Scenario

The construction of the LPA, design options, and MOSs would employ conventional construction techniques and equipment typically used in the Southern California region. Major construction elements would include at-grade guideway and trackwork, below-grade stations and tunnels, cut and cover segments, at-grade station platforms, elevated guideways and stations, parking facilities, utility relocations, possible traffic signal modifications and specialty system work such as traction power, communications, and signaling.

The equipment that would be used during construction may include rail-mounted equipment, earth moving equipment, cranes, concrete mixers, flatbed trucks, sand and gravel delivery trucks, dump trucks, and tunnel boring machines. These construction vehicles may temporarily impede traffic mobility in areas of construction. Traffic detours and truck routes would be required during construction. To minimize disruptions to traffic, mitigation of potential traffic adverse effects and traffic management and traffic control measures would be implemented with the coordination and involvement of the various jurisdictions within the study area.

There would be no major construction activities under the No-Build Alternative, and no adverse construction effects are anticipated. Therefore, the focus of construction impacts will be limited to the LPA.

Construction for the LPA would occur during an approximate four- to five-year period. Surface streets would be impacted through intermittent closures and lane reductions for a total of approximately 28 to 45 months. The 8.5-mile LRT alignment is divided into separate segments which include four aerial segments (three grade separations and the connection to the Metro Green Line) and three below-grade segments (adjacent to LAX runway, Victoria Avenue to 60th Street and 48th Street to Exposition Boulevard). It is anticipated that construction of multiple segments will be in construction simultaneously. The three below-grade segments would also occur at the same time and construction of systems and tracks would begin approximately 18 to 24 months after the start of construction. Simultaneous construction activity would accommodate activities requiring lengthy construction times such as tunnels, below ground stations, and aerial segments, as well as reduce the overall construction duration. General hours of construction are 7:00 a.m. to 5:00 p.m. Nighttime and weekend construction are likely required for specific cases. Construction during the nighttime and weekends may be required to mitigate potential impacts to commute-period traffic congestion and to

accommodate scheduling of construction windows for specific work activities such as along the LAX segment. Tunneling operations, trackwork, catenary wire installation and other cut and cover sections are other examples of construction activities that may also involve nighttime and weekend construction due to the type of work activities involved. Noticing of construction activity will take place within the context of Metro's extensive outreach program during construction.

Construction would follow all applicable local, state and federal laws for building and safety. The Metro Fire Life Safety Committee, composed of members from the City and County of Los Angeles Fire Departments and Metro specialists, would review all construction methods. Because segments of the proposed alternatives are also located within the City of Inglewood, the City of Inglewood may be required to review all construction methods that affect city facilities or property. Working hours would be varied to meet special circumstances. Standard construction methods would be used for traffic, noise, vibration and dust control, consistent with all applicable laws, and as described in the following paragraphs. A map of proposed construction staging and lay down areas is shown in Figure 4-66. These areas may serve as temporary parking for construction personnel. These areas have been incorporated into the analysis of construction effects for the project.

During the entire construction period, a community liaison will be available to address community concerns. Contact information will be advertised on all construction notices and in project literature. This follows Metro's longstanding practices. Furthermore, there will be a Field Office available for community members. Major issues can be vetted through a body known as the Crenshaw/LAX Leadership Council.

4.15.1.2 Surface, Below-Grade, and Aerial Construction

The subsections below describe in added detail the characteristics of three categories of construction: surface, below-grade, and aerial construction. Construction of the proposed alternatives would involve various combinations of these three types of construction. A summary of these types of construction is presented in Table 4-53.

4.15.1.3 Surface Construction

Utility Relocation and Street Closures

Prior to beginning construction it would be necessary to the extent possible, to relocate, modify or protect in place all utilities and below-grade structures which would conflict with excavations for street level trackwork, cut-and-cover station and shallow tunnel sections, deeper tunnel sections with a tunnel boring machine (TBM), bridges, and station structures. Shallow utilities, such as maintenance manholes or pull boxes, which would interfere with guideway excavation work, would require relocation. The utilities would be modified, protected, and moved away from the proposed facilities. Temporary interruptions in services (several hours) may be experienced during relocation or rerouting of utilities. Depending on the extent of utility relocation work, estimated construction durations are four to six months for a one-mile segment of work.

Figure 4-66. Construction Staging and Laydown Areas

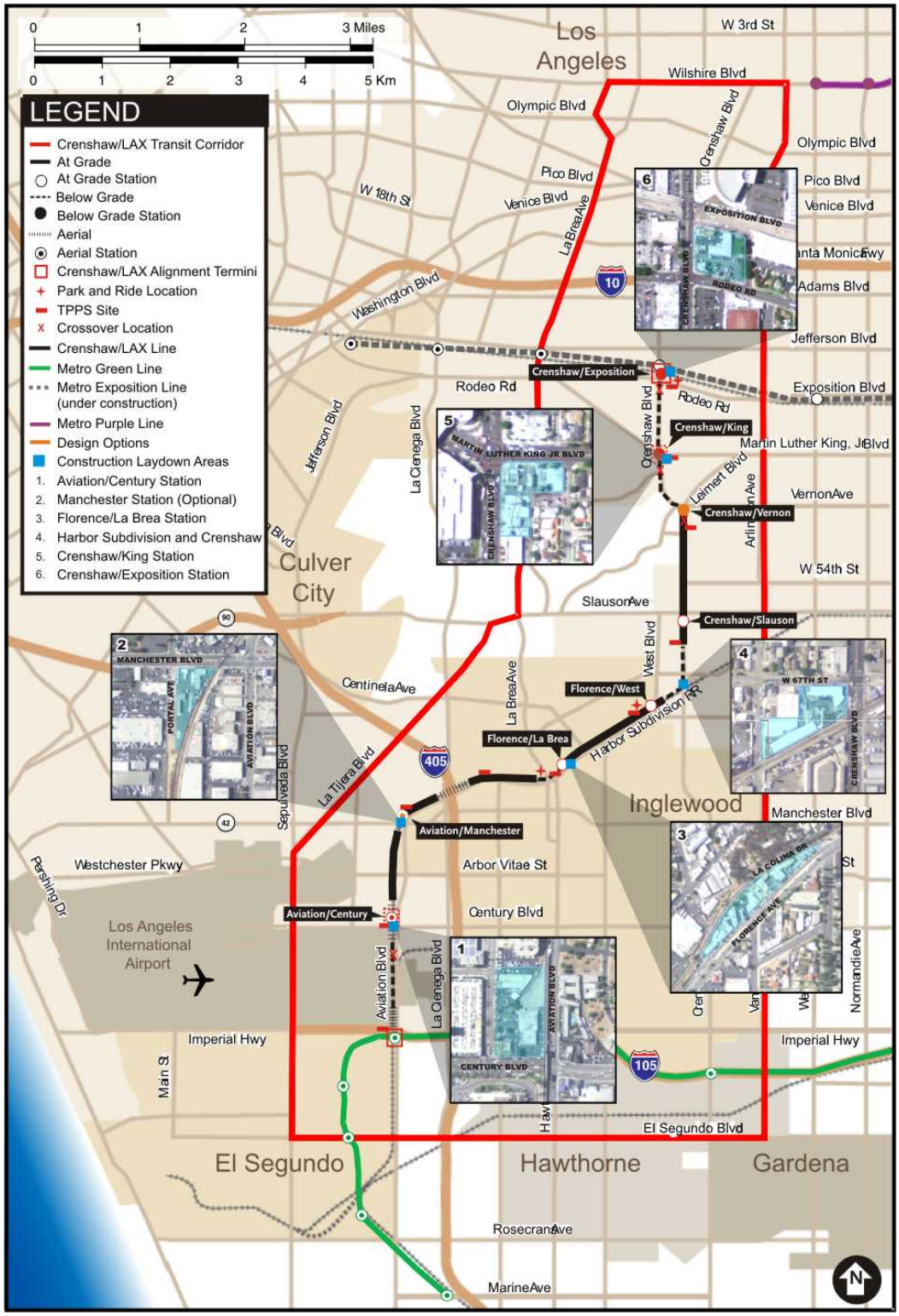


Table 4-53. Summary of Construction Activities

Activity	Duration (months)	Description	Equipment Required
At-Grade			
Utility Relocation[1]	12-18	Move utilities away from construction	Jackhammers, trenchers
Street Widening	5-12	Requires new curbs, sidewalks, and lane configuration in areas where existing right-of-way is inadequate	Pavers, pavement breakers, cement trucks
Surface Trackwork	28	Demolition, construction of slab, and laying rail	Trucks, storage for rail, and truck mounted welders
Trench, Retaining Wall, Fill Construction	2-15	Minimize rail grade	Bulldozers, tractor trailer rigs, loaders, earthmovers
Station Construction	12	Developed simultaneously with segments using standard building materials	Forklifts, generator sets, loaders, welders
Operating Systems Installation	8	Cantenary overhead wire system and substations for power,	Highrail vehicles
Parking Facilities	1-3	Parking lot and landscaping	Pavement breakers, diamond saws, compressors, paving machines, loaders, haul trucks
Below-Grade			
Pre-Construction	12	Final design and geotechnical investigation	Trenchers, drill rigs
Tunnel Construction	14-30	Use of Cut-and-Cover or TBM	Bulldozers, loaders, TBM, haul trucks
Stations and Portals	15	Cut-and-cover, open cut, doorframe slab	Bulldozers, loaders
Underground Utilities	12	Relocate or temporarily reroute utilities	Trenchers, compactors, excavator, loaders
Station Excavation	12	Build foundations to support existing adjacent structures	Excavators, loaders, drill rigs,
Station Construction	24	Base slab, exterior walls and columns	Forklifts, generator sets, loaders, welders
Street/Site Restoration	2-4	Backfilling, and reinstallment of street and sidewalks	Pavers, rollers, cement trucks
Vent Shafts and Emergency Exits	1-2	Exits and vents at both ends of stations	Drill rigs, excavator, loaders
Aerial			
Station Construction	18		Forklifts, generator sets, loaders, welders
Elevated Guideway	6-20	Construction of foundation columns, and elevated sections	Cranes, compressors, concrete and haul trucks, loaders, rigs

[1]Utility relocation of airport-related equipment within the Metro-owned Harbor Subdivision right-of-way would involve significant coordination between Metro, LAWA and FAA to ensure continued operation and availability of power and communications to aviation facilities on the east side of Aviation Boulevard. This relocation would occur by the responsible party in compliance with the license agreement between Metro and FAA/LAWA.

Source: Parsons Brinckerhoff, 2008

Street Widening

Certain segments of the proposed alignments would require street work to widen the existing roadway widths in order to maintain the required number of through and turning traffic lanes. Work would initially be done at the curb line to construct new curb and gutter, sidewalks, and outside traffic lanes. The estimated construction duration is five months to a year depending on the extent of widening and utility relocation for a one-mile segment. During this stage of work, property owners and businesses located immediately adjacent to the work areas may be affected.

Surface Trackwork

LRT tracks would be located in the street right-of-way and within the Harbor Subdivision. Standard concrete curbs would be constructed to discourage vehicular traffic from driving on the tracks. After required utility relocation, rough grading would be completed within the streets, followed by trackbed excavation, subdrainage installation, subgrade and base preparation and placement of ties for support of the rails. Duct banks would be installed at this time below the bottom of trackwork to carry communication and signaling conduits.

Trackwork construction involves work to demolish the roadway section being displaced by the LRT trackway, preparation of the track bed, construction of the supporting track structures, and laying of rail. Foundations for overhead catenary poles will be installed with the track installation. At this stage of construction, center traffic lanes would be closed, which would effectively eliminate all mid-block turns and street parking. One-mile construction segments are likely to be recommended to minimize cost and schedule. Segments may be under construction both north and south of below-grade segments. Rail would be welded into strings at several locations along the proposed alignments, using diesel powered, trailer mounted machines. The machinery would clean, straighten, prepare, weld, and grind short sections of rail into approximately 0.25 mile strings or shorter dependent on site conditions such as length of street blocks. Rails would be brought to the site in 78 foot lengths by truck for welding. Local rail storage areas would be necessary for short-term storage and to facilitate placement of rail. Work durations are estimated to be four months to complete trackwork for each 1-mile segment. Periodic lane closures predominately on one side of the work zone or the other would be required for delivery of materials, as well as during concrete pours. The construction of station platform foundations would be coordinated with trackwork installation within each 1-mile segment.

During trackwork construction, minor cross streets and alleyways may be temporarily closed, however access to adjacent properties would be maintained. Major cross streets may require partial closure (half of the lanes on a street at a time), while relocating utilities, if required, for surface stations and constructing the LRT trackbed. Depending on allowable working hours, full street blocks may require partial closure during excavation, preparation of subgrade, and track placement. Closures would be in a staggered sequence to facilitate traffic control. Where streets are not fully closed, two-way traffic would be allowed on half of the street. After the trackbed is constructed across a local street and the roadway is restored to its permanent condition, vehicles would resume original traffic patterns. Equipment used for construction of the surface tracks

(and surface stations) would be similar to equipment required for construction of the utilities with the addition of specialized track laying equipment, paving machines, concrete mixers, and concrete finishers.

Trench, Retaining Wall, and Fill Construction

Trenching and filling to lower or raise the existing grades may be required to meet the necessary rail gradients. Relatively small retaining walls (estimated to be less than 5 feet in height) would be necessary to retain these sections. The excess material would be excavated using bulldozers, earthmovers, front-end loaders, and tractor-trailer rigs. Excess material would be transported to Metro-approved disposal sites.

At-Grade Stations

All stations would be constructed simultaneously; however, the construction contractor may elect to construct them sequentially. The duration of construction for each station would be approximately 14 months. These stations would be constructed from standard building materials such as concrete, steel, aluminum, and heavy plastic, which are durable and resistant to vandalism.

Operating Systems Installation

Operating systems for the LPA include traction power, an overhead catenary system, communications, and train control. Catenary systems consist of poles connected to drilled shaft foundations with overhead wires to supply power to the trains. Traction power includes ten substations to provide direct current power for the trains. Except for below-grade stations, these include grounding systems and prefabricated units which are placed on foundation slabs by crane and connected to the system. For underground stations, substation equipment is placed inside the station box. Where existing structures must be demolished to accommodate substations, demolition work would be completed prior to construction of the substations. Construction equipment would include highrail vehicles for installation of the overhead catenary wires in the guideway area. While wires are strung at cross streets, temporary nighttime or weekend street closures lasting a few hours are anticipated.

Systems installation is installed on system-wide basis and follows the completion of line segment construction. Finishing work for stations and landscaping would be planned to overlap with systems work and be completed prior to final testing and pre-revenue operations. The systems installation work is considered to be significantly less disruptive to communities compared to the line segment construction work and is estimated to be approximately five months in duration for a 1-mile segment.

Parking Facilities

Construction of three park-and-ride lots would involve grade preparation of the parking area, paving, and striping. Concrete curbs, lighting, driveways, sidewalks, and landscaping would be reconstructed as necessary. Equipment used for construction of the parking facilities would include diamond saws, pavement breakers, jackhammers, compressors, concrete pumping equipment, paving machines, dump trucks, and front-end loaders.

4.15.1.4 Below-Grade Construction

Preconstruction Activities

Preconstruction activities would include building assessments (preconstruction evaluation of existing structures along the proposed alignments) and the preparation of worksite traffic control plans. During preliminary and final design of the proposed alternatives, additional subsurface (geotechnical) investigations would be undertaken to evaluate soil, groundwater, seismic, and environmental conditions along the proposed alignments. The geologic conditions would influence design and construction methods specified for stations and tunnels, as well as foundations.

Cut-and-Cover Construction

The cut-and-cover construction technique involves the sequential excavation and support of an excavation and surface. The cut and cover construction technique is common in areas where the alignment is located within a public right-of-way and excavation does not require the displacement or relocation of existing uses. These station excavations, trenches or tunnels can be constructed conventionally, from the bottom-up, from the top-down, or by cast in place. The conventional cut and cover involves excavating a trench and backfilling and restoring the original roadway or ground with a support system to carry the load of the material used to cover over the tunnel, such as steel or shotcrete. The bottom-up method occurs where a drilling rig installs caisson walls down to the existing bedrock and the soil between the walls is excavated to a depth below the tunnel floor. The floor slab is then poured followed by the sidewalls from the bottom up and the roof and roadway are then constructed and restored, respectively. Methods used for construction and support include concrete, pre-cast concrete, pre-cast arches, or corrugated steel arches. The top-down method occurs when a trencher digs a trench and a temporary slurry wall is constructed, followed by the permanent wall structure. The roof of the tunnel is then constructed, followed by the restoration of the surface roadway. The tunnel is then excavated down to the tunnel floor and the tunnel slab is the last component constructed. The top-down method allows for an earlier reinstatement of roadways and services on the surface above. The cast-in-place method involves the trench being excavated with forms being built inside the trench. Concrete is then cast and upon curing the forms are removed and the trench is backfilled and roadway is restored.

In order to evaluate the worst-case scenario, cut-and-cover construction methods are assumed for all below grade segments of the proposed project. The general concern relative to the use of cut-and-cover construction is the potential for disruption to existing surface traffic during the construction period. To minimize such traffic impacts, a minimum of two traffic lanes would be maintained in the north and south directions on Crenshaw Boulevard during peak periods in accordance with City of Los Angeles Department of Transportation (LADOT) requirements. Cut-and-cover or open-cut construction methods are required for the following locations: from 111th Street to 104th Street, from Victoria Avenue along the Harbor Subdivision to 60th Street along Crenshaw, and the below-grade King and Crenshaw/Exposition Stations.

The detailed sequence of construction for the installation of support of excavation wall elements and traffic decking for these guideway segment is indicated in Appendix G Technical Appendix. To minimize such traffic impacts, a minimum of two traffic lanes

would be maintained in the north and south directions on Crenshaw Boulevard during daytime hours. During evening periods, traffic would be reduced to a single lane in each direction.

The sum of the schedule duration for these segments is approximately six to eight months. Once the initial decking is complete, the walls will be in place, and decking can continue in a progressive sequence. In addition, tasks such as excavation, installation of tie backs and construction of the permanent guideway will be ongoing while the support of excavation and decking process is advancing. At the conclusion of the construction, the traffic decking must be removed and surface streets restored. Temporary traffic patterns, similar to those described above, will have to be established to support the removal process. However, the durations of the traffic detours will be significantly reduced. It is estimated that the process of decking removal and street restoration for the underground segment in Crenshaw Boulevard should be completed within a period of approximately three months.

The durations of any particular stage are based upon a single piece of each type of equipment. Should additional equipment be added, construction times will correspondingly reduce. Similarly durations will vary depending upon the considerations that the project may obtain from LADOT relative to work hours and traffic lane.

A description of cut-and-construction activity for these segments can be used as typical construction period effects where cut-and-cover is used along other below-grade segments of the alignment.

Tunnel Boring Machine

Tunnel boring operations occur for long segments or when deep excavation is required. A tunnel boring machine (TBM) is lowered into a cut-and-cover portal shaft by a crane. Staging areas would be required adjacent to the location for lowering or removal of the TBM. The TBM would be advanced a small distance (typically 4 to 6 feet) by means of hydraulic jacks, which react against the previously installed tunnel lining ring. Tunnel lining rings are typically pre-cast concrete segments bolted in place together. Elastomeric gaskets are placed at segment joints to prevent groundwater inflows during and after construction. The TBM is advanced and the process is repeated until the entire length of the tunnel has been excavated. The pre-cast concrete liners are fabricated off-site and delivered by truck to the site. Segment loads are estimated to be 400 or 500 total truck loads. Several days' production of segments may be stored at the worksites to allow continuous tunneling. Although cut-and-cover construction methods are assumed for all below grade segments of the proposed project in order to evaluate the worst-case scenario, the use of a TBM for below grade segments that are deep enough to allow use of a TBM may be considered by proposing contractors.

Stations and Portals

Below-grade stations and portals for the proposed LPA would be constructed with cut-and-cover and open cut methods. The depths of the stations would be as required to allow for utilities, access to the stations' center station platform, structure thickness, and cover over the tunnels extending from the stations. Depths range from approximately 50 to 60 feet for the below-grade section along Crenshaw Boulevard. Station widths would be approximately 60 feet to include trackways and center platforms. Portals would be

designed to accommodate twin tracks, station widths, traffic flow around the portals, and existing topography. Prior to below-grade construction, work sites would require clearing and possible building demolition in some areas. Demolition equipment typically includes bulldozers and loaders. Prior to demolition, contractors may salvage items such as fixtures, mechanical equipment, and lumber, unless the contract states otherwise. Where economical, materials such as concrete and steel may be recycled.

Underground Utilities

Subject to other constraints, the below-grade stations would be located to avoid, to the extent possible, conflicts with the space occupied by below-grade utilities. In certain instances, the positioning of a station or the location of station entrances and vent shafts would require that conflicting utilities be relocated to clear the way for the station structures. Utilities, such as water mains and gas lines, may represent potential hazards during cut-and-cover and open cut station construction. Utilities that are not to be permanently relocated away from the work site would be temporarily rerouted to prevent accidental damage to the utilities, to construction personnel, and to the adjoining community. Buried utilities are often protected in place and supported by hanging from deck beams at cut-and-cover sections.

Station Excavation – Initial Support

If the building assessments indicate the necessity to protect nearby structures, the first step in construction of a below-grade station would be to support the foundations of buildings adjacent to the station excavation. This would be done by underpinning (additional foundations placed under the building), or by other means such as soil grouting. In lieu of underpinning or grouting, or in combination with grouting, the support of adjacent structures is commonly accomplished by use of excavation support systems which in conjunction with proper excavation and bracing procedures serve as building protection.

The excavation's initial support systems may include reinforced concrete drilled-in-place piles; braced soldier piles and lagging, tangent pile walls; diaphragm walls; and tied-back excavations. Initial support allows support of the ground while soil is removed from the excavation and for the temporary duration of tunneling and other work in the shaft. Final support includes the concrete slabs, walls, and walkways for the stations and portals. Some lateral movement of the excavation walls would occur during removal of soil. The amount of movement would depend on the construction contractor's excavation methods, wall design, and the height of the wall. Project specifications would call for monitoring of walls and adjacent ground for lateral movements and surface settlement. Acceptable movements, such that adjacent buildings would be protected, would be determined during final design of the proposed project. Specifications would require the construction contractor to take appropriate actions if limiting movements are approached.

Prior to installation of the ground support system, dewatering may be required at the underground station sites to temporarily lower the groundwater level below the station excavation depth or to an impermeable soil layer. This facilitates installation of the piles, improves soil stability, and allows excavation in dry conditions. Groundwater is pumped from wells installed around the perimeter of the excavation. If contaminated water is

encountered, it is either treated at the site or hauled to a treatment facility. At the completion of the stations, pumping is discontinued and groundwater levels return to their natural level.

To install the soldier piles and lagging for the support of the excavation it would be necessary to bore out the holes for the placement of the piles. The pre-drilling of holes is necessary to eliminate pile driving and reduce project noise levels that would otherwise occur with pile driving. The contractor would occupy one side of the street to install one line of soldier piles while the other side would remain open for traffic circulation. The equipment required for installation of the soldier piles includes drill rigs, concrete trucks, cranes, and dump trucks.

After installation of soldier piles on both sides of the street for the underground stations, the construction contractor would proceed with installation of the deck and deck beams, excavation, and bracing. Pre-cast concrete panels (decking) allow continued traffic and pedestrian circulation since they would be installed flush with the existing street or sidewalk levels. However, deck installation would require lane and nighttime street closures at the stations. The concrete decking would be installed in progressive stages. Portal construction would follow similar construction methods as for the station excavations and retaining walls. The portal would remain permanently open and, thus, no decking would be used during construction.

Excavation, Bracing, and Hauling of Soil

With the decking installed and the utilities supported, the major excavation activities can proceed. The method of removing the material for hauling away from the job site is a choice made by the contractor. A typical operation would be for the bulldozers and/or overhead loaders to move the material to a central pick-up point or several such points, where a large bucket from a crane or a vertical or diagonal conveyor belt can hoist the material and place it into waiting trucks or a loading hopper. Spoils from the station site would be moved sideways out from under the deck onto an off-street work site and loaded from there into hauling trucks. Spoils would not be loaded in the street, except during the initial drilling of the soldier piles and deck installation.

Construction of Station and Portal Final Structures

The construction sequence for the final station structure would include installation of the station floor, also known as the base slab, followed by the installation of exterior walls and interior column elements. Slabs are poured as the columns and intermediate floor and roof wall pours progress. Portal structures would use similar construction methods involving placement of concrete inverts, walls, and walkways. Station entrance locations are generally used as access points to the underground station during the construction process. Exterior entrances would be constructed after the station structure has been completed.

Street Restoration/Site Restoration

After the below-grade structure has been completed and the roof slab allowed to cure for a specified period, the backfilling operation would begin. During the backfilling operations, the utilities would be restored to their permanent locations. Where sidewalks

have been demolished because of the cut-and-cover construction, they would be restored. After backfilling, the permanent street would be installed and the sidewalks and pavement restored to city standards.

Ventilation Shafts and Emergency Exits

The below-grade or tunnel segments of the alignment include a number of ventilation and emergency exit areas for the below-grade segment in the vicinity of the below-grade stations. The stations would house emergency ventilation fan shafts, as well as separate emergency exit shafts at both ends of the stations. Ventilation fans are used for extracting smoke from the tunnels and stairs for evacuation in the event of an emergency – such as a fire in the below-grade areas. The location of these facilities is shown in Appendix A, the advanced conceptual engineering drawings for the project. These shafts are constructed as extensions of the station excavation, using cut-and-cover construction methods.

It is assumed that each below-grade station would have two exit hatches connected to emergency stairs at each end of the station. Each exit hatch is approximately six feet wide. Most of these hatches and gratings would be located at the station entrance plazas or right-of-way to be acquired for the construction staging areas. During the preliminary engineering design phase, further coordination with the City of Los Angeles would be required to determine if some or all of these hatches and gratings would be located within the public right-of-way. This may require variances from City codes.

Trench Construction near LAX South Runway Complex

Construction of the trench (both the fully-covered LPA condition and the Partially-Covered LAX Trench Design Option) adjacent to the LAX South Runway Complex involves coordination of construction schedules and construction methods with airport operations and airfield safety. There is a dual notice of construction requirement with LAWA and FAA during a project level notice of construction for establishing specific construction activity involving cranes and heavy equipment. Metro has been engaged in extensive coordination with the FAA and LAWA for the construction of this project and this coordination would continue through submittals to FAA using the Form 7460-1, Notice of Proposed Construction or Alteration, for all construction activities and and through the completion of the project.[3] Materials stockpiles and construction equipment will be organized so as to protect the integrity of NAVAID signals and FAA technician access to FAA facilities located east of Aviation Boulevard.

Schedule Coordination

A number of construction time windows have already been discussed with the FAA and LAWA through ongoing coordination. Examples include night and early morning when existing airport noise abatement procedures already prioritize aircraft arrivals and

[3] A "Conduct of Construction Plan or CCP" will be developed as part of the coordination effort to detail the specific construction sequence, means, methods, and daily and seasonal time windows that each party would follow to complete the project. The goal of this CCP would be to ensure that this construction has the minimum impact possible upon airport operations, airfield safety, airfield lighting, approach lighting and navigational aids.

departures that do not overfly the Harbor Subdivision right-of-way. Other time windows when airport operations are already adjusted due to other airport-related capital improvement projects would also be considered. In general, Metro is coordinating with the FAA and LAWA to maintain normal aircraft arrival and departure operations during the construction period. Potential solutions to be explored include, but are not limited to, the displacement of runway thresholds to the west. In cases when these displaced runway thresholds may not be possible, such as due to inclement weather, it may be necessary to close one runway at a time, either to arrivals (primarily Runway 25L) or departures (primarily Runway 25R).

The sum of the overall schedule duration for this segment is approximately 24 months. The critical work activity is the construction of the temporary excavation support system immediately adjacent to both runways which will take approximately 3 months dependent on the daily construction windows provided by the FAA and LAWA.

Typical Construction Activities & Techniques

Each of the steps of the construction process is described in general below with descriptions of typical construction equipment and methods used for each.

- Utilities Protection and Relocation, which would begin as soon as possible, is intended to ensure continuous power and data service for both FAA and LAWA facilities that cross the Metro ROW. Metro would protect in place or relocate all utilities until the final utility ducts are completed as part of the project construction and final cables are installed, tested and operational in accordance with terms of license agreements between FAA and Metro. All utilities work would be closely coordinated with both the FAA and LAWA construction representatives. Future access to the FAA and LAWA utilities after construction completion would be via clearly identified man-hole access and duct banks.

- Temporary Excavation Support is typically constructed with a soldier pile and lagging method. With this method, shafts for soldier piles (steel beams) are drilled from the surface at regular intervals using a continuous flight auger (CFA). On reaching the required shaft depth (typically between 30 and 50 feet), the auger is extracted, and grout is pumped through the hollow auger stem to create a soil mix column. The auger will project to a height of a maximum of 60 feet above the ground surface. Also during this stage, cranes are used to lift the soldier piles into place. The crane boom will extend up to a maximum of 60 feet above grade. Other construction methods use equipment of similar height and yield similar effects.

  As stated above, construction times will be coordinated with the operation of the runways. For Runway 25L, coordination will focus on schedule coordination as tall cranes and other equipment in this area would be incompatible with arriving aircraft landing. Since Runway 25R is primarily used for departing aircraft in a westbound direction, coordination in this area would focus more on worker protection and safety from the effects of jet blast (exhaust). Construction may include temporary jet blast fencing (in addition to the existing jet blast fence at the end of Runway 25R) and restricting departing aircraft from using the easterly 1,000 feet of Runway 25R for

departures, which would allow for approximately 11,000 feet of departure runway length.

- Excavation is undertaken from grade level to below track invert using a hydraulic excavator. Material is loaded into dump trucks and hauled away or placed in stockpiles outside the runway protection zone area. This step in the construction can take place without interrupting airport operations.

- Tie back installation – Installation of temporary tie backs, which provide support for excavation support walls until permanent retaining walls are in place, involves specialized equipment working within the trench. Like the excavation, this work can take place without interrupting airport operations.

- Construction (of trench and cover) – Formwork, reinforcement and other elements are lifted into the trench by cranes. Concrete is delivered by a ready mix truck and placed using a concrete pump. The majority of this work can take place without interrupting airport operations although there may be the need for short time windows when cranes may be needed for specific steps in the process. These time windows would be coordinated with the FAA and LAWA to minimize their impact on airport operations.

- Backfill – performed by hydraulic excavator. This work can take place without interrupting airport operations.

4.15.1.5 Aerial Construction

Aerial structures (bridges and elevated approach sections) would be constructed using typical phases of work: foundation construction, installation of columns, and setting in place of concrete or steel girders or steel trusses. Lower elevation portions of the bridge approach structures may be constructed on retained fills. A 1,000-foot bridge may take as long as 24 months to complete. Construction of the column foundations may begin at the same time the utilities are relocated, providing the utilities do not directly impact the foundation locations. Once the foundations are in place, the columns would be constructed. It may be possible to conduct most of the column construction and girder placement during late night hours to minimize disruptions on the local streets. Traffic would not be allowed to pass under the structure during form and concrete placement, and temporary lane closures would be necessary during these periods.

Equipment used for construction of the aerial guideway segments would include drill rigs/augers, cranes, pile drivers, jackhammers, compressors, concrete trucks and pumping equipment, dump trucks, front-end loaders, paving machines, and large tractor-trailer rigs to carry girders and miscellaneous tools.

4.15.2 Environmental Impacts/Environmental Consequences

4.15.2.1 Methodology

The following section addresses the construction-related adverse effects of the LPA based on the implementation of the construction scenario described in the preceding section. Topics addressed in this section include:

4.15.2.2. Traffic, Circulation, and Parking
4.15.2.3. Land Use and Development
4.15.2.4. Displacement and Relocation of Existing Uses
4.15.2.5. Community and Neighborhood
4.15.2.6. Visual and Aesthetic
4.15.2.7. Air Quality
4.15.2.8. Noise and Vibration
4.15.2.9. Ecosystems/Biological Resources
4.15.2.10. Geotechnical/Subsurface/Seismic/Hazardous Materials
4.15.2.11. Water Resources
4.15.2.12. Energy
4.15.2.13. Historic, Archaeological and Paleontological
4.15.2.14. Parklands and Community Facilities
4.15.2.15. Economic and Fiscal
4.15.2.16. Safety and Security
4.15.2.17. Growth Inducing
4.15.2.18. Environmental Justice

4.15.2.2 Traffic, Circulation, and Parking

Refer to Section 3.0 Transportation Impacts for a discussion of construction effects. For trench construction near LAX, automobile traffic on one southbound lane of Aviation Boulevard may be temporarily interrupted, but since work periods will generally occur during periods of low traffic volumes (night and early morning), the remaining roadway capacity should be sufficient to accommodate traffic volumes.

4.15.2.3 Land Use and Development

LPA

Construction for the LPA may require temporary easements but would not affect zoning or surrounding land use compatibility. The large amount of concrete necessary for construction of the alignment, particularly for the aerial structure and below-grade construction, may necessitate the placement of a batch plant, likely within the existing Harbor Subdivision and compatible with the existing zoning. Therefore, no adverse effects are anticipated.

The staging of equipment, and the stockpiling or hauling of dirt and materials would be temporary and would not affect the land use compatibility of the surrounding primarily industrial area. Therefore, no adverse effects to land use compatibility are anticipated for the MOSs.

Design Options

The staging of equipment, and the stockpiling or hauling of dirt and materials associated with slightly more complex construction activity and longer construction duration would not affect the land use compatibility of the surrounding primarily industrial area. Therefore, no adverse effects to land use compatibility are anticipated for the design options.

Mitigation Measures

None required.

4.15.2.4 Displacement and Relocation of Existing Uses

Displacement and relocation of existing uses would occur prior to construction activity, and, therefore, no adverse construction effects are anticipated for the LPA, design options, and MOSs.

Mitigation Measures

None required.

4.15.2.5 Community and Neighborhood

LPA

The noise from construction equipment and the timing of construction (potentially at nighttime), as well as street closures, would temporarily disrupt the communities and neighborhoods within the corridor. These temporary adverse effects would affect individuals or individual property owners, but would not divide a neighborhood, remove important amenities, or affect the integrity of the neighborhood. Access to some neighborhoods would be disrupted and detoured for short periods of time during construction, but access would continue to be available to neighborhoods for both residents and emergency response. Construction activity would be kept to a minimum at nighttime and on weekends except during major closures. Mitigation measures that are identified to reduce the construction effects on traffic and access (Section 3.0 Transportation Impacts of the Alignment and Stations), noise, and visual quality would reduce the adverse effects on communities and neighborhoods in the corridor. As referenced in Section 4.15.1.1, the Conduct of Construction Plan for the project would identify a community liaison throughout the construction period to address community concerns that arise during construction. The contact information for the community liaison would be posted at the construction site and available on the project website. Therefore, no adverse environmental effects are anticipated with implementation of these measures.

The MOSs would have similar construction effects to neighborhoods and communities as described for the LPA and design options.

Design Options

Similar to the LPA, some neighborhoods would be disrupted and detoured for short periods of time during construction, but access would continue to be available to

neighborhoods for both residents and emergency response. Mitigation measures are presented to reduce the construction effects. Therefore, no adverse environmental effects are anticipated.

Mitigation Measures

None required.

4.15.2.6 Visual Quality

LPA

During construction of the LPA, the project area's visual quality may be altered from the start of the Crenshaw/Exposition Station to the Aviation/Century Station where the alignment ends. The coordination of construction scheduling for the covered trench adjacent to the LAX south runways would be facilitated by night-time construction windows, when the airport operates in an over-ocean operation. That is when planes land and takeoff to the west. Planes landing and taking off to the west would not be affected by any nighttime lighting used during construction. An adverse impact from glare may occur to approaching planes at night when planes are not operating in the over-ocean operation (approximately twilight-midnight) without mitigation (CON3). Construction of the alignment would be interrupted if construction lighting conflicts with the runway approach lighting directing aircraft into LAX.

Multi-family residences and motels are located along Crenshaw Boulevard, while single-family residences are located along La Colina Drive. The stockpiling of dirt and materials, although covered, would be visible to these residential and other sensitive uses located adjacent to Crenshaw Boulevard and the Harbor Subdivision. The placement of concrete barriers with fencing would be visible along the perimeter of construction areas. Mature vegetation, including trees, would be removed from some areas. Temporary lighting may be necessary for nighttime construction of certain project elements or in existing highway rights-of-way (to minimize disruption to daytime traffic). This temporary lighting may potentially affect residential areas by exposing residents to glare from unshielded light sources or by increasing ambient nighttime light levels. Therefore, potentially adverse effects are anticipated.

The MOSs would have similar construction effects to visual quality as described for the LPA and design options. Therefore, potentially adverse effects are anticipated.

Design Options

The construction effects to visual quality would be the same as described for the LPA. Construction of the partially-covered trench adjacent to LAX south runways would use the same construction methods and lighting used under the LPA. Potential nighttime glare would affect the approaching airplanes before the over ocean operations, and other sensitive uses located near the alignment. Therefore, potentially adverse effects are anticipated.

Mitigation Measures

Mitigation measures are proposed for the LPA, design options, and MOSs to avoid, minimize, and mitigate adverse effects related to conflicts between scale and visual character, effects on scenic resources, location of ancillary facilities, and introduction of new sources of light and glare.

CON1 Visually obtrusive erosion control devices, such as silt fences, plastic ground cover, and straw bales should be removed as soon as the area is stabilized.

CON2 Stockpile areas should be located in less visibly sensitive areas and, whenever possible, not be visible from the road or to residents and businesses.

CON3 During nighttime construction activities, lighting shall be aimed downward and away from residential and other sensitive uses adjacent to the alignment and stations.

Impacts Remaining After Mitigation

With the implementation of Mitigation Measures **CON1** through **CON3**, the visual effects of construction activity would be reduced for the LPA, design options, and MOSs. The downward direction of nighttime construction lighting in the Metro ROW would eliminate glare observed by arriving and departing aircraft thereby avoiding any impact to pilots' night vision. These temporary construction effects to visual quality would not be adverse.

4.15.2.7 Air Quality

LPA

Construction emissions were assessed using guidance and significance thresholds established by the South Coast Air Quality Management District (SCAQMD). Construction exhaust emissions were calculated using emission factors from the OFFROAD2007 and EMFAC2007 models. Fugitive dust emission estimates were based on emission factors from the USEPA AP-42 (Compilation of Air Pollutant Emission Factors). The localized construction analysis followed guidelines published by the SCAQMD in the Localized Significance Methodology for CEQA Evaluations (SCAQMD Localized Significance Threshold (LST) Guidance Document).

Construction of the LPA would generate pollutant emissions from the following activities: 1) demolition, 2) grading, 3) mobile emissions related to construction workers traveling to and from construction areas, 4) mobile emissions related to the delivery and hauling of construction supplies and debris to and from construction sites, and 5) stationary emissions related to fuel consumption by on-site construction equipment. The SCAQMD significance thresholds are in pounds per day. As such, emissions have been estimated using an analysis of worst-case daily emissions. Detailed construction information was not available at the time of this analysis. The emissions were based on broad, conservative, and reasonable construction activities. It was assumed that construction activities, would result in the simultaneous operation of 20 pieces of heavy-duty equipment per day, 200 heavy-duty truck roundtrips per day, and disturb 4,000 cubic yards of soil per day. The LPA

would generate fugitive dust and equipment emissions from excavation activity and NO_X emissions associated with the transport of excavated material.

Table 4-54 shows construction emissions associated with the LPA. . Regional emissions would exceed the NO_X threshold and localized emissions would exceed the NO_X, $PM_{2.5}$, and PM_{10} thresholds. The effects of lane closures and intersection improvements during construction activity would also reduce traffic speeds and result in increased emissions, particularly CO emissions at major points of delay. Detour routes would ensure that traffic does not idle for extended periods of time thus reducing the potential for localized exceedances of the federal CO standards.

Table 4-54. Regional Construction Emissions

Scenario	Pounds Per Day					
	VOC	NO_X	CO	SO_X	$PM_{2.5}$	PM_{10}
Maximum Regional Emissions	31	267	147	<1	18	29
Regional Significance Threshold[1]	**75**	**100**	**550**	**150**	**55**	**150**
Exceed Threshold?	No	Yes	No	No	No	No
Maximum Localized Emissions	21	191	90	<1	14	25
Localized Significance Threshold	**--[2]**	**91**	**664**	**--[2]**	**3**	**5**
Exceed Threshold?	--[2]	Yes	No	--[2]	Yes	Yes

[1] The localized thresholds were based in the smallest project site used in the SCAQMD guidelines (one-acre) and a 25-meter (82-foot) receptor distance. These assumptions give the most conservative significance threshold.
[2] SCAQMD has not developed localized significance methodology for VOC or SO_X.
Source: TAHA, 2011.

Dust and debris from construction activity in front of the LAX South Runway Complex could have the potential to interfere with airport-related navigational aids. The stockpiling of materials, debris and excavated earth which could cause foreign object damage (FOD) interference would not be permitted within this area. The storing of heavy equipment, such as crane booms, which would not pose a risk for FOD damage would still be permitted in this area. Mitigation Measures **CON4** through **CON24** also require dust-reducing practices which would further reduce the potential to affect airport-related navigational aids. Construction-related air quality impacts would be temporary. With the implementation of mitigation measures, no substantial adverse construction effects are anticipated.

The MOSs would result in shorter alignments which would reduce the amount of excavation and soil hauling compared to the LPA. Similar to the LPA, construction-related air quality impacts would be temporary. With the implementation of mitigation measures, no substantial adverse construction effects are anticipated.

Design Options

The design options would include additional excavation activity and soil hauling. These activities would generate additional emissions, especially regional NO_X from haul trucks and localized fugitive dust. Similar to the LPA, construction-related air quality impacts

would be temporary. With the implementation of mitigation measures, no substantial adverse construction effects are anticipated.

Mitigation Measures

CON4 Water or a stabilizing agent shall be applied to exposed surfaces in sufficient quantity to prevent generation of dust plumes.

CON5 Track-out shall not extend 25 feet or more from an active operation and track-out shall be removed at the conclusion of each workday.

CON6 Contractors shall be required to utilize at least one of the measures set forth in South Coast Air Quality Management District Rule 403 section (d)(5) to remove bulk material from tires and vehicle undercarriages before vehicles exit the project site.

CON7 All haul trucks hauling soil, sand, and other loose materials shall maintain at least 6 inches of freeboard in accordance with California Vehicle Code Section 23114.

CON8 All haul trucks hauling soil, sand, and other loose materials shall be covered (e.g., with tarps or other enclosures that would reduce fugitive dust emissions).

CON9 Traffic speeds on unpaved roads shall be limited to 15 mph.

CON10 Operations on unpaved surfaces shall be suspended when winds exceed 25 mph.

CON11 Heavy equipment operations shall be suspended during first and second stage smog alerts.

CON12 On-site stockpiles of debris or rusty materials shall be covered at all times when not being used. On-site stockpiles of dirt shall be watered at least two times per day or covered at all times when not being used.

CON13 Contractors shall maintain equipment and vehicle engines in good condition and in proper tune per manufacturers' specifications.

CON14 Contractors shall utilize electricity from power poles rather than temporary diesel or gasoline generators, as feasible.

CON15 Heavy-duty trucks shall be prohibited from idling in excess of five minutes, both on- and off-site.

CON16 Construction parking shall be configured to minimize traffic interference.

CON17 Construction activity that affects traffic flow on the arterial system shall be limited to off-peak hours, as feasible.

CON18 Construction staging and vehicle parking, including workers' vehicles, shall be prohibited on streets adjacent to sensitive receptors such as schools, daycare centers, senior facilities, and hospitals.

CON19 The construction process shall utilize an on-site rock crushing facility with water control to suppress dust, when feasible.

CON20 Portable generators shall be low-emitting and use ultra low sulfur diesel (<15 parts per million) or gasoline.

CON21 Construction equipment shall use a combination of low sulfur diesel (<15 parts per million) and exhaust emission controls.

CON22 The construction process shall use equipment having the minimum practical engine size (i.e., lowest appropriate horsepower rating for the intended job).

CON23 Contractors shall be prohibited from tampering with construction equipment to increase horsepower or defeat emission control devices.

CON24 Metro shall designate a person to ensure the implementation of air quality mitigation measures through direct inspections, records reviews, and complaint investigations.

Impacts Remaining After Mitigation

Mitigation Measures **CON4** through **CON12** would reduce fugitive dust emissions. Mitigation Measures **CON13** through **CON24** would reduce exhaust emissions, including NO_X, $PM_{2.5}$, and PM_{10}. It is difficult to quantify emission reductions associated with each of the mitigation measures. For example, **CON14** would reduce exhaust emissions by using electricity from the power grid instead of generators. However, the detail necessary to calculate emission reductions (e.g., how many generators and types of generators) was not known at this time. Generally, SCAQMD dust control measures would reduce fugitive dust by approximately 61 percent. In addition, **CON13** would reduce equipment exhaust emissions by approximately five percent. Implementation of Mitigation Measures **CON4** through **CON24** would reduce the effects of construction on air quality. Construction emissions would be temporary, and not result in any long-term effects. No substantial adverse construction effects are anticipated.

4.15.2.8 Noise and Vibration

LPA

Potential effects of construction vibration would result in annoyance to nearby occupied buildings. Noise from removal of existing track and construction of the right-of-way along the Harbor Subdivision Railroad between Crenshaw Boulevard and Century Boulevard, would be generated by heavy equipment. Table 4-55 shows the estimated noise levels associated with the common pieces of construction equipment based on FTA guidance. It is anticipated that the average construction noise level from combined operations would be 89 dBA L_{eq}. Construction activity would occur as close as 50 feet from existing structures along the alignment. Sensitive receptors located near the

Table 4-55. Construction Equipment Noise Levels

Construction Phase	Noise Level at 50 feet from Source L_{eq} (dBA)
Backhoe	80
Compactor	82
Concrete Pump	82
Dozer	85
Grader	85
Jack Hammer	88
Loader	85
Roller	74
Truck	88
Pile Driver[1]	101

[1]Cast in drilled holes (CIDH) would be used instead of pile driving adjacent to sensitive structures (residences and historic buildings) and in front of the LAX south runway complex.
Source: FTA, *Transit Noise and Vibration Impact Assessment*, May 2006.

construction zone are identified in Table 4-15. Construction noise levels at these receptors will vary based on distance. For example, construction noise would be approximately 89 dBA L_{eq} at 50 feet, 83 dBA L_{eq} at 100 feet, and 77 dBA L_{eq} at 200 feet. These noise levels would continue to dissipate by 6 dBA every doubling of distance. Construction noise levels will vary greatly depending on the construction activity, For example, activity occurring in a trench would result in lower noise levels than at-grade activity because the trench would block noise waves from reaching the receptors. Construction noise levels would exceed existing ambient noise levels by at least 5 dBA at nearby land uses. These noise levels, while temporary, are anticipated to be adverse.

View Park Preparatory Accelerated School is located near the intersection of Crenshaw Boulevard and Slauson Avenue and St. John the Evangelist School is located near the intersection of Crenshaw Boulevard and 60th Street. Construction activity would typically be at least 60 feet from the schools. At this distance, construction equipment would typically generate a noise level of 89 dBA L_{eq}. Interior noise levels would be less due to attenuation from building materials such as walls and windows. Regardless, construction noise level would potentially disrupt classroom activities.

Common vibration-producing equipment used during at-grade construction activities include: jackhammers, pavement breakers, augur drills, bulldozers, and backhoes. Pavement breaking and soil compaction would produce the highest levels of vibration. Table 4-56 shows the type of construction equipment measured under a variety of construction activities and includes an average of source vibration levels reported in terms of velocity levels. Although the table lists one level for each piece of equipment, considerable variation exists in reported ground-vibration levels from construction activities. The data provides a reasonable estimate for a wide range of soil conditions. Potential effects of construction vibration would result in annoyance to nearby occupied buildings. These estimated vibration levels would be similar to the construction methods

Table 4-56. Vibration Source Levels for Construction Equipment

Equipment		Peak Particle Velocity at 25 feet(in/sec)	Approximate L_v at 25 feet(VdB)[1]
Pile driver (impact)	Upper range	1.518	112
	Typical	0.644	104
Pile driver (sonic)	Upper range	0.734	105
	Typical	0.170	93
Clam shovel drop (slurry wall)		0.202	94
Hydromill (slurry wall)	In soil	0.008	66
	In rock	0.017	75
Large bulldozer		0.089	87
Caisson drilling		0.089	87
Loaded trucks		0.076	86
Jackhammer		0.035	79
Small bulldozer		0.003	58

[1] L_v = RMS velocity in decibels (VdB) re 1 micro-inch/sec.
RMS = The square root of the mean-square value of an oscillation waveform.
Source: Transit Noise and Vibration Impact Assessment, FTA, May 2006.

and means used for the LPA, MOSs, and design options. Construction-related vibration impacts would be temporary, but would result in a significant impact. With the implementation of mitigation measures, no substantial adverse construction effects are anticipated.

Metro is coordinating with the FAA and LAWA to maintain normal aircraft arrival and departure operations during the construction period. Potential solutions to be explored include displacement of runway thresholds to the west. In cases when these displaced runway thresholds may not be possible, such as due to inclement weather, it may be necessary to close one runway at a time to arrivals (primarily Runway 25L) or departures (primarily Runway 25R). When Runway 25L is closed, arrivals to this runway would be relocated to mixed arrival and departure operations on Runway 25R and some would be spread to the LAX North Airfield. When Runway 25R is closed, departures would be relocated to mixed arrival and departure operations on Runway 25L and some would be spread to the LAX North Airfield. This operation would be for limited periods of time (four to six weeks in the worst case) with no significant impact to existing sensitive receptors north, south and east of LAX.[4] Soldier pile installation would be through drilled and placed piles with no excessive vibration from drilling activities to affect navigational aids operation. Site excavation would be with normal excavation equipment such as scrapers, bulldozers, front end loaders and similar equipment.

The MOSs would have similar noise and vibration construction effects as described for the LPA and design options. Therefore, potentially adverse effects are anticipated. With

[4] LAWA has conducted noise analysis of three-runway operations as part of the South Airfield Implementation Program (SAIP). Actual noise monitoring during the SAIP construction found that there was no additional noise impact as a result of the runway closure.

implementation of the identified mitigation measures these effects are not anticipated to be substantial.

Design Options

The construction generated noise levels associated with all of the design options would be similar to the LPA and construction-generated noise levels may potentially result in adverse short-term effects. Potential effects of construction vibration would result in annoyance to nearby occupied buildings. The vibration levels expected from construction equipment associated with this project is not anticipated to result in either architectural or structural damage to nearby buildings. With the implementation of mitigation measures, no substantial adverse construction effects are anticipated.

Mitigation Measures

CON25 The construction contractor shall develop and implement a Noise and Vibration Control Plan demonstrating how to achieve the more restrictive of the Metro Design Criteria noise limits and the noise limits of the city noise control ordinance. The Plan should also show how to achieve FTA vibration limits. The Plan shall include measurements of existing conditions, a list of the major pieces of construction equipment that will be used, and predictions of the noise and vibration levels at the closest noise-sensitive receptors (residences, hotels, schools, churches, temples, and similar facilities). The Noise and Vibration Control Plan will need to be approved by Metro prior to initiating construction. Where the construction cannot be performed in accordance with the requirements of Metro, the contractor shall investigate alternative construction measures that would result in lower noise and vibration levels. The contractor shall conduct monitoring to demonstrate compliance with Metro and City noise limits. In addition, the contractor shall coordinate with the View Park Preparatory Accelerated and St. John the Evangelist school administrators to avoid disruptive activities during school hours.

CON26 The construction contractor shall utilize a combination of the following options of best management practices for noise abatement to comply with the Metro Design Criteria:

- The contractor shall utilize specialty equipment equipped with enclosed engines and/or high-performance mufflers as commercially available.
- The contractor shall locate equipment and staging areas as far from noise-sensitive receptors as possible.
- The contractor shall limit unnecessary idling of equipment.
- The contractor shall install temporary noise barriers as determined by the Noise Control Plan.
- The contractor shall reroute construction-related truck traffic away from residential streets to the extent permitted by the relevant municipality.

- The contractor shall avoid impact pile driving near noise-sensitive receptors (residences, hotels, schools, churches, temples, and similar facilities). Where geological conditions permit their use, drilled piles or a vibratory pile driver is generally quieter.

Impacts Remaining After Mitigation Measures

Implementation of Mitigation Measures CON25 and CON26 would reduce the effects of construction noise. CON25 states that the construction contractor shall develop and implement a Noise and Vibration Control Plan demonstrating how to achieve the noise limits of the city noise control ordinance. Therefore, no significant construction noise and vibration effects are anticipated. The conclusion of no adverse impacts is based on compliance with the city code. This is consistent with the guidance in Section 12.1.3, Construction Noise Criteria, in the FTA *Transit Noise and Vibration Impact Assessment* that states noise criteria should be developed using local ordinances when possible. This mitigation measure acts as a performance standard tied to the requirements of the code and includes a Noise Control Plan to be completed by the construction contractor using construction details specific to the methodology employed by the construction contractor and that are not known at this time. Monitoring is also required to demonstrate compliance with contract noise limits. Mitigation Measure CON26 lists additional best management practices that comply with the Metro Design criteria to eliminate construction noise impacts at sensitive receptors.

4.15.2.9 Ecosystems/Biological Resources

LPA

Construction of the LPA or MOSs may require removal or disturbance of mature trees along Crenshaw Boulevard. If construction of the LPA results in removal of native tree species (as defined in the Native Tree Protection Ordinance) within the City of Los Angeles, compliance with the Native Tree Ordinance would ensure that no adverse effect would occur. Although the ordinance does not require a permit for the pruning of protected trees, if the project requires pruning of native tree species, Mitigation Measures EB1and EB2, indentified in Section 4.7, would be implemented to ensure that the pruning would not damage or adversely affect the trees.

Design Options

The Below-Grade Crossing at Centinela may result in the removal of non-native palm trees located along the Harbor Subdivision on the opposite side of Edward Vincent Jr. Park in the City of Inglewood. As these mature trees provide potential nesting and roosting habitat for select bird species, including raptors, removal during the nesting season may affect the habitat and bird species that are present.

The optional below-grade Crenshaw/Vernon Station would be located in the vicinity of Leimert Plaza Park, which supports a few mature trees, but not sensitive biological resources. The proposed below-grade station would be located on the opposite side of Vernon Avenue from Leimert Plaza Park; no surface disruption would occur, and the trees at the park would not be disturbed or impacted.

Mitigation Measure **EB1** and **EB2**, indentified in Section 4.7 would be implemented to ensure no adverse impact would occur for the design options. Similar to the LPA, with implementation of Mitigation Measures **EB1** and **EB1**, these design options would not be anticipated to have an adverse impact on biological resources.

Impacts Remaining After Mitigation

Through compliance with existing ordinances and implementation of Mitigation Measures **EB1** and **EB2**, indentified in Section 4.7, construction of the LPA and LPA design options are not anticipated to adversely affect biological resources.

4.15.2.10 Geotechnical/Subsurface/Seismic/Hazards/Hazardous Materials

LPA

The primary concern for the LPA or MOSs would be the potential for encountering hazardous materials during grading and excavation within the Harbor Subdivision. It is possible that contaminated soil and/or groundwater may be encountered in the areas of the proposed at-grade, below-grade, and aerial alignments along the entire section.

The construction work for the at-grade alignments would generally be contained to the upper 5 feet of soil, thereby constraining the volume of unearthed contaminated soil and eliminating the possibility of encountering contaminated groundwater.

The below-grade areas would probably consist of cut-and-fill activities to approximately 70 feet below-grade, which would result in encountering large quantities of soil and increasing the possibility of encountering contaminated soil and possibly contaminated groundwater. A geotechnical investigation was conducted during the advanced conceptual engineering for the project. The investigation found that a conventional shoring system is feasible for supporting excavations in the cut-and-cover sections of the alignment. A brace shoring system would be required when in proximity to traffic or structures.

According to LAWA and FAA regulations, no foreign object, such as structures or construction equipment is allowed to penetrate into a runway safety area (RSA) or object free area (OFA) as designated by LAWA. Due to the proximity of the alignment to the LAX south runways, the proposed construction methods, equipment, and hours of operation in front of the south runways would be subject to approval of LAWA and FAA. Cut-and-cover construction would require coordination with LAWA, including airport Traffic Control Technical Operations, Western Flight Procedures, and other FAA offices during construction for runway restrictions/closures and operating windows. To install the proper foundational support for the trench in front of the airport, backhoe excavators, auger rigs, a crane boom extending up to 55 feet above grade would be required to install soldier piles all of which have the potential to encroach the OFA and RSA for the LAX. The coordination of construction scheduling would be facilitated by night-time construction windows, when the airport operates in an over-ocean operation, that is when planes land and takeoff to the west. Planes landing and taking off to the west would not result in an increased risk from safety hazards. Coordination and approval of construction methods by FAA and LAWA would result in no adverse effects or hazards. During periods of east flow, (limited times when wind speed and direction require

aircraft to takeoff headed east and overfly the Harbor Subdivision site) construction activities that impact the object free zone would be halted until the airport resumes normal west flow or over-ocean operations.

The aerial sections would consist of pile foundations that would require deep earthwork, down to 60 feet below-grade, to support the crossovers, thereby increasing the possibility of encountering contaminated soil and possibly contaminated groundwater.

A hazardous substances investigation was conducted during the advanced conceptual engineering for the project. Sixty five soil samples were collected along the alignment and tested for hazardous materials (metals, volatile organic compounds, petroleum hydrocarbons). One area near the Harbor Subdivision and Crenshaw Boulevard was found to contain an elevated level of Arsenic at approximately 10 feet. However, the level of Arsenic (28mg/kg) is still considered non-hazardous because it is below ten times the screening threshold limit (50mg/kg). Construction activity would be conducted in accordance with all federal and State regulatory requirements that are intended to prevent or manage hazards. Therefore, the LPA and MOSs would not result in adverse effects related to hazardous materials. The mitigation measures that follow provide the recommended methods for safely approaching potential hazardous materials encountered during the course of the project.

Design Options

The design options would have similar construction effects as described for the LPA. Construction of the Partially-Covered LAX Trench Option would use the same method of construction (cut-and-cover) as the covered trench and would result in similar effects to hazards. With implementation of Mitigation Measure CON27, no adverse effects would occur.

Mitigation Measures

The following mitigation measures are recommended per the conclusions of the Phase I ESA, and Preliminary Geotechnical and Hazardous Substances Reports prepared for the proposed project.

CON27 Soil Mitigation Plan – A soil mitigation plan should be prepared after final construction plans are prepared showing the lateral and vertical extent of soil excavation during construction, and implemented. The soil mitigation plan should establish soil reuse criteria, establish a sampling plan for stockpiled materials, describe the disposition of materials that do not satisfy the reuse criteria, and specify guidelines for imported materials. The soil mitigation plan should include a provision that during grading or excavation activities, soil should be screened for contamination by visual observations and field screening for volatile organic compounds with a PID. Soil samples that are suspected of contamination based on field observations and PID readings shall be analyzed for suspected chemicals by a California certified laboratory. If hazardous soil is found, it shall be removed, transported to an approved disposal location. .

4.15.2.11 Water Resources

LPA

The LPA would require excavation below the surface level. Los Angeles Regional Water Quality Control Board (RWQCB) records and soil borings indicate a potential for a high groundwater table north of Stocker Street to Exposition Boulevard. The tunnel for the LPA, which is approximately 50 feet below the ground surface, also has a potential to be below the water table. If groundwater is encountered, a dewatering permit is required from the Los Angeles RWQCB prior to construction. Uncontaminated groundwater that is collected during the construction dewatering operations can be treated with a small-scale treatment facility and pumped back into the groundwater table or pumped to the sewer or storm drain system or used onsite for dust control purposes. Permission from the Los Angeles RWQCB is required if groundwater is to be pumped back or discharged to the storm drain system. Contaminated groundwater is prohibited from being discharged to the storm drain system. Once construction is complete, no long term adverse effects to groundwater are anticipated.

The LPA would require the installation of new facilities for the fixed guideway, new stations, and support facilities. There are several catch basins or storm drain structures that may require relocation or temporary closure. There are three catch basins located at the Leimert Boulevard/Crenshaw Boulevard intersection. There are also two catch basins located along Florence Avenue at the North La Brea Avenue intersection and at the Centinela Avenue intersection. A station would be built near the La Brea Avenue/Florence Avenue intersection, where a catch basin may be impacted. The proposed project would relocate or resize drainage conveyance features appropriately so that flooding or ponding is not induced on the project site or on adjacent properties. With the implementation of a drainage control plan, no adverse effects to the local drainage basin would occur.

The LPA would include construction of new stations and installation of a track for the fixed guideway. Construction adverse effects would potentially include increased sediment and erosion in or near disturbed areas. For general construction activities, the proposed project is required to comply with the National Pollutant Discharge Elimination System (NPDES) General Construction Permit to discharge stormwater associated with construction activity. To address and reduce water quality adverse effects, the project is required to prepare a Stormwater Pollution Prevention Program (SWPP) in accordance with the General Construction Stormwater Permit. BMPs indentified in Appendix F will be identified in the SWPP to reduce or eliminate pollutants in stormwater discharges from the construction site. A Standard Urban Stormwater Mitigation Plan (SUSMP) would also be prepared to address the quality and quantity of stormwater runoff generated on-site during project operation and the incorporation of permanent treatment BMPs into the project. Implementation of temporary and permanent treatment BMPs would minimize adverse effects to water quality due to the construction of the proposed project.

The MOSs would have similar construction effects to water resources as described for the LPA and design options. Therefore, with implementation of Mitigation Measures **WQ1**, **WQ2**, and **WQ4**, indentified in Section 4.9 Water Resources, the MOSs would not have an adverse effect on water resources.

Design Options

The design options would include additional excavation activity and soil hauling which would increase the possibility of encountering groundwater and necessitating dewatering activity than would the LPA. If groundwater is encountered during tunneling and dewatering is necessary, a dewatering permit is required from the Los Angeles RWQCB prior to construction. With compliance with applicable regulations, no long-term or adverse impacts are anticipated related to groundwater resources. Construction of a station at the Vernon Avenue/Crenshaw Boulevard intersection, may potentially impact the catch basins in that area. These design options would relocate or resize drainage conveyance features appropriately so that flooding or ponding is not induced on the project site or on adjacent properties. With the implementation of a drainage control plan, no adverse effects to the local drainage basin would occur. Similar to the LPA, implementation of temporary and permanent treatment BMPs identified in Appendix F would minimize adverse effects to water quality due to the construction.

Impacts Remaining After Mitigation

With the implementation of Mitigation Measures **WQ1**, **WQ2**, and **WQ4**, effects to water resources and water quality would not be adverse.

4.15.2.12 Energy

LPA

The highest indirect energy consumption would occur during demolition and then construction of on-site facilities, such as guideways, structures, stations, and support facilities. Construction-related energy consumption would result in the one-time, non-recoverable energy costs associated with the construction and manufacturing of LRT vehicles. Construction of the Crenshaw/LAX Transit Corridor Project would provide transit infrastructure to increase mobility and regional connectivity and would not lead to wasteful, inefficient, or unnecessary consumption of energy. Therefore, impacts on non-renewable energy resources would be temporary and not be considered adverse for the LPA or MOSs.

Design Options

The design options would be similar to the LPA, and construction-related energy consumption would result in the one-time, non-recoverable energy costs associated with the construction and manufacturing of light-rail vehicles. Impacts on non-renewable energy resources would be temporary and not be considered adverse.

Mitigation Measures

None required.

4.15.2.13 Historic, Archaeological, and Paleontological Resources

LPA

Archaeological Resources

No known archaeological resources listed in or eligible for listing in the National Register would be affected by the LPA or MOSs. The LPA has the potential to alter, remove, or

destroy previously unidentified archaeological resources within the APE. Such damage to archaeological resources would represent an adverse yet mitigable effect. Implementation of Mitigation Measure Mitigation Measure **CR1** would be implemented to insure no adverse effects would occur to archaeological resources.

Paleontological Resources

Based upon the paleontological review, the majority of the project area has a high level of sensitivity for paleontological resources, especially at depths below five feet. Under the LPA or MOSs, excavation during construction would exceed five feet at the below grade portions of the alignment as well as possibly at the elevated guideways and station locations. While it is unlikely, if construction of the LPA destroys a significant paleontological resource, it would potentially result in an adverse effect on paleontological resources. Mitigation Measure **CR2** would be implemented as appropriate to ensure no adverse impact would occur.

Historic and Architectural Resources

Construction adjacent to the Proud Bird, Merle Norman, Edward Vincent Jr. Park, and Inglewood Cemetery would occur within the Harbor Subdivision and would not require the acquisition of any historic properties. Although the majority of construction would take place within the Harbor Subdivision, pedestrian and vehicular circulation may be restricted with increased truck traffic or sidewalk closures. All of these properties would maintain full access during the construction period.

The Harrison Ross Mortuary, Maverick's Flat, the Broadway Department store (now WalMart), May-Company Department store (now Macy's), Angelus Funeral Home, the Department of Water and Power and the Los Angeles Sentinel are all located near where the proposed LRT tracks would be located below grade within the center of the street right of way. Construction period effects may include restriction of access to the businesses and therefore negatively affect their economic viability. These buildings are all located in areas where cut and cover subway construction techniques may be employed. Cut and cover construction typically requires surface land area located within the public right of way to allow for excavation, equipment and adjacent lay down and spoil areas. Cut and cover construction sites may limit pedestrian, vehicular and parking access to adjacent land uses and businesses. These properties have dedicated off-street parking accessible from Crenshaw Boulevard, as well as an adjacent side street or alley, except for Harrison Ross Mortuary, which uses the adjacent bank lot for parking. As described in the Transportation section under Mitigation Measures **T1** through **T6**, Metro will maintain access as well as provide way finding signage to these parking areas during construction. Cut and cover disruption at a single location is likely to extend for six to eight months before the area is fully decked. It is not anticipated that access to this adjacent property would be severely restricted, and as a result, it would be unlikely that all access to this adjacent property would be eliminated, to the extent that the economic viability of the historic property would be adversely affected and to the extent there would physical deterioration of property during the period of construction.

Ground-borne vibration would be generated by general construction activity and drilled cast-in-place piles. The FTA has published a construction vibration damage criterion of 0.12 peak particle velocity (PPV) in inches per second for buildings extremely susceptible

to building damage. Construction activity typically generates a vibration level of 0.089 PPV at 25 feet. This reference level would result in a vibration level of 0.12 PPV at 21 feet. No sensitive land uses are located within 21 feet of construction activity. Therefore, typical construction activity would not result in adverse vibration levels.

The LPA would not include driven piles. Cast-in-drilled-hole (CIDH) piles will be used to support structures. Typical construction activity, including CIDH piles, generates a vibration level of 0.089 PPV at 25 feet. This reference level would result in a vibration level of 0.12 PPV at 21 feet. No sensitive land uses are located within 21 feet of construction activity. Therefore, construction activity would not result in adverse vibration levels. The potential effects of all other construction activity would not directly alter characteristics of the historic property in a manner that would diminish the integrity of the properties' location, design, setting, materials, workmanship, feeling, or association.

Under Section 106, "change of the character of the property's use" and "neglect of a property which causes its deterioration" both would be considered an "adverse effect" if they were to occur during cut-and-cover construction (Criteria of Adverse Effect *iv*, and *vi*, respectively). With implementation of previously described Traffic Mitigation Measures **T1** through **T6**, these buildings would be unlikely to experience physical damage, a change of the character of the property's use, or physical deterioration during construction. Therefore, no adverse effects are anticipated during construction related to historic and architectural resources.

Construction effects to archaeological, paleontological, and historic and architectural resources would be the same for the MOSs as described under the LPA. The risk of encountering unknown archaeological or paleontological resources would be less for the MOSs because of the shorter segments.

Design Options

Archaeological Resources

Similar to the LPA, the discovery of archaeological resources is possible during excavation activities during construction. Mitigation Measure **CR1** would be implemented to ensure no adverse impact would occur to archaeological resources.

Paleontological Resources

Potential impacts to paleontological resources for the design options are similar to the LPA. Mitigation Measure **CR2** would be implemented as appropriate to ensure no adverse impact would occur.

Historic and Architectural Resources

Similar to the LPA, construction period effects would include restriction of access to the businesses, and therefore, negatively affect their economic viability. These buildings are located in areas where cut and cover subway construction techniques may be employed. Cut and cover construction typically requires surface land area located within the public right of way to allow for excavation, equipment and adjacent lay down and spoil areas. Cut and cover construction sites may limit pedestrian, vehicular and parking access to adjacent land uses and businesses. As described in the Transportation section under

Mitigation Measures **T1** through **T6**, Metro will maintain access to these buildings and parking areas during construction. Cut and cover disruption at a single location is likely to extend for eight months before full decking. It is not anticipated that access to this adjacent property would be severely restricted, and as a result, it would be unlikely that all access to this adjacent property would be eliminated, to the extent that the economic viability of the historic property would be adversely affected and to the extent there would physical deterioration of property during the period of construction.

No direct adverse effects would occur to historic properties within the APE that are in the vicinity of the Below-Grade Crossing at Centinela and the optional Aviation/Manchester Station. The indirect impacts from noise and vibration, air quality, and visual effects to historic properties within the APE that are in the vicinity of the Below-Grade Crossing at Centinela and the optional Aviation/Manchester Station, are not adverse, would not require mitigation, and do not warrant further detailed analysis. Therefore, construction of these options are not anticipated to have an adverse impact on historic and architectural resources.

A portal in this location could also involve an underground connection into the basement of the department store and a permanent underground easement would be required in order to facilitate this connection. The alternate portal would not generate adverse noise and vibration levels at the Broadway building during operation of the project. The impacts on this resource would not be adverse, as this connection would not substantially diminish the features and attributes of the resource.

The design options would not include driven piles. Cast-in-drilled-hole (CIDH) piles will be used to support structures. Typical construction activity, including CIDH piles, generates a vibration level of 0.089 PPV at 25 feet. This reference level would result in a vibration level of 0.12 PPV at 21 feet. No sensitive land uses are located within 21 feet of construction activity. Therefore, construction activity would not result in adverse vibration levels. The potential effects of all other construction activity would not directly alter characteristics of the historic property in a manner that would diminish the integrity of the properties' location, design, setting, materials, workmanship, feeling, or association.

Mitigation Measures

Impacts that would arise from construction of the LPA, design options, and MOSs are identified above. Elimination or reduction of these construction period impacts would occur through two steps, as follows: (1) compliance with local, State or federal regulations or permits that have been developed by agencies to manage construction impacts, to meet legally established environmental impact criteria or thresholds, and/or to ensure that actions occurring under agency approvals or permits are in compliance with laws and policies, as described below; (2) implementation of the LPA, design options, and MOSs with implementation of Mitigation Measures **CR1** and **CR2** indentified in Section 4.11 and Mitigation Measures **T1** through **T6** in Chapter 3.0 Transportation.

Impacts Remaining After Mitigation

Implementation of Mitigation Measures **CR1** and **CR2** in Section 4.11 and Mitigation Measures **T1** through **T6** would result in no adverse construction period impacts for the LPA, design options, and MOSs.

4.15.2.14 Parklands and Other Community Facilities

LPA

Construction activity associated with the LPA may potentially temporarily disrupt circulation patterns and result in temporary obstruction of pedestrian and vehicular access to the parklands and other recreational facilities along the alignment.

No roadway modifications would occur along Crenshaw Boulevard adjacent to Leimert Park. However, the roadway would be widened immediately to the south of the park which would temporarily disrupt circulation patterns in the vicinity. Vehicles and pedestrians accessing the park from the south would have to traverse the construction area to reach the park. However, pedestrian and vehicular entrances to the park would be maintained and, therefore, be unobstructed and the park and its amenities would remain accessible. The disruption caused by construction along Crenshaw Boulevard would be temporary and not adverse.

Construction of the LPA would occur adjacent to the southern edge of the Edward Vincent Jr. Park. Vehicular access to the park is provided from Warren Avenue and Park Avenue to the north and Redondo Boulevard and Park Way to the east of the park, which would not be directly affected during the construction period. Although there is no direct access into the park from the Harbor Subdivision, vehicular and pedestrian circulation in the park vicinity would be temporarily disrupted but not adverse.

Edward Vincent Jr. Park is not gated and pedestrian access to the park is located around the perimeter of the park except to the south along the Harbor Subdivision. Therefore, construction activity along the Harbor Subdivision would not adversely affect pedestrian access to the park. Recreational amenities in close proximity to the construction area are tennis courts and athletic fields. While use of the tennis courts and play fields may temporarily be impaired as a result of noise and air emissions associated with construction, the amenities would likely remain open for use during the construction period. Furthermore, construction would primarily occur during weekdays as opposed to weekends when use of the park amenities would be at the highest levels.

Cut and cover excavation of a below-grade vertical alignment within the right-of-way of Crenshaw Boulevard would occur adjacent to Leimert Plaza Park. No parkland would be permanently acquired and the zone of construction, including safety fencing and tiebacks for the excavation would not extend into the park. While use of the park may temporarily be impaired as a result of noise and air emissions associated with construction, the amenities would likely remain open for use during the construction period and no adverse effects would occur.

No construction would also occur immediately adjacent to the Museum of African American Art located on Crenshaw Boulevard near Martin Luther King Jr. Boulevard.

However, construction would occur on Crenshaw Boulevard on the opposite side of the street across and to the south of the museum. This would temporarily disrupt vehicular and pedestrian circulation patterns in the vicinity. However, direct access into the museum site would remain open.

Construction would temporarily disrupt vehicular and pedestrian circulation in the vicinity of several recreation facilities; this impact would be temporary in that it would only occur only while construction is occurring along the LPA segment in the immediate vicinity. Further, direct vehicular and pedestrian access into all the recreational facility sites would remain open. Therefore, construction activity on parklands and other community facilities would not result in adverse effects.

Construction along the alignment would result in temporary lane closures and disruption in traffic. However, emergency ingress and egress would be maintained at all times. Construction work traffic control plans would be prepared for each construction site and submitted to Los Angeles Department of Transportation (LADOT) for review and approval prior to the start of construction activities. As part of the work plan process, advance notice would be given to emergency service provides (the LAPD, IPD, LAFD, and Los Angeles County Fire Department) regarding the location and duration of traffic delays and applicable detours to minimize the potential disruption to emergency services caused by limited access to and/or closure of lanes and streets within the public rights-of-way. Construction would not adversely affect the provision of police and fire protection services.

Adverse construction effects related to roadway modifications and construction associated with the LPA may temporarily disrupt circulation patterns and result in temporary obstruction of pedestrian and vehicular access to community facilities located along the alignment. However, this impact would be temporary in that it would only occur only while construction is taking place along the LPA segment in the immediate vicinity of the facility. Those community facilities that would be affected to the greatest degree are those with ingress and egress located on roadway segments that are being modified. Five religious facilities and two educational facilities have ingress and egress on segments of Crenshaw Boulevard frontage roads where roadway modifications will occur with no alternative site access available. While access to these facilities would be impeded during construction, it would not be eliminated. Therefore the impact would not be adverse.

The MOSs would have similar construction effects to parklands and community facilities as described for the LPA and design options. Impacts would be temporary and not be considered adverse.

Design Options

Potential construction impacts to parklands and community facilities are similar to those discussed for the LPA described above. Similar to the LPA, these options are not anticipated to have an adverse effect from construction related to roadway modifications and construction.

Mitigation Measures

None required.

4.15.2.15 Economic and Fiscal Effects

LPA

The preliminary capital costs for the LPA is $1,681.9 million ($2010). Table 4-57 shows the estimated total estimated jobs expected during the construction period. The average annual total employment during construction would be about 401 employees. Total annual direct, indirect, and induced employment from new monies in the region for the LPA would total about 7,321. About 2,000 construction workers would be needed over the five-year construction period. It is fully expected that the regional labor force would meet the expected demand.

Table 4-57. Construction Jobs for the Crenshaw/LAX Transit Corridor Project

Phase	Total Jobs /a/	Direct Jobs /b/
Construction (Capital) /c/		
Total (5-year period)	36,606	2,005
Annual	7,321	**401**

/a/ Uses Factor or 24,000 jobs per billion for construction and 41,000 jobs per billion for operations which is a blend of IMPLAN and REMI modeling systems.
/b/ Direct jobs are calculated using a ratio 18.25 Total/Direct jobs obtained from BEA, RIMS II.
/c/ Calculated in year of expenditure dollars based on the Cost and Performance Chapter
Sources: EDRG and American Public Transportation Association, *Job Impacts of Spending on Public Transportation*, April, 2009, Bureau of Economic Analysis, *2005 RIM II Modeling System*, EDRG, and Metro.

The construction for the road improvements and LRT stations would involve expenditures for labor, materials and supplies, however, most would go to workers and businesses in the region. For purposes of assessing economic and fiscal impacts, it is assumed that much of the project's construction labor force will reside within the region during the construction period (hiring and procurement of project construction services and labor will comply with federal requirements).

It is expected that the size of the regional labor force would be sufficient to construct this alternative and the regional labor force would likely benefit. State and local governments would benefit from income taxes paid on the project construction force wages. However, the magnitude of the construction activities for the LPA is relatively small and so it is not expected that the labor expenditures would result in net new expenditures for construction labor. Therefore, it is unlikely that state and local governments would see a substantial increase in income tax revenues.

The purchase of materials and supplies associated with roadway modifications, the rail tracks, LRT stations, and park-and-ride lots would include routine roadway and rail construction activities. Purchases would include gravel, asphalt, concrete, track rails, and architectural materials for the station structures, and signage. Most of these materials and supplies would be expected to be purchased within Southern California, if not a substantial portion in Los Angeles County. The purchase of these materials and supplies would include the payment of sales tax, which would be revenue distributed to the state and local governments. The amount of materials and supplies required for the proposed project, however, is relatively small compared to all construction projects that would be

ongoing in the region. As such, it is unlikely that the state or local governments would see a substantial increase in sales tax revenues.

For business owners and commercial property owners, the disruption of construction activities would similarly involve multiple construction crews operating along the corridor simultaneously. The extent of construction activities under this alternative would last for a total duration of four to five years. These construction activities would inconvenience and disturb area employees, business operations, and business customers. Temporary construction effects would include:

- Presence of construction workers, heavy construction equipment, and materials
- Use of short-term reduction in number of roadway travel lanes, road closures, traffic diversions, and modified access to properties
- Loss of parking, especially on-street parking
- Increase in airborne dust
- Increase in noise and vibration from construction equipment and vehicles
- Decreased visibility and change in customer access to businesses

Depending on construction activities, individual businesses may suffer little or no adverse effects, while others may experience a noticeable adverse change in sales or operating costs. Construction activities for at-grade segments would take the least amount of time followed by elevated portions and then below-grade segments.

Disruption from cut-and-cover construction activities would be more extensive, the duration of reduced number of roadway travel lanes, road closures, traffic diversion, and modified access to business properties, and loss of on-street parking would be greater. These effects would further decrease business visibility and access to businesses by suppliers and customers, and would result in an adverse effect on corridor businesses and commercial property owners.

The MOS-King alternative would begin at the Metro Green Line Aviation Station and end at the Crenshaw/King Station. The preliminary capital cost estimate for MOS-King is $1,509,259,200.

The MOS-Century alternative would begin at the Metro Exposition and end at the Aviation/Century Station. The preliminary capital cost estimate for MOS-Century is $1,441,122,400.

Design Options

Partially-Covered LAX Trench Option. This Partially-Covered LAX Trench Option would provide a cost savings compared to the LPA.

Below-Grade Crossing at Centinela Option. The Below-Grade Crossing at Centinela Option includes a below-grade crossing instead of an at-grade crossing at Centinela Avenue. The preliminary capital cost estimate for this design option is $18,451,200.

Optional Aviation/Manchester Station. The optional Aviation/Manchester Station would either be located in an aerial configuration across Manchester Avenue or to the north where the alignment returns to grade after crossing Manchester Avenue. The preliminary capital cost estimate for this design option is $18,942,600 (aerial).

Optional Below-Grade Crenshaw/Vernon Station. The Below-Grade Crenshaw/Vernon Station Option involves a below-grade station south of Vernon Avenue in the Leimert Park triangle. The preliminary capital cost estimate for this design option is $120,000,000.

Alternate Southwest Portal at Crenshaw/King Station Option. The alternate southwest portal at the Crenshaw/King Station would be located in front of the Broadway (WalMart) building at the Baldwin Hills Crenshaw Plaza. It would involve a surface portal or an underground connection to the basement floor of the Broadway building. This design option would only be implemented if the land is privately funded or if easements to privately-owned land are granted to Metro.

Mitigation Measures

It is not expected that effects on the regional economy, employment, and government revenues would be adverse. However, construction planning and mitigation measures would be needed to reduce adverse effects from the inconvenience and/or disruption to the flow of customers, employees, and materials and supplies to and from corridor businesses. Some mitigation measures would be integrated into the project management plan, the business mitigation plan, and the project's contract specifications. Recommended mitigation measures to reduce these adverse effects on project area businesses should include the following:

CON28 Nearby business owners and commercial property owners shall be notified of the schedule for specific planned construction activities, changes in traffic flow, and required short-term modifications to property access.

CON29 General notice shall be provided to local government, transit agencies, major institutions, and other organizations of the schedule for planned construction activities.

CON30 Methods shall be developed by which business owners can convey their concerns about construction activities and the effectiveness of mitigation measures during the construction period so activities can be modified to reduce adverse effects.

CON31 Advance notice shall be provided to affected property owners if utilities would be disrupted for short periods of time and scheduled major utility shut-offs during low-use periods of the day.

CON32 Construction activities shall be planned to minimize effects on community gatherings, special celebrations, or other similar events.

CON33 Public information campaigns shall be conducted to encourage patronage of corridor businesses during the construction period.

Impacts Remaining After Mitigation

Implementation of Mitigation Measures CON28 through CON33 would result in no substantial adverse economic and fiscal effects during construction.

4.15.2.16 Safety and Security

LPA

Under the LPA or MOSs, construction would involve excavation, and on-site construction equipment which would pose a temporary safety threat to traffic and pedestrians. Concrete barriers with fencing would be placed around the perimeter of the site to restrict access and eliminate the threat to safety and security of anyone not directly involved in construction activity. Construction sites located near schools may pose an additional risk to students who pass by on their way to or from school. It is assumed that all additional related activity would be implemented in accordance with all Federal and State requirements and permits during the construction process.

There are two access points to the airport along this segment of Aviation Boulevard at 104th and 111th Streets. Access to the airport will be maintained at a minimum of one of these locations at all times so that emergency vehicles may enter airport property if needed.

For the security of the LAX airfield, there is an existing fence between Metro's right-of-way and the airfield. This will remain in place during construction. Construction in front of the LAX South Runway Complex would occur outside of the existing LAX perimeter security fence. Construction access to the Metro right-of-way will occur from outside the existing LAX security perimeter and access will be coordinated by LAWA construction and maintenance personnel. As part of the Metro construction security and safety program, construction staff will be made aware of the security situation and existing airport facilities outside of the perimeter security fence that must be kept operational. If Metro's construction activities required encroachment onto the airfield, Metro would install a replacement security fence for the period of required encroachment. Jobsite security measures will be outlined in the Conduct of Construction Plan that will be developed in consultation with LAWA and the FAA. Construction contractors will be required to comply with the Conduct of Construction Plan. Any construction access required for on-airport utility relocation will be accomplished with construction staff who have been appropriately screened and badged by LAWA Security Badging Office. Any utility relocation that requires the removal of perimeter fence sections will occur with temporary perimeter fencing and final replacement of fencing to the same standard.

To maintain worker safety during trench construction near LAX, the relocation of runway thresholds and jet blast fencing, subject to coordination with FAA and LAWA, would ensure proper protection from exhaust turbulence to the east of Runway 25R. Excavation in the airfield area will be conducted with full dust control measures. Soil and material stockpiling will take place outside of the airfield and RPZ area, also with full dust control measures. Work crews will be made aware of and regularly reminded of Foreign Object Damage (FOD) risks to aircraft and will secure all tools and objects on the work site so as to avoid being blown onto the airfield area. The stockpiling of materials, debris and excavated earth which could cause FOD interference would not be permitted within this

area. The storing of heavy equipment, such as crane booms, which would not pose a risk for FOD damage would still be permitted in this area. Mitigation Measures CON4 through CON24 also require dust-reducing practices which would further reduce the potential to affect airport-related navigational aids. Construction-related air quality impacts would be temporary. With the implementation of mitigation measures, no substantial adverse construction effects are anticipated. Metro will coordinate with FAA on performing necessary tests for electromagnetic interference (EMI) to limit any impacts due to welding. Therefore, the LPA would have no adverse effects related to safety and security.

Design Options

The design options would have the same safety and security construction effects as the LPA.

Mitigation Measures

None required.

4.15.2.17 Growth Inducing Effects

Construction-related activity that would be growth inducing is addressed in Section 4.15.3.15 Economical and Fiscal Impacts for the LPA, design options, and MOSs.

Mitigation Measures

None required.

4.15.2.18 Environmental Justice

LPA

Crenshaw Boulevard is a major street with highway-oriented and local serving businesses. Many businesses are minority-owned and the population served by these businesses are minority and low-income, elderly, and language dependent. Construction of the project within the Crenshaw Boulevard right-of-way would be temporary, however, it would have the potential to disrupt these businesses through the loss of access, changes to local circulation, loss of street parking, and restricted use of access. These types of changes, without mitigation, could result in adverse effects. Moving the project alignment to another route would avoid adverse effects to local minority or minority-serving businesses, but would fail to provide the increased long-term mobility and access for minority communities.

The main factor affecting the intensity of construction-related impacts to local businesses would be the construction technique for the below-grade sections. Below-grade sections would extend from Victoria Avenue along the Harbor Subdivision to 60th Street along Crenshaw Boulevard and from 48th Street to Exposition Boulevard along Crenshaw Boulevard. These sections are populated by small business and multi-family residential buildings. While the entire duration of construction for the project is five years, the cut-and-cover sections would require excavation of sequential segments within the Crenshaw Boulevard right-of-way and would result in temporarily reduced street capacity, loss of parking, changes to circulation, and other inconveniences for five to eight months per

segment. No permanent displacement of local minority-serving commercial uses or residential uses is anticipated.

With the exception of the below-grade stations at King and Exposition Boulevards and the below-grade transition from the Harbor Subdivision to Crenshaw Boulevard, other less intrusive and disruptive construction techniques may be feasible. Their feasibility is dependent on whether such construction techniques, like tunnel-boring, can fit within the established financial plan for the project. Should these techniques be proven to not be feasible, the temporary disruption associated with cut-and-cover construction would occur to minority and low-income areas. Although the project would provide long-term mobility improvements and access for minority and low-income populations, the construction effects may have environmental justice implications from difficulty of access to local businesses and services. Implementation of Mitigation Measure CON34 would result in no adverse effects.

The MOSs would have similar environmental justice construction impacts as the LPA.

Design Options

The design options would have similar environmental justice construction impacts as the LPA.

Mitigation Measures

CON34 Metro shall make provisions for temporary signage and advertising during construction to maintain access for residents and help businesses that are partially blocked or that have inconvenient access due to construction activity.

4.15.3 CEQA Determination

The CEQA determination compares the effects of the proposed project, design options and MOSs with the existing conditions described in the affected environment/existing conditions section. The CEQA Guidelines implicitly acknowledge that construction-related changes may be the source of significant impacts to the physical environment even though these effects may be short-term in duration. Typically significant construction effects are identified in CEQA as changes to the physical environment that are particularly disruptive or that have specific health and safety considerations. The construction effects identified above by in large require the development and implementation of a comprehensive array of construction management and abatement measures as described previously under the Mitigation Measures heading. Those environmental changes requiring mitigation under the NEPA analysis would be considered significant for purposes of CEQA and include:

- Traffic, Circulation, and Parking
- Visual Quality
- Air Quality
- Noise and Vibration
- Ecosystems/Biological Resources

- Geotechnical/Subsurface/Seismic/Hazardous Materials
- Water Resources
- Historic, Archaeological and Paleontological
- Economic and Fiscal
- Environmental Justice

Because the previous NEPA analysis uses existing conditions to analyze construction effects, the preceding discussion has addressed all topic areas of environmental effects as required by CEQA, except for air quality. Based on the NEPA analysis of the above topics, all impacts, other that air quality, would be mitigated to less-than-significant level under CEQA. The following is a discussion of the effects of air quality during construction under CEQA.

Air Quality

The South Coast Air Quality Management District (SCAQMD) has established significance thresholds for regional and local emissions. As shown in Table 4-54, regional construction emissions would exceed the NO_X significance threshold and localized emissions would exceed the NO_X, $PM_{2.5}$, and PM_{10} significance thresholds. Therefore, without mitigation, the proposed project would result in a significant impact related to regional construction emissions. Implementation of Mitigation Measures CON4 through CON24 would reduce the effects of construction on air quality. However, regional and localized emissions would continue to exceed the SCAQMD significance thresholds. Therefore, the proposed project would result in a significant and unavoidable impact related to construction air emissions.

The greatest potential for TAC emissions during construction would be diesel particulate emissions associated with heavy equipment operations. According to SCAQMD methodology, health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. "Individual Cancer Risk" is the likelihood that a person continuously exposed to concentrations of TACs over a 70-year lifetime will contract cancer based on the use of standard risk assessment methodology. Given the short-term construction schedule and that construction activity would be transient along the corridor, construction activity would not result in a long-term (i.e., 70 years) source of TAC emissions. No residual emissions and corresponding individual cancer risk are anticipated after construction. Therefore, construction activity would in a less-than-significant impact related to toxic air contaminants.

Potential sources that may emit odors during construction activities include equipment exhaust and architectural coatings. Odors from these sources would be localized and generally confined to the immediate area surrounding the construction site. Construction activity would utilize typical construction techniques, and the odors would be typical of most construction sites and temporary in nature. Therefore, construction activity would result in a less-than-significant impact related to odors. Construction activity would generate approximately 39,135 metric tons of greenhouse gas emissions over an approximately five-year construction period. The SCAQMD recommends that construction-related greenhouse gas emissions be amortized over a 30-year period and

included in annual operations emissions. Refer to the operational air quality analysis for a discussion of greenhouse gas emissions. As previously discussed, GHG emissions would result in a less-than-significant impact.

4.16 Growth-Inducing Impacts

4.16.1 Existing Conditions/Affected Environment

4.16.1.1 Study Area

The study area crosses through two of the 14 subregions in SCAG's planning area: the City of Los Angeles and the South Bay Cities Council of Governments (SBCCOG) subregions. The Cities of Inglewood, Hawthorne, and El Segundo are located within the SBCCOG subregion.

The primary regional growth management plans are developed by SCAG. SCAG initiated a comprehensive growth visioning process called the Southern California Compass (Compass). The Compass process seeks to accommodate growth while maintaining mobility, livability, prosperity, and sustainability goals for residents in the SCAG region. SCAG also developed the RCPG, which is described in Section 4.1 Land Use and Development.

4.16.1.2 Population Growth

As illustrated in Table 4-58, the SCAG region had a 2010 population of roughly 18.4 million persons. For the 2000 through 2010 period, Los Angeles County contributed the largest share of total population change for the region, at nearly 40 percent, with the addition of 921,750 residents. However, in terms of the relative growth rate, Los Angeles County was the slowest growing county in the SCAG region, with an annual average growth rate of approximately 0.8 percent. Table 4-59 shows that Los Angeles County had the largest number of households (917,143 households), which comprises 40 percent of the total for the region.

Table 4-58. Regional Population Growth, 2000-2010

County	Year 2000 Population	Year 2010 Population	2000-2010 Change	2000-2010 Annual Average % Change
Imperial	142,361	183,029	40,668	2.0%
Los Angeles	9,519,330	10,441,080	921,750	0.8%
Orange	2,846,289	3,166,461	320,172	0.9%
Riverside	1,545,387	2,139,535	594,148	2.5%
San Bernardino	1,710,139	2,073,149	363,010	1.6%
Ventura	753,197	844,713	91,516	1.0%
SCAG Region	**16,516,703**	**18,847,967**	**2,331,264**	**1.1%**

Source: State of California, Department of Finance, E-4 Population Estimates for Cities, Counties and the State, 2001-2010, with 2000 Benchmark. Sacramento, California, May 2010.

Table 4-59. Households in the Region, 2000-2010

County	Year 2000 Households	Year 2010 Households	2000-2010 Change	2000-2010 Annual Average % Change
Imperial	131,317	171,610	40,293	2.13%
Los Angeles	9,344,078	10,261,221	917,143	0.8%
Orange	2,803,924	3,122,678	318,754	0.9%
Riverside	1,511,034	2,104,010	592,976	2.6%
San Bernardino	1,664,402	2,022,249	357,847	0.2%
Ventura	739,985	830,312	90,327	1.0%
SCAG Region	**16,194,740**	**18,512,080**	**2,317,340**	**1.1%**

Source: State of California, Department of Finance, E-4 Population Estimates for Cities, Counties and the State, 2001-2008, with 2000 Benchmark. Sacramento, California, May 2008.

Table 4-60 shows the near-term population growth for all of the cities in the study area. Between 2000 and 2010, the City of Los Angeles has the highest annual average growth rates, at 1.1 percent. The City of El Segundo, which had the smallest population in 2000 (16,033 people), had about the same annual average growth rate (0.6 percent) as the Cities of Hawthorne and Inglewood (0.5 percent) between 2000 and 2010.

Table 4-60. Population Growth for Study Area Cities, 2000-2010

City	Year 2000 Population	Year 2010 Population	2000-2010 Change	2000-2010 Annual Average % Change
El Segundo	16,033	17,049	1,039	0.5%
Hawthorne	84,112	90,145	6,533	0.6%
Inglewood	112,580	119,053	7,843	0.6%
Los Angeles	3,694,742	4,094,764	482,619	1.1%

Source: State of California, Department of Finance, E-4 Population Estimates for Cities, Counties and the State, 2001-2010, with 2000 Benchmark. Sacramento, California, May 2010.

Table 4-61 also shows that the City of Los Angeles experienced the largest amount of household growth from 2000 to 2010. By 2010, Los Angeles had the largest number of households at 4,008,578 households and the annual average percent change in number of households at 0.9 percent, compared to the other cities in the study area.

4.16.1.3 Employment Growth

As shown in Table 4-62, total employment in the SCAG region, including self-employment, increased by 56,900 jobs between 2000 and 2010, an estimated 0.7 percent average annual increase. Compared to the other counties in the SCAG region, Los Angeles County was the only county experiencing a negative growth in employment at an average annual average of (-0.3) percent.

Table 4-61. Households for Study Area Cities, 2000-2010

City	Year 2000 Households	Year 2010 Households	2000-2010 Change	2000-2010 Annual Average % Change
El Segundo	16,010	17,026	1,016	0.5%
Hawthorne	83,612	89,645	6,033	0.6%
Inglewood	111,210	117,683	6,473	0.5%
Los Angeles	3,612,145	4,008,578	396,433	0.9%

Source: State of California, Department of Finance, E-4 Population Estimates for Cities, Counties and the State, 2001-2010, with 2000 Benchmark. Sacramento, California, May 2010.

Table 4-62. Regional Employment Growth, 2000-2010

County	2001 Employment	2010 Employment	2000-2010 Employment Change	2000-2010 Annual Average % Change
Imperial	52,000	54,000	2,000	0.4%
Los Angeles	4,424,900	4,280,400	-(144,500)	-(0.3)%
Orange	1,428,400	1,451,300	22,900	0.2%
Riverside	643,900	776,500	132,600	1.7%
San Bernardino	703,600	738,800	35,200	0.5%
Ventura	374,700	383,400	8,700	0.2%
SCAG Region	**7,627,500**	**7,684,400**	**56,900**	**0.07%**

Sources:
1. State of California, Department of Finance, Labor Force Data for Sub-county areas, with 2010 Benchmark. Sacramento, California, 2010.
2. State of California, Department of Finance, Labor Force Data for Sub-county areas, with 2010 Benchmark. Sacramento, California, 2010.

As shown in Table 4-63, out of the four study area cities, the City of Los Angeles the largest decrease in employment numbers (68,200 less jobs); however, the annual average percent change in growth for the City of Los Angeles is roughly the same as the Cities of Hawthorne, and Inglewood. El Segundo was the only jurisdiction to experience an increase with 500 new jobs over the period at an annual average change of 0.5 percent.

4.16.1.4 Projections

As shown in Table 4-64, the region is expected to have a population of nearly 23 million persons and 8.7 million persons employed by 2030. Along with the population and job growth, the region is expected to have a total of roughly 6 million households. The population of Los Angeles County and the employment in Los Angeles County are projected to increase by nearly 1.5 million people and 640,000 jobs between 2010 and 2030. This represents an estimated average annual increase of approximately 75,100 persons (0.7 percent annual population growth) and 32,000 jobs (0.6 percent employment growth). For comparison, the annual average increase was 43,000 jobs, or 1.4 percent, during the 1972 to 2000 period.

Table 4-63. Employment Growth for Study Area Cities, 2000–2010

City	2001 Employment	2010 Employment	2000-2010 Employment Change	2000-2010 Annual Average % Change
El Segundo	10,300	10,800	500	0.5%
Hawthorne	37,000	35,700	-(1,300)	-(0.4)%
Inglewood	47,600	45,100	-(2,500)	-(0.05)%
Los Angeles	1,710,700	1,642,500	-(68,200)	-(0.4)%

Sources:
1. State of California, Department of Finance, 2000 Labor Force Data for Sub-county areas, with 2010 Benchmark. Sacramento, California, 2010.
2. State of California, Department of Finance, 2007 Labor Force Data for Sub-county areas, with 2010 Benchmark. Sacramento, California, 2010.

Table 4-64. Regional Population, Households, and Employment from 2010-2030

County	2010 Population	2030 Population	2010 Households	2030 Households	2010 Employment	2030 Employment
Imperial	189,025	269,874	54,626	83,735	76,724	111,072
Los Angeles	10,718,007	12,221,799	3,404,016	4,120,270	5,022,215	5,660,992
Orange	3,291,628	3,552,742	1,034,027	1,098,474	1,749,985	1,921,806
Riverside	2,085,432	3,143,468	685,775	1,127,780	727,711	1,188,976
San Bernardino	2,059,420	2,713,149	618,782	897,739	770,877	1,178,890
Ventura	865,149	989,765	275,352	332,109	381,680	465,466
SCAG Region	**19,208,661**	**22,890,797**	**6,072,578**	**7,660,107**	**8,729,192**	**10,527,202**

Source: Southern California Association of Governments, 2004 RTP Growth Forecast. April 2007.

For study area cities, forecast information, including population, number of households, and employment, was estimated based on the transportation analysis zones (TAZ) identified for each city, based on the SCAG 2030 Projections in the 2004 RTP. As demonstrated in Table 4-65, the City of Hawthorne is expected to have the most substantial change in population at 1.5 percent per year; however it exhibits the lowest growth per year of households (0.5 percent per year). The City of Los Angeles is anticipated to have the highest growth in households (1 percent per year), compared to the City of Inglewood and the City of El Segundo (both at 0.7 percent per year). The City of Los Angeles is expected to have the largest employment growth, with an anticipated growth rate of over 0.6 percent per year for the 20-year period while the City of Hawthorne and City of Inglewood are projected to have employment growth at 0.5 percent per year.

Table 4-65. Study Area Cities Population, Households, and Employment from 2010-2030

City	2010 Population	2030 Population	2010 Households	2030 Households	2010 Employment	2030 Employment
El Segundo	16,787	19,479	7,218	8,171	65,618	70,647
Hawthorne	90,395	116,725	29,217	32,153	37,915	41,897
Inglewood	119,023	133,072	39,358	44,812	56,859	62,046
Los Angeles	3,950,347	4,309,625	1,372,873	1,637,475	1,994,358	2,223,338

Source: Southern California Association of Governments, Draft 2035 Baseline Projections (2007).

4.16.2 Environmental Impacts/Environmental Consequences

Generally, growth-inducing projects are located in isolated, undeveloped, or underdeveloped areas, necessitating the extension of major infrastructure (e.g., sewer and water facilities, roadways, etc.) or are those that could encourage "premature" or unplanned growth (i.e., "leap-frog" development). Growth-inducing impacts would be considered significant if the proposed project has the potential to induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).

4.16.2.1 No-Build Alternative

The No-Build Alternative would include all existing highway and transit services and facilities, the committed highway and transit projects in Metro's current LRTP, and the committed highway and transit projects in SCAG's 2008 RTP. A substantial permanent change to the physical environment of the study area would not occur under the No-Build Alternative. The No-Build Alternative would not have the potential to induce growth in the project corridor. Therefore no adverse impacts are anticipated related to growth inducement.

4.16.2.2 LPA

The LPA would operate in at-grade, below grade, and aerial segments along Crenshaw Boulevard and the Harbor Subdivision. The LPA would be located within a densely developed urban setting and would not extend into previously undeveloped areas that may induce changes in such areas. Potential indirect growth inducing effects may result from the micro-scale growth or development near proposed stations due to the implementation of local and State land use policies or local planning objectives, which may encourage transit-oriented development, station area planning, or housing density bonuses adjacent to transit corridors. The potential indirect growth is speculative at this time. The LPA or MOSs would not remove a barrier to growth or otherwise induce growth directly. Therefore, no adverse impacts are anticipated related to growth inducement.

4.16.2.3 Design Options

The Below-Grade Crossing at Centinela Option and Alternate Southwest Portal at Crenshaw/King Station Option would not remove a barrier to growth or otherwise induce

growth directly. The Optional Below-Grade Crenshaw/Vernon Station and Optional Aviation/Manchester Station have the potential for transit-oriented development near these locations with the addition of a station; however, such conclusions would be speculative. These areas, Westchester and Leimert Park, have a mix of residential and commercial uses near the proposed optional station locations. Therefore, no adverse impacts related to growth inducement are anticipated for these design options.

4.16.3 Mitigation Measures

No mitigation measures are required.

4.16.4 CEQA Determination

The CEQA determination compares the effects of the proposed project, design options and MOSs with the existing conditions described in the affected environment/existing conditions section. According to CEQA, growth inducing impacts would be considered significant if the proposed project has the potential to induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure). The proposed project intends to meet the existing and future transit needs of the study area. The proposed project would be located within a densely developed urban setting and would not extend into previously undeveloped areas that may induce changes in such areas. As previously mentioned, for the LPA and the design options, potential indirect growth-inducing effects may result from the micro-scale growth or development near proposed stations due to the implementation of local and State land use policies or local planning objectives, which may encourage transit-oriented development, station area planning, or housing density bonuses adjacent to transit corridors. However, this potential indirect growth is speculative at this time. According to CEQA, it must not be assumed that growth is necessarily beneficial, detrimental, or of little significance to the environment. Therefore, no significant growth-inducing impacts are anticipated.

4.16.5 Impacts Remaining After Mitigation

No significant impacts related to growth inducement are anticipated for the proposed project alternatives.

4.17 Cumulative and Indirect Impacts

4.17.1 Cumulative Impact Assessment

An adequate discussion of significant cumulative impacts involves analyzing either (1) "a list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency", or (2) "a summary of projections contained in an adopted local, regional or statewide plan, or related planning document, that describes or evaluates conditions contributing to the cumulative effect. Such plans may include: a general plan, regional transportation plan, or plans for the reduction of greenhouse gas emissions."

This cumulative impact analysis relies on method (2) described above. This cumulative impact analysis incorporates the regional projections from SCAG's 2008 RTP, the Metro 2009 Long Range Transportation Plan, and Measure R, a half-cent sales tax approved by the voters in November 2008. In addition, the following are known large projects that will be completed through the year 2035:

- Baldwin Hills Crenshaw Mall Expansion
- Bedford Parc/Promenade Mixed Used Development
- Buckingham Place Senior Development
- Crenshaw/Exposition Mixed Use Development
- District Square Retail Development
- Forum Site Mixed Use Development
- Home Stretch at Hollywood Park Retail Development
- Inglewood Promenade Retail Development
- Los Angeles County Office Park Development
- Market Plaza Retail Development
- Marlton Square Mixed Use Development
- Prairies Promenade Retail Development
- The Renaissance Residential Development

These plans and projects reflect transportation, population, employment, and land use data for the six-county SCAG area through the year 2035, and are, thus, an appropriate basis for the analysis of cumulative impacts.

The region wide impact analysis conducted in the 2008 RTP PEIR (SCH No. 2007061126, May 2008), serves as the basis for this analysis of cumulative impacts and is incorporated by reference, per Section 15150 of the CEQA guidelines. SCAG states that lead agencies, such as Metro, may use the region-wide impact analysis contained in the RTP PEIR as the basis of their cumulative impact analysis. The RTP PEIR contains a thorough analysis of regional growth and development within the SCAG region and the environmental impacts resulting from implementation of various transportation projects

throughout SCAG's six county region that encompasses approximately 38,000 square miles. Therefore, the RTP PEIR is used as the basis of this cumulative impact analysis and is hereby incorporated by reference per Section 15150 of CEQA guidelines.

The cumulative effects analysis examines the effects of the LPA (alignment, stations, and maintenance facility), design options, and MOSs as described in Chapter 2.0 and discussed in Chapters 3.0, 4.0, and 5.0 within the framework of the cumulative regional transportation analysis contained in the RTP PEIR. These impacts are summarized below:

4.17.1.1 Traffic, Circulation, and Parking

The RTP PEIR indicates that the region is expected to grow in both population and vehicle miles traveled (VMT). Development and redevelopment would result in increased traffic congestion, particularly along Crenshaw Boulevard, with the planned expansion of the Baldwin Hills Crenshaw Plaza. The No-Build Alternative would not affect or contribute to a cumulative effect on traffic circulation or parking. It would not relieve or contribute to traffic congestion. The SCAG RTP PEIR found significant cumulative impacts related to transportation. The LPA, design options, and MOSs would expand regional transportation choices and are aimed at improving regional quality of life and overall mobility. The LPA, design options, and MOSs would result in a decrease in VMT due to the increased use of transit. Therefore, the LPA, design options, and MOSs would result in a beneficial contribution to cumulative traffic circulation impacts.

The increase in transit use reduces the reliance on automobiles and generally reduces the demand for parking on a regional basis. The study area is heavily developed and built out. Crenshaw Boulevard and other areas along the proposed corridor offer limited off-street parking. As outlined in Section 3.0 Transportation Impacts, the supply of parking provided by the LPA, design options, and MOSs would meet the demands of the transit users. Therefore, the proposed project would not contribute to a cumulative impact to on-street parking near transit station areas due to the demand of on-street parking by transit users.

4.17.1.2 Land Use and Development

The projects outlined in the RTP would contribute to new growth or the intensity of development within the SCAG region. As discussed in Section 4.1 Land Use, the SCAG region is expected to grow in population by 24.6 percent (or 5.4 million persons) between 2005 and 2035. Likewise, employment in the region is expected to grow by 24.3 percent during the same time period. The proposed project does not result in adverse direct impacts associated with regional land use under the alternatives or the associated maintenance and operations facilities sites.

Under the LPA, the design options, and MOSs, no new regional growth would be generated, and land use and development patterns are not expected to substantially change at a regional level (See Section 4.1 Land Use and Development and 4.17.1.2 Cumulative Impacts). The LPA, design options, and MOSs, when considered as part of the Metro Long Range Plan, would play an important role in expanding regional transportation choices and in improving regional quality of life and overall mobility.

These alternatives would not be incompatible with the study area's land uses and would provide connectivity between land uses and activity centers. Therefore, no adverse cumulative impacts associated with regional land use are anticipated. No cumulative population growth beyond the RTP projections from the proposed project in conjunction with the projects within the RTP would be expected.

4.17.1.3 Displacement and Relocation of Existing Uses

Implementation of the projects within the RTP would result in substantial right-of way acquisition and considerable displacement of homes and businesses. Implementation of the Crenshaw/LAX Transit Corridor Project would involve termination or non-renewal of leases and right-of-way acquisition, as discussed in Section 4.2 Displacement and Relocation of Existing Uses. No significant cumulative impacts to displacement and relocation were identified in the RTP PEIR. The right-of-way impacts of the project would be mitigated through the use of relocation assistance programs and be isolated to areas along the alignment. Future projects along the alignment, including the LAX Master Plan Project could result in the acquisition and displacement of homes and businesses. However, similar to the proposed project, future projects along the alignment that result in the displacement of existing use would be required to comply with applicable relocation assistance programs. Therefore, the LPA, design options, and MOSs would not make a cumulatively considerable contribution to cumulative displacement and relocation effects.

4.17.1.4 Community and Neighborhoods

Projects included in the RTP are intended to increase the overall accessibility and mobility of persons within the SCAG region. No significant cumulative impacts to community and neighborhoods would result from the RTP. The Crenshaw/LAX Transit Corridor Project would contribute to the beneficial impact of increased accessibility to community resources, businesses, and residences and increased regional mobility. Therefore, the proposed project would not result in an adverse cumulative effect to community cohesion.

4.17.1.5 Visual Quality

The RTP PEIR concludes that RTP projects potentially would obstruct views of scenic resources, thus resulting in a cumulative visual quality impact. With the implementation of the measures identified in Section 4.4 Visual Quality, the LPA for the Crenshaw/LAX Transit Corridor Project would not obstruct views of scenic resources and, therefore, the LPA, design options, and MOSs would not make a cumulatively considerable contribution to an adverse cumulative visual impact when considered in conjunction with the projects in the RTP.

The No-Build Alternative would not include construction activities within the proposed project corridor and therefore, there would be no impacts to scenic resources or increases in light and glare. The No-Build Alternative would not contribute to an adverse cumulative visual impact.

The LPA, design options, and MOSs would require potential acquisitions, remove mature vegetation and landscaping, and require construction of elevated guideway and stations. The LPA, design options, and MOSs would require removal of landscaped medians and roadway

widening on Crenshaw Boulevard (designated scenic highway), construction of large, elevated structural components, and removal of screening vegetation between a residential neighborhood and the BNSF tracks. This would impact the visual character of these areas. Implementation of mitigation measures identified in Section 4.4 Visual Quality would reduce impacts and those impacts would be isolated and not contribute to a cumulative visual impact; therefore, the LPA, design options, and MOSs would not make a cumulatively considerable contribution to cumulative visual quality impacts.

4.17.1.6 Air Quality

The implementation of public transit projects such as the LPA, design options, and MOSs would help to remove vehicles from roadways and freeways, decreasing the VMT and the usage of fuels. Lower automobile VMT corresponds to a reduction of criteria pollutant emissions from the vehicles. Consistent with the RTP PEIR air quality analysis, the LPA, design options, and MOSs would result in a net beneficial contribution effect to cumulative regional air quality resulting from the increased transit ridership and the anticipated reduction in automobile use. The Crenshaw/LAX Transit Corridor Project would contribute to the implementation of the adopted Air Quality Management Plan.

As shown in Section 4.4 Air Quality, the LPA, design options, and MOSs would decrease GHG emissions compared to baseline conditions and would not result in emissions of criteria pollutants that exceed the federal thresholds. The LPA, design options, and MOSs would not make a cumulatively considerable contribution to a cumulative adverse effect on air quality.

4.17.1.7 Noise and Vibration

Noise and vibration impacts are site-specific and there are no known future projects that would increase noise levels in the Crenshaw/LAX Transit Corridor. No noise impacts were identified for the No-Build Alternative. These alternatives would not contribute to cumulative noise and vibration impacts.

Resulting noise and vibration effects of the LPA, design options, and MOSs have been identified from four potential sources: passby noise from LRT vehicles, warning signals and areas of special track work, and ground-borne noise and vibration effects. All noise impacts would be mitigated with the use of soundwalls and placement of special track work away from areas of noise sensitive land uses. Operation of the LPA would not contribute to cumulative noise and vibration impacts.

4.17.1.8 Ecosystems and Biological Resources

The RTP PEIR analysis indicates that cumulative impacts to biological resources could occur due to construction in undeveloped areas and growth and development on natural lands. However, there are no underdeveloped areas, and no sensitive species or habitat located directly within the project area. The No-Build Alternative would not result in physical impacts and therefore, no impacts to sensitive species, habitat, or locally protected trees would occur. Accordingly, the project would not make a cumulatively considerable contribution to the significant cumulative impact to biological resources.

The operation of the LPA proposed project would be along a defined corridor within a highly urbanized area. The LPA, design options, and MOSs are not anticipated to make a cumulatively considerable contribution to adverse cumulative biological resource impacts.

4.17.1.9 Geotechnical/Subsurface/Seismic/Hazardous Materials

Geotechnical hazards are site-specific, and there is little, if any, cumulative geological relationship between the proposed project and future projects. Potential hazards including the Newport-Inglewood fault, liquefaction, and seismically-induced settlement have been identified for the LPA, design options and MOSs. Standard construction procedures for transportation projects ensure that the LPA, design options, and MOSs would consider local geotechnical conditions and address potential impacts with mitigation measures. As with the proposed project, other future projects would be subject to the same regulations pertaining to geotechnical conditions. Therefore, the LPA, design options, and MOSs would not contribute to cumulative impacts related to geotechnical, subsurface, and seismic conditions.

Hazards and hazardous materials could be encountered during construction and operation of the LPA, design options, and MOSs. Mitigation for hazards and hazardous materials impacts would ensure that less-than-significant impacts would occur. The proposed construction activities are not likely to present a substantial cumulative impact in concert with other proposed projects, if conducted in accordance with applicable hazardous waste laws, statues and regulations in conjunction with use of sound hazardous material detection and management practices. Hazardous materials encountered during construction will be removed or treated in place, thus reducing the potential for cumulative impacts. Therefore, LPA, design options, and MOSs would not contribute to cumulative impacts related to hazards and hazardous materials.

4.17.1.10 Water Resources

SCAG's analysis of the RTP PEIR concludes cumulative impacts to water quality would result due to projected growth induced by the RTP, and would include increased impervious surfaces, increased development in alluvial fan floodplains, and increased water demand and associated impacts, such as drawdown of groundwater aquifers.

The No-Build Alternative would have no impacts to water resources. Compliance with NPDES standards and implementation of a SWPPP will be required and would minimize the short-term impacts on water quality. Construction and operation of the LPA, design options, and MOSs will not result in significant impacts on water resources. Compliance with NDPES standards, implementation of a SWPPP, and mitigation measures and Best Management Practices identified in Section 4.9 Water Resources would ensure no significant short- and long-term impacts to drainage patterns, surface waters, groundwater quality, discharge of pollutants, construction-related erosion and sedimentation, or exposure of people or structures to flood-related hazards would occur. The LPA, design options, and MOSs would not make a cumulatively considerable contribution to significant cumulative water quality impacts.

4.17.1.11 Energy

The implementation of public transit projects, such as the proposed project, would help to remove vehicles from roadways and freeways, easing the increase in VMT and the usage of fuels. The LPA, design options, and MOSs would result in less energy consumption than baseline conditions and, as such, would result in a beneficial energy impact. Therefore, the LPA, design options, and MOSs would make a beneficial contribution to the region's cumulative energy impacts.

4.17.1.12 Historic, Archaeological and Paleontological Resources

The RTP PEIR indicates that a significant cumulative impact to cultural resources would result due to a substantial increase in urbanization in the SCAG region. Certain transportation improvements in the RTP would result in significant impacts to historic, archaeological, and paleontological resources. No significant impacts to cultural resources would result from the Crenshaw/LAX Transit Corridor Project. The project area is already heavily urbanized and the proposed project would not make a cumulatively considerable contribution to to the adverse cumulative cultural resources impacts detailed in the RTP PEIR. The proposed project includes requirements that if buildings or structures are altered for the proposed project, modifications will be made in accordance with the Secretary of Interior's Standards such that the impacts would not be adverse and would be less than significant. The alternatives would not considerably contribute to adverse cumulative cultural resources impacts.

Regarding archaeological resources, the proposed project is located in a heavily developed urban area, and no National Register-eligible sites were identified. Therefore, the proposed project would not contribute to cumulative adverse effects in regard to archaeological resources. However, one pre-recorded site was identified eleven feet below the surface; therefore, even with the majority of the project area developed there is the potential for buried archaeological deposits beneath the developed land surface. Discovery of archaeological resources is possible during construction of the LPA, design options, and MOSs, and if a National Register-eligible archaeological resource is damaged or destroyed during construction of the LPA, design options, and MOSs, would contribute to the adverse cumulative effect on archeological resources.

Based upon the paleontological review, the majority of the project area has a high level of sensitivity for paleontological resources, especially at depths below 5 feet. The LPA, design options, and MOSs may require excavation exceeding five feet for below-grade segments, foundations for elevated guideways and at station locations. While it is unlikely, if construction of the LPA, design options, and MOSs destroys a significant paleontological resource, these alternatives would contribute to an adverse cumulative impact on paleontological resources.

4.17.1.13 Parklands and Community Facilities

The No-Build Alternative would not result in physical impacts and therefore, no impacts to parklands or community/public facilities would occur. As identified in Section 4.12 Parklands and Community Facilities, the LPA, design options, and MOSs would have the beneficial impact of situating public transit adjacent to parks, and thereby, potentially increasing accessibility to the parks. Although the proposed project would potentially

make these parklands more accessible, this accessibility would not create such a demand on the parklands that they would need to be expanded or have new facilities constructed. Overall, the alternatives would contribute to beneficial cumulative impacts related to parklands due to the improved accessibility.

The LPA, design options, and MOSs would be served by existing public service facilities and would not generate an increase in the need for new or expanded public services in the vicinity or interfere with response times of police and fire service providers. In addition, the maintenance and operations facility site associated with the LPA, design options, and MOSs would not result in the need for new or expanded public services. The LPA, design options, and MOSs would not contribute to adverse cumulative impacts related to community/public facilities.

4.17.1.14 Economic and Fiscal Impacts

The anticipated economic and fiscal impacts discussed in Section 4.13 Economic and Fiscal Effects include regional economic activity, construction employment, government revenues, and construction disruptions (primarily access) to adjacent and nearby businesses in the project corridor. Generally, government revenues directly associated with purchases of materials and supplies would be sales tax. The amount of materials and supplies required for the proposed project, however, is relatively small compared to all construction projects that would be on-going in the region. As such, it is unlikely that the state or local governments would see a substantial increase in sales tax revenues. It is expected that the regional labor force would meet the expected demand for labor for all of the alternatives. It is not expected that the labor expenditures would result in substantial net new expenditures for construction labor in the region. As such, economic and fiscal impacts would be less than significant for all project alternatives. The LPA, design options, and MOSs are not expected to contribute to an adverse cumulative economic and fiscal impact.

4.17.1.15 Safety and Security

The No-Build Alternative would not result in safety or security impacts. It would be physically and financially impossible to protect all transportation systems contemplated in the RTP from natural disaster or human caused incidents. There is nothing inherent in transportation improvements that would be reasonably anticipated to result in significant cumulative safety and security impacts. Community outreach has identified concern over the pedestrian safety of an at-grade alignment along Crenshaw Boulevard. Crenshaw Boulevard would contain one at-grade segment, which could have a potential cumulative effect in the area. Implementation of Mitigation Measures **SS1** through **SS9** would ensure that these effects are reduced to less-than-significant levels. In addition, implementation of the LPA, design options, and MOSs, or other RTP projects may have a beneficial cumulative effect in this area, due to safety and security elements (personnel, technology and physical improvements) associated with these projects. The LPA, design options and MOSs would not make a cumulatively considerable contribution to a significant cumulative safety or security impact.

4.17.1.16 Construction Impacts

Construction impacts, by nature, would be temporary and intermittent over the construction period for the Crenshaw/LAX Transit Corridor Project. Over this time period, other developments in the vicinity may compound construction nuisances, such as air quality, noise, and traffic delays, for the community and motorists in isolated areas in and around the Crenshaw/LAX Transit Corridor. The project area is a growing area, and major development adjacent to the proposed project alignment could potentially have a short-term cumulatively considerable construction impact. Exposition Phase I will have been completed by the time construction of the Crenshaw/LAX Transit Corridor Project will begin. Exposition Phase II is scheduled to be completed in 2015 and construction is anticipated to occur at the same time as the Crenshaw/LAX Transit Project. The construction of Exposition Phase II would occur more than three miles to the west and the likelihood of a direct combined effect would be low. However, there could be some subregional traffic effects from construction-related vehicles and temporary street closures on haul routes and construction sites, thereby affecting people traveling across multiple communities. The Crenshaw/LAX Transit Corridor Project includes measures to minimize construction impacts and thereby, reduce the proposed project's contribution to cumulative construction impacts. However, in the long-term, construction impacts would not make a cumulatively considerable contribution to a significant cumulative construction impact.

4.17.2 Indirect Impact Assessment

4.17.2.1 Methodology

CEQA Guidelines define three types of impacts, direct or primary impacts that are caused by a project and occur at the same time and place, indirect or secondary impacts that are reasonably foreseeable and caused by a project, but occur at a different time or place and cumulative impacts (described above). The CEQA Guidelines state the following with regard to indirect impacts:

An indirect physical change in the environment is a physical change…which is not immediately related to the project, but which is caused indirectly by the project. If a direct physical change in the environment in turn causes another change in the environment, then the other change is an indirect change in the environment (Section 15064 (d)(2)).

"Indirect or secondary effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems (Section 15358)(a)(2))."

As stated in Section 15126.2(d) of the Guidelines, a growth-inducing impact could occur if: "…the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects that would remove obstacles to population growth (a major expansion of a waste water treatment plant might, for example, allow for more construction in the service areas). Increases in the population may tax existing

community service facilities, requiring construction of new facilities that could cause significant environmental effects."

A project may have some characteristic that may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. For example, the construction of a new sewage treatment plant may facilitate population growth in the service area due to the increase in sewage treatment capacity, which may lead to an increase in air pollution from man-made mobile and stationary sources. Section 15126.2(d) of the Guidelines concludes by cautioning that "It must not be assumed that growth in area is necessarily beneficial, detrimental, or of little significance to the environment."

4.17.2.2 Traffic, Circulation, and Parking

The proposed project is a transportation project that would decrease traffic volumes in the project corridor and in the region. Under the LPA, design options and MOSs, impacts identified included, potential for spillover parking in neighborhoods and the potential for traffic queuing delays at some intersections. These impacts are fully evaluated in Section 3.0 Traffic, Circulation, and Parking. Indirect impacts associated with the project could include induced demand in the form of increase in travel to the area to take advantage of transit oriented development that could occur. However, based on past examples of TOD, these services would mostly be small scale neighborhood serving establishments and would not draw traffic from outside the area adding to congestion. In addition, as these services would be accessible by transit, it is reasonable to assume many people would choose to arrive by transit rather than automobile. Therefore, the LPA, design options and MOSs would not result in adverse indirect effects associated with traffic, circulation and parking.

4.17.2.3 Land Use and Development

The proposed project does not result in adverse direct impacts associated with regional land use under the alternatives or the associated maintenance and operations facilities sites. Under the LPA, design options and MOSs, no new regional growth would be generated, and land use and development patterns are not expected to substantially change at a regional level (See Section 4.1 Land Use and Development). The proposed stations under the LPA, design options and MOSs are located in areas with existing bus transit service and therefore would not introduce a new land use type into the area. Station areas will be designed to be integrated into current and future development.

The development of these stations and the forecasted growth in the area may indirectly provide an opportunity for transit oriented development. Initial development opportunities could involve vacant parcels and parking lots or parcels required during construction. However, these properties would remain subject to the land use controls of the local jurisdiction. Therefore, the LPA, design options and MOSs would not result in adverse indirect effects associated with land use compatibility or regional growth.

4.17.2.4 Displacement and Relocation of Existing Uses

Implementation of the Crenshaw/LAX Transit Corridor Project would involve termination or non-renewal of leases and right-of-way acquisition, as discussed in Section

4.2 Displacement and Relocation of Existing Uses. These effects would be direct in nature and would relate to the displacement of housing only. Therefore, the LPA, design options and MOSs would not result in adverse indirect effects associated with displacement or relocation.

4.17.2.5 Community and Neighborhood

The LPA, design options and MOSs would not create additional barriers, disruption, or displacement in the existing established communities and neighborhoods along the Harbor Subdivision. In addition, these alternatives would not alter or block access to community assets, displace on- or off-street parking spaces, impact economic development, result in changes to population, community cohesion and interaction, social values, quality of life, or result in isolation. Although some mature trees and parking would be removed to accommodate the proposed project which could modify the character of the neighborhood, generally these changes would occur in urbanized areas. The proposed project would also contribute to an overall urbanization of the area by adding urban elements (i.e., the proposed project) the area is currently heavily traversed by bus and other traffic and would not result in a loss of community cohesion. Therefore, the LPA, design options and MOSs would not result in adverse indirect effects associated with communities and neighborhoods.

4.17.2.6 Visual Quality

Visual impacts associated with the LPA, design options and MOSs are discussed in Section 4.4 Visual Quality. The analysis determined that changes to the visual character of the project area would occur as a result of the proposed project. These changes would be the result of the addition of a fixed guideway in Crenshaw Boulevard with overhead wires and OCS poles. In addition landscaping would be removed as part of the proposed project. These would be direct effects of the proposed project. Indirect effects could include the addition of further urban elements along the corridor which could also affect visual resources, cast shadows and result in increased light and glare. However, no such urban elements have been identified at this time. Therefore, the LPA, design options and MOSs would not result in adverse indirect effects associated with visual quality.

4.17.2.7 Air Quality

Air quality impacts related to the proposed project are evaluated in Section 4.5 Air Quality. The analysis determined that the LPA, design options and MOSs would not result in adverse or significant air quality impact. The climate change analysis in Section 4.5 Air Quality includes an assessment of indirect emissions associated with electricity generation. The analysis determined that indirect greenhouse gas emissions would not contribute to an increase in regional GHG emissions. Therefore, the LPA, design options and MOSs would not result in adverse indirect effects associated with air quality.

4.17.2.8 Noise and Vibration

Noise impacts are evaluated in Section 4.6 Noise and Vibration. As discussed in Section 4.6, the LPA, design options and MOSs have four potential sources of noise and vibration impacts during operations. These sources are: passby noise from LRT vehicles, warning signals at grade crossings, areas of special trackwork, and maintenance yards all of which

would occur as a direct result of the proposed project. Therefore, the LPA, design options and MOSs would not result in adverse indirect effects associated with noise and vibration.

4.17.2.9 Ecosystems and Biological Resources

As discussed in Section 4.7 Ecosystems and Biological Resources, there are currently no sensitive species or habitat located directly within the project area. The LPA, design options and MOSs could require removal or disturbance of mature trees along Crenshaw Boulevard. Removal or disturbance of vegetation during the nesting season could affect the habitat and any bird species that are present. However, mitigation measures have been included in the project to reduce potential impacts. Impacts to ecosystems and biological resources would be site specific in nature. Therefore, the LPA, design options and MOSs would not result in adverse indirect effects associated with ecosystems and biological resources.

4.17.2.10 Geotechnical/Subsurface/Seismic/Hazardous Materials

Section 4.8 Geotechnical/Subsurface/Seismic/Hazardous Materials, analyzes the potential for geotechnical hazards to occur, and modifications have been made to the proposed project to address these potential hazards. The risks from these types of hazards are site-specific in nature and have been fully evaluated. Therefore, the LPA, design options and MOSs would not result in adverse indirect effects associated with geotechnical/subsurface/seismic/hazardous materials.

4.17.2.11 Water Resources

The study corridor is in an urbanized area in which much of the runoff does not seep into the ground. The proposed project could result in a marginal increase of impervious surfaces due to the construction. The proposed project would not alter the drainage or increase the amount of runoff. Nonetheless, mitigation measures are included to ensure impacts are minimized. These measures would control drainage during construction and operation of the proposed project. Therefore, the LPA, design options and MOSs would not result in adverse indirect effects associated with water resources.

4.17.2.12 Energy

The LPA would help remove vehicles from the roadways, easing the increase in VMT and usage of fuels. Indirect impacts that could occur would be reduced travel times on the roadway, reduced congestion and cleaner air from the reduction in tailpipe emissions. Therefore, the LPA, design options and MOSs would have a beneficial indirect effect.

4.17.2.13 Historic, Archaeological and Paleontological Resources

Impacts related to historic, archeological and paleontological resources are identified in Section 4.11. The LPA would not result in a direct change to the adjacent historic properties. However, there is a risk of settlement and damage that may result from both tunnel and station construction. In addition, construction period effects could include restriction of access to the businesses and therefore negatively affect their economic viability. The LPA, design options and MOSs would only affect those properties either directly adjacent to the alignment or in areas where excavation would occur. Therefore, the LPA, design options and MOSs would not result in adverse indirect effects associated with historic, archeological, and paleontological resources.

4.17.2.14 Parklands and Community Facilities

Impacts related to parklands and community facilities are evaluated in Section 4.12. Impacts involve physical acquisition; displacement, or relocation. Direct impacts would occur along the entire alignment since the project is at-grade. Indirect impacts involve changes to pedestrian or vehicular access and would occur at facilities adjacent to or in close proximity to the alignment. The intensity of impacts would be highest near stations, as they would require the most construction and changes to the existing patterns and decrease with distance from the alignment. Additional indirect effects would include increased access and use of parklands and community facilities near stations and reduction in traffic congestion, which could benefit police and fire response times. Indirectly, the LPA would provide opportunities for transit-oriented development around station areas, which includes a residential use component. Residential uses may increase demand for local parks and other community facilities, and potentially influence a demand for additional recreational and other facilities. However, those uses would not increase demand such that additional impacts would occur. Therefore, the LPA, design options and MOSs would not result in adverse indirect effects associated with parklands and community facilities.

4.17.2.15 Economic and Fiscal Impacts

Indirect economic impacts would include those secondary effects that would occur, such as increased economic activity for merchants near the stations due to additional foot-traffic on the streets. Section 4.13 Economic and Fiscal Impacts includes a discussion of the potentially for new development or redevelopment to occur within the project corridor. These would be beneficial indirect effects.

4.17.2.16 Safety and Security

Safety and security concerns generally would occur along the alignment, in particular, immediately adjacent to the track where opportunities for train/pedestrian incidents have the greatest potential to occur. Impacts related to safety and security would be direct impacts. Therefore, the LPA, design options and MOSs would not result in adverse indirect effects associated with safety and security.

4.17.2.17 Construction Impacts

Generally, indirect construction effects would be related to access. These impacts could occur at any point during the construction phase, when construction disrupts the normal flow of traffic resulting in delays or lack of access to businesses. Additionally, access to sidewalks and other amenities could be disrupted as well. However, these effects would be temporary and intermittent. Indirect benefits of construction would include economic benefits in the form of construction spending and jobs. Therefore, the LPA, design options and MOSs would not result in long-term adverse indirect effects associated with construction.

4.18 Environmental Justice

The need for the study of a mass transit service along the Crenshaw/LAX Transit Corridor has developed over the years, in a large part due to issues that pertain to environmental justice. Over the years as Metro has developed and invested in its bus and rail systems throughout the County of Los Angeles. However, the Crenshaw/LAX Transit Corridor remained an overlooked and underserved community that contained a large transit dependent population that is characterized by being primarily minority and low-income. Although several studies had been completed regarding mass transit in the Corridor, there has not been a comprehensive study that takes into account all of the unique facets of the communities within the Corridor until now. The present study is intended to bridge the gap between regional transit planning and adequately serving transit dependent communities within the Crenshaw/LAX Transit Corridor.

This section describes the existing conditions related to environmental justice indicators within the study area. The potential impacts to minority, low-income, elderly, and LEP communities will be assessed to determine if a disproportionate share of the proposed project impacts will be placed on these communities. Social and economic impacts are not considered impacts under CEQA and, therefore, there is no CEQA Determination discussion in this section. Instances where social issues affect the significance of environmental impacts are discussed in other sections of this EIS/EIR.

Data from the 2000 United States (U.S.) Census was used for the demographic and socioeconomic data. Although this data is over ten years old, it is the most comprehensive demographic and socioeconomic data available for analysis at the Census tract level. The American Community Survey (ACS) updates most demographic and socioeconomic data for cities and counties every two years, but not for Census tracts. In order to better compare the Census tract data, the data for the other geographies (Los Angeles County and cities) are also from the 2000 U.S. Census.

4.18.1 Affected Environment/Existing Settings

4.18.1.1 Los Angeles County

The characteristics of Los Angeles County are shown in Table 4-66. Approximately 69 percent of the Los Angeles County population is characterized as minority. The FHWA uses the following definition given in Title IV of the Civil Rights Act of 1964 to define "minority":

Black	a person having origins in any of the black racial groups of Africa
Hispanic	a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race
Asian	a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent
American Indian	a person having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition

Table 4-66. Demographic Characteristics of Los Angeles County

Characteristic	Value
Total Population	9,519,338 Persons
Total Households	3,270,909 Households
Percent population low-income	18%
Median Household income	$42,189
Percent Minority	69%
Percent Limited English Proficiency, Age 5 or older	16%
Percent of Population over 65 years of Age	9.7%
Unemployment Rate	5%

Source: U.S. Census Bureau, 2000.

Native Hawaiian or other Pacific Islander — a person having origins in any of the original peoples of Hawaii, Guam Samoa, or other Pacific Islands

The FHWA uses the following definition given in Title IV of the Civil Rights Act of 1964 to define "low-income":

Low-income — a person whose household income (or in the case of a community or group, whose median household income) is at or below the U.S. Department of Health and Human Services (HHS) poverty guidelines.

The largest minority population is Hispanic, making up approximately 45 percent of the total population. According to the 2000 U.S. Census, approximately 18 percent of Los Angeles County is characterized as low-income. The percentage of persons with Limited English Proficiency (LEP population) over the age of five for Los Angeles County is 16 percent (and, of this percentage, 12 percent speak only Spanish). The percentage of elderly (age 65 and older) in Los Angeles County is 9.7 percent of the total population. The County of Los Angeles has an unemployment rate of 5 percent.

4.18.1.2 Study Area

The study area for the Crenshaw/LAX Transit Corridor Project traverses various communities within Los Angeles County. These include the Cities of Los Angeles, Inglewood, Hawthorne, El Segundo, and unincorporated areas of Los Angeles County. In the City of Los Angeles, the study area includes several City-designated communities/ neighborhoods, including Mid-City, Crenshaw, and Jefferson Park. As shown in Table 4-67, according to the 2000 U.S. Census, there are 370,362 persons residing in the study area. In addition, there are 126,934 households in the study area. The study area has an overall employment density of approximately 4,950 jobs per square mile.[5] The average

[5] There are approximately 229,400 jobs in the census tracts associated with the study area. These census tracts comprise a total area of 55.29 square miles. The total area of the Census tracts exceeds the Crenshaw/LAX Transit Corridor total area of 33 square miles because the geography of various Census tracts that were used for the analysis extends beyond the Corridor boundaries.

Table 4-67. Study Area Demographic and Socioeconomic Data

General Characteristics		Value
Total Persons		370,362
Total Households		126,934
Race	**% of Total Population**	**Persons**
White	6.3%	23,199
Black or African American	43.6%	161,487
American Indian or Native Alaskan	0.3%	1,078
Asian	5.2%	19,275
Native Hawaiian and Other Pacific Islander	0.3%	1,180
Some Other Race	0.3%	1,227
Two or more Races	2.2%	7,998
Hispanic or Latino	41.8%	154,918
Total Minority Population	93.7%	347,163
Annual Income	**% of Total Working Population /a/**	**Total**
Less than $10,000	22.3%	38,484
Between $10,000 and $14,999	14.5%	24,912
Between $15,000 and $19,999	11.6%	20,027
Between $20,000 and $24,999	10.0%	17,281
Between $25,000 and $29,999	8.5%	14,584
Between $30,000 and $39,999	12.9%	22,149
Between $40,000 and $59,999	14.2%	24,428
Between $60,000 and $99,999	4.1%	7,019
Over $100,000	1.9%	3,309
Median Household Income		$34,505
Poverty Levels	**% of Total Population /b/**	**Total**
Population below Poverty Threshold	23.1%	84,658
Population above Poverty Threshold	76.9%	282,102

/a/ The total working population is 172,193 persons.
/b/ Percentage of the total population evaluated for poverty status (366,760 persons), which is 99 percent of the total population.
Source: 2000 U.S. Census.

unemployment rate for the study area is 6.1 percent, compared to the overall Los Angeles County unemployment rate of 5 percent.

Approximately 94 percent of the study area population belongs to a minority group, as shown in Table 4-67. The minority group with the largest representation in the study area is African-Americans (44 percent). The second largest minority group in the study area is Hispanics/Latinos (42 percent). The study area is comprised of less than 10 percent of the following races: White, American Indian or Native Alaskan, Asian, Native Hawaiian or other Pacific Islander, or other race. Of the total population, 2.2 percent identify themselves as belonging to more than one race. The racial density distribution of the Crenshaw/LAX Transit Corridor is shown in Figure 4-67. LAUSD school enrollment data for the last five school years (2005-2006 to 2009-2010) confirms that the area is still predominately minority, with African Americans and Hispanics/Latinos

representing approximately 99 percent of the enrollment in elementary, middle, and high schools. There has been a demographic shift from a predominately African-American student population at local schools to a predominately Hispanic/Latino student population.[6] Based on the school data, the study area remains predominately minority.

In terms of income, the median household income in the study area was $34,505.00 in 1999. Of the various income levels shown in Table 4-67, the highest percentage of the working population (22.3 percent) earned less than $10,000 per year. In the 2000 U.S. Census, 99 percent of the study area's population (366,760 persons) was evaluated for poverty status. Poverty status computations are derived by the U.S. Census using the Health and Human Services poverty thresholds (Table 4-68). As shown, 23 percent of the population in the study area is living below the poverty threshold. The distribution of households below poverty in the Crenshaw/LAX Transit Corridor is shown in Figure 4-68.

Table 4-68. 2000 U.S. Census Poverty Thresholds

Household Size	Income Threshold
One-Person	$8,794.00
Two-Person	$11,239.00
Three-Person	$13,738.00
Four-Person	$17,603.00
Five-Person	$20,819.00
Six-Person	$23,528.00
Seven-Person	$26,754.00
Eight-Person	$29,701.00
Nine-Person	$35,060.00

Source: U.S. Census Bureau, Housing and Household Economic Statistics Division, 2000.

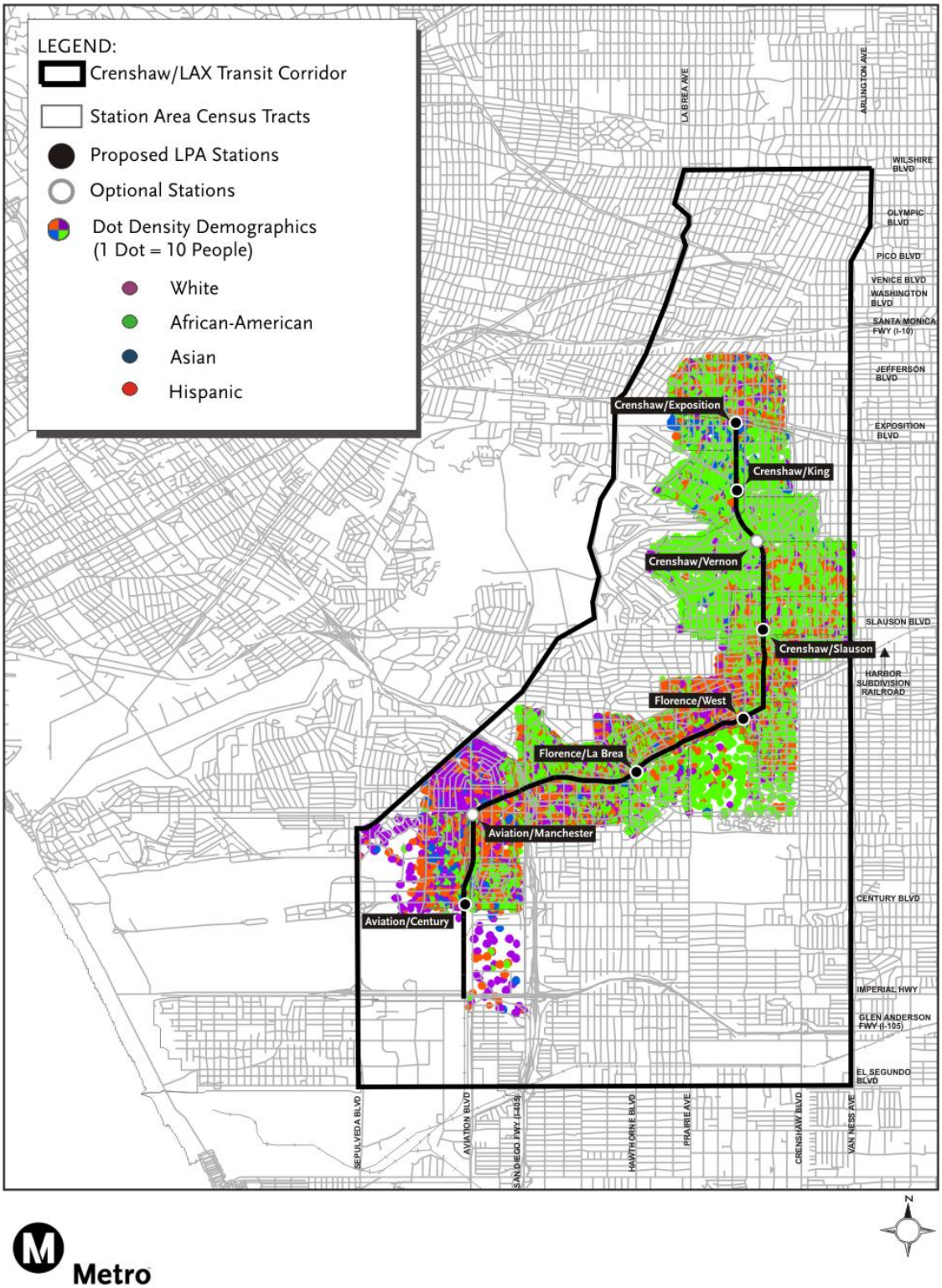
4.18.1.3 Proposed Station Areas

In order to analyze the socioeconomic impacts of the proposed stations, the census tracts within 0.25 mile of each of the proposed station locations were evaluated. The results are summarized in Table 4-69.

As shown in Table 4-69, 10 of the 13 proposed station areas have a minority population of over 50 percent. Only the Aviation Boulevard/Metro Green Line Aviation Station had a minority population of less than 50 percent. Seven of the 13 proposed station areas have a racial majority of African-Americans, with five of the proposed station areas containing an ethnic majority of Hispanics.

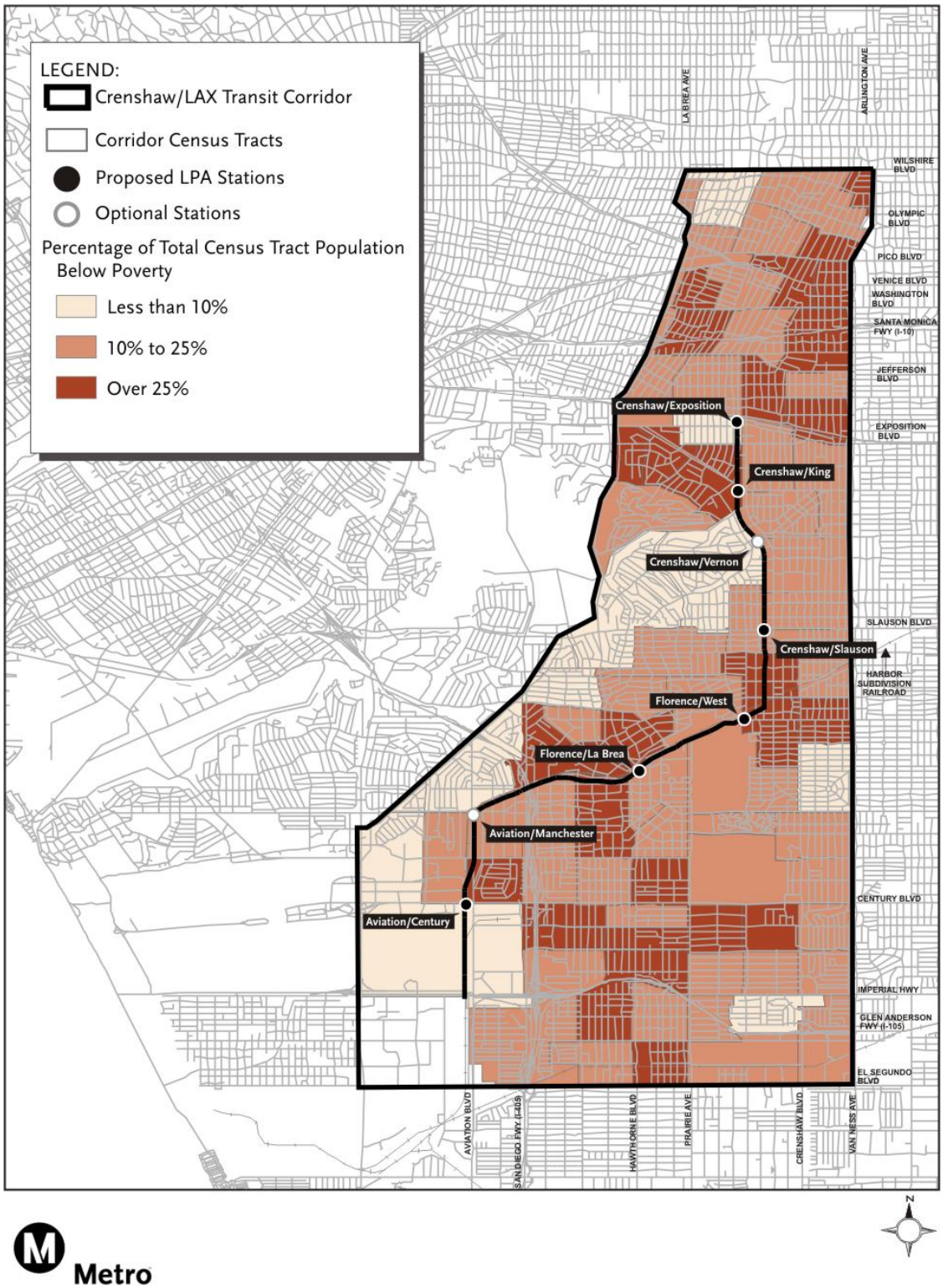
[6] The percentage of African-Americans in schools in the study area has changed from an average of 50 percent in 2005 to 40 percent in 2010. Conversely, the percentage of Hispanic/Latinos in schools in the study area has changed from an average of 50 percent in 2005 to 60 percent in 2010. Los Angeles Unified School District School Profiles website, *http://search.lausd.k12.ca.us/cgi-bin/fccgi.exe?w3exec=school0*, accessed February 8, 2011.

Figure 4-67. Demographic Characteristics of the Corridor



Source: ESRI and TAHA, 2008

Figure 4-68. Station Area Poverty Distribution



Source: ESRI and TAHA, 2008

Table 4-69. Station Area Demographic Data

Station	Census Tracts Affected	Percent Minority	Largest Minority Group (% of Total Population)	Median Household Income	% of Population Below Poverty Threshold
Exposition	2187, 2193, 2200, 2342	97.6%	African-American (55.1%)	$28,418	20.1%
King	2342, 2343, 2361	98.6%	African-American (85.9%)	$29,283	22.1%
Vernon (optional)	2343,2345,7032	97.23	African-American (81.2%)	$42,605	13.6%
Slauson	2346, 2347	98.4%	African-American (67.5%)	$30,568	18.7%
West	2352.02, 6009.12	97.6%	Hispanic (53.0%)	$29,892	28.2%
La Brea Ave	6009.02, 6010.01, 6012.11, 6013.02	96.4%	African-American (62.7%)	$27,480	26.2%
Manchester (optional)	2771, 2772, 6014.01	76.3%	Hispanic (41.8%)	$45,785	14.6%
Century	2772, 2774, 2780	76.5%	African-American (34.9%)	$41,150	19.7%

Source: 2000 U.S. Census.

Seven of the 13 proposed station areas have a median household income that is lower than the average median household income for the entire study area ($34,505.00). Only one proposed station area, the Aviation Boulevard/Metro Green Line Aviation Station, have a median household income above $50,000.00. This same proposed station area is the only one where less than ten percent of the residential population lives below the poverty threshold.

The density of persons that have identified themselves as White (non-Hispanic), African-American, Asian, and Hispanic within a 0.25-mile from the proposed station areas is shown in Figure 4-67.

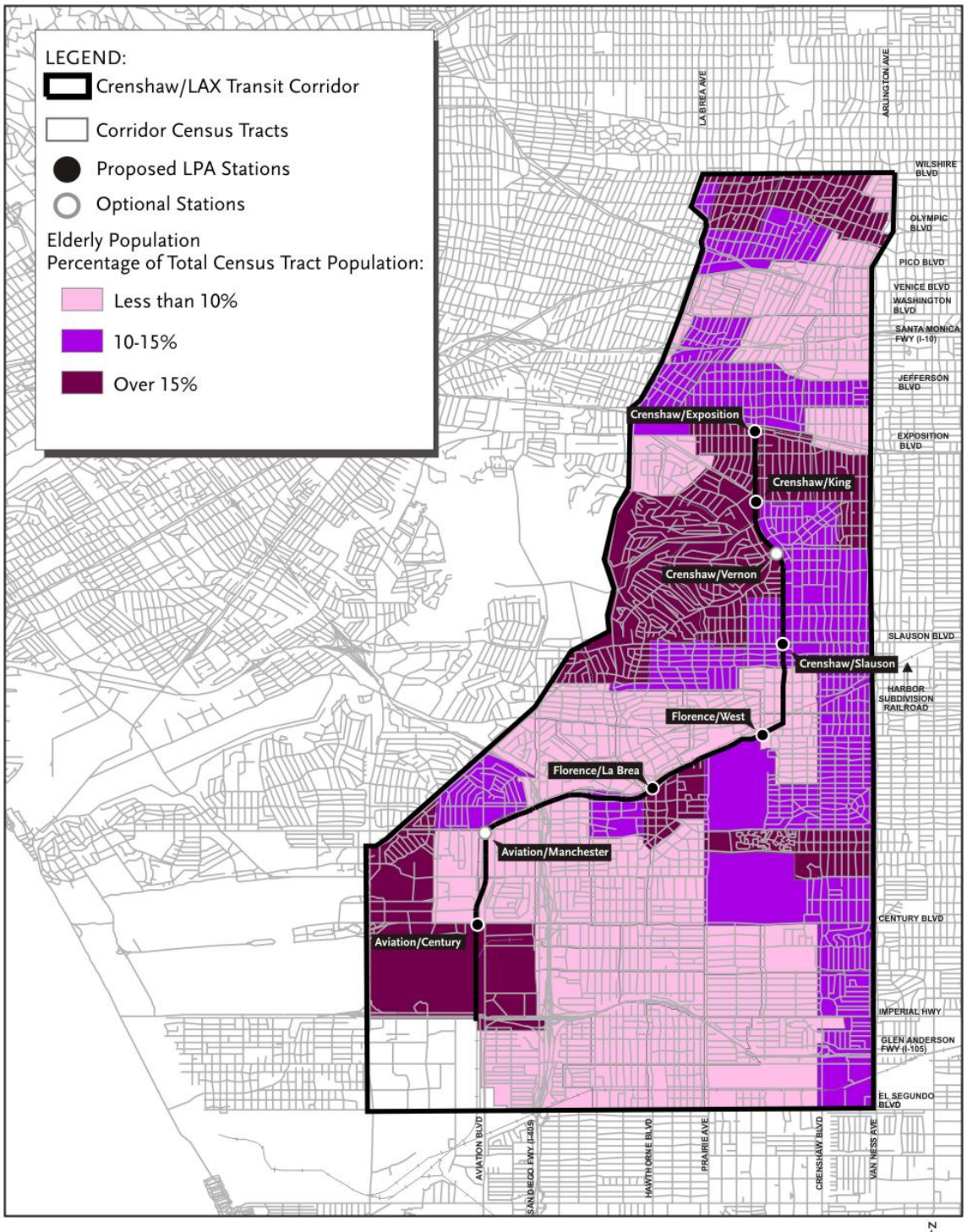
4.18.1.4 Elderly Population

According to the 2000 U.S. Census, approximately 8.9 percent of the study area population is elderly (approximately 32,971 persons). The percentage of elderly in the Corridor population is less than the percentage of elderly in the total Los Angeles County population (9.7 percent). The distribution of the elderly population in the Crenshaw/LAX Transit Corridor is shown in Figure 4-69.

4.18.1.5 Limited English Proficiency Population

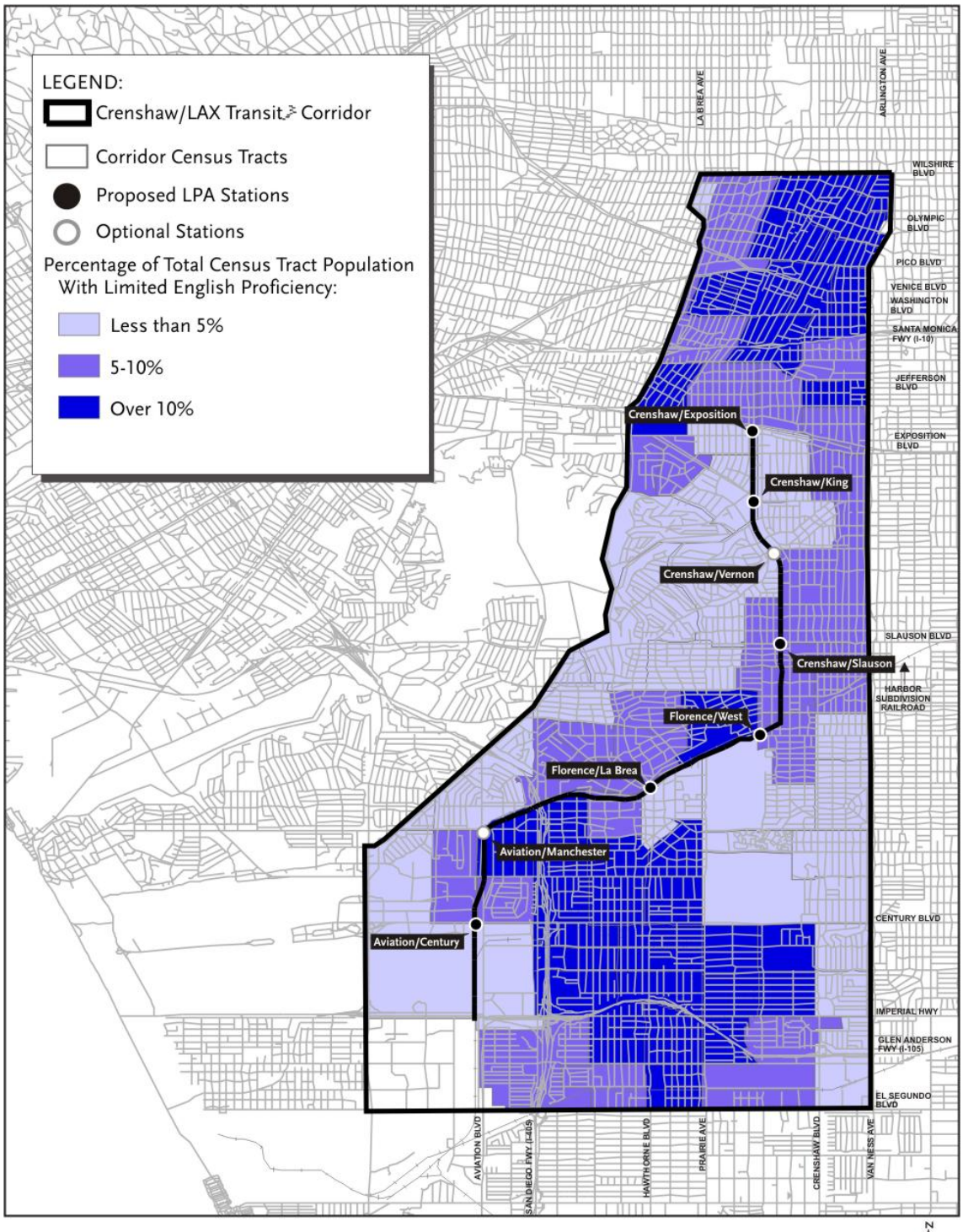
The 2000 U.S. Census data indicates that approximately 14 percent of the population (50,013 households) in the Crenshaw/LAX Transit Corridor is linguistically isolated (i.e., age 5 and older have limited English proficiency). Of this LEP population, approximately 89 percent were Spanish-speaking and approximately 10 percent spoke Asian or Pacific Island languages. The distribution of the LEP population in the Crenshaw/LAX Transit Corridor is shown in Figure 4-70. LAUSD school enrollment data for the last five school years shows that the percentage of the student population in ESL education ranges from 30 to 45 percent in elementary school, and from 11 to 12 percent in high school. Therefore, the percentage of LEP population in the study area has remained high.

Figure 4-69. Station Area Elderly Population Distribution



Source: ESRI and TAHA, 2008

Figure 4-70. Station Area LEP Population Distribution



Source: ESRI and TAHA, 2008

4.18.2 Public Participation

The details of the extensive public outreach that has been conducted for the project are described in Chapter 7.0 of the FEIS/FEIR. Spanish translation and sign language services were available at all public meetings and workshops. Flyers were distributed to notice this workshop, as well as e-mail blasts to stakeholders. Flyers were distributed to elected officials, agencies, local jurisdictions, community organizations, churches, and schools. Similarly, flyers included community organizations, churches, and schools. Newspaper ads were placed in Spanish and local papers catering to the local minority and ESL populations. All meetings were located within various parts of the corridor that were accessible by public transit. All announcements provided the specific transit routes that could be used to attend the meetings. Individual meetings and briefings were also held with numerous community leaders and organizations.

The format of the public meetings and workshops allowed attendees the opportunity to review project information prior to the start of the presentations. Project team members were present to address public questions and/or comments related to the project. Spanish translators were made available, as appropriate.

4.18.2.1 Public Comments Related to Environmental Justice

Of the 365 comments received by the Metro during the three scoping meetings, 25 were directly related to the topic of environmental justice. Twelve of the 25 comments were made by members of the general public. A similar proportion of environmental justice-related comments were received during the circulation of the DEIS/DEIR. These comments focused on the need to maintain equal standards in the study area, in terms of project development and implementation, especially in relation to other, more affluent communities. Issues of grade-separation and transit technology were also important to members of the general public. A majority of the 12 comments showed a preference for grade-separation, in particular, below-grade or underground alignments, which often correlated to a preference for heavy or light rail transit. Comments that showed a preference for grade-separation also addressed issues of safety and visual aesthetics, which proved to be especially important to members of the community. Some comments also expressed concern regarding a perceived lack of urgency and follow-through for projects located in minority communities. Lastly, a comment regarding community investment and the displacement of minority-owned businesses was also received.

Grade separation for LRT is typically driven by technical criteria, and is not dependent on the type of community where it is to be located. For example, where there is an intersection that already operates at capacity, the addition of a dedicated busway or rail signalization would further aggravate operations. Therefore, these intersections are grade separated. As shown in Table 4-70, most of the grade separations that occur in the existing Metro rail system are grade separated at predominately minority and low-income communities. Therefore, the decisions for grade separation in the Crenshaw/LAX Transit Corridor were not driven by the type of community, but rather by engineering considerations.

Table 4-70. Existing Metro Rail Grade Separation Characteristics

Transit Line	Percentage of Total Alignment Miles That is Grade Separated /a/							
	In Minority Areas		In Non-Minority Areas		In Low-Income Areas		In Non-Low-Income Areas	
	% of Alignment	% Grade Separated	% of Alignment	% Grade Separated	% of Alignment	% Grade Separated	% of Alignment	% Grade Separated
Red Line and Purple Line	55%	55%	45%	45%	74%	74%	26%	26%
Blue Line	84%	21%	16%	14%	76%	17%	24%	18%
Green Line	81%	81%	19%	19%	44%	44%	56%	56%
Gold Line	53%	39%	47%	28%	47%	39%	53%	29%
Gold Line Eastside Extension	100%	37%	0%	0%	100%	37%	0%	0%
Systemwide /b/	73%	48%	27%	23%	64%	41%	36%	30%

/a/ This calculation is derived from dividing the total number of miles that are grade separated in each specific area by the total alignment miles. Thus, the sums of minority/non-minority percentages and low-income/non-low-income percentages do not necessarily equal 100 percent as there are at-grade segments for all alignments except the Red, Purple, and Green Lines.
/b/ Data for the Exposition Line under construction is not yet available.
Source: Metro, 2008

The required screening process of alternatives takes into account environmental, engineering, and technical considerations, but also takes into account the comments and input from the public at these meetings.

4.18.3 Environmental Impacts/Environmental Consequences

4.18.3.1 Methodology

Although there are no established evaluation criteria for the analysis of environmental justice, based on the community concerns discussed above and the goals and objectives of the proposed project, the following considerations were utilized in the environmental justice evaluation to ensure compliance with Executive Order 12898:

- Whether the proposed project would provide transit service equity;
- Whether the proposed project would have potential adverse impacts that would be disproportionately borne by minority and low-income communities; and/or
- Whether low-income communities have had opportunities to actively participate in the planning of the proposed project.

4.18.3.2 Effects on Minority and Low-Income Populations

No-Build Alternative

The following is a discussion of the effects of the No-Build Alternative to environmental justice populations in the Crenshaw/LAX Transit Corridor. The No-Build Alternative includes the status quo and all fully funded planned highway and transit improvements that are part of the 2008 LRTP.

Transit Service Equity. The No-Build Alternative would maintain Rapid Bus transit in the Crenshaw/LAX Transit Corridor, however, it would not include new Rapid Bus lines nor would it invest major capital in mass transit infrastructure and service in a corridor that is predominately minority and low-income. Since congestion in the corridor is anticipated to increase and the No-Build Alternative would not include additional transit service, the existing transit service would be impacted by the increased congestion. This would in turn increase commute times and potentially restrict mobility for the transit-dependent population in the Crenshaw/LAX Transit Corridor. Therefore, the No-Build Alternative would result in disproportionate adverse effects related to transit service equity if it is assumed that all other projects in the *Long Range Transportation Plan* are developed. It is worth noting that Metro's transit investments to date have taken place at higher ratios in low income and minority populations.

Traffic Congestion. Traffic congestion is anticipated to increase on a regional level, and as a result, all communities, including minority or low-income, would be impacted. The Crenshaw/LAX Transit Corridor specifically would be impacted, as it contains a large population of low-income, transit-dependent residents (Table 4-67). The No-Build Alternative would not include additional transit and would not reduce anticipated congestion. The existing transit service would be impacted by the additional congestion and this would decrease the mobility for the transit-dependent population in the Corridor.

Displacements. The No-Build Alternative would not include new transit lines. No properties would be acquired or right-of-way leases terminated under the No-Build Alternative. No disproportionate adverse impacts associated with displacements are anticipated.

Community and Neighborhoods. The No-Build Alternative would not introduce elements, such as street closures, that would result in disproportionate effects related to community cohesion, access, and exclusion. Therefore, no disproportionate adverse impacts associated with communities are anticipated.

Aesthetics. The No-Build Alternative would not introduce visual elements that would result in adverse visual effects. Therefore, no disproportionate adverse impacts associated with aesthetics are anticipated.

Health Issues. The discussion of Health Issues under the No-Build Alternative includes the environmental issues of air quality, noise and vibration. Water quality and exposure to contaminated soils are other health issues that are not addressed because the proposed project does not include elements which could affect environmental justice populations for these areas.

Air Quality. The No-Build Alternative does not include improvements that would reduce or increase regional criteria pollutant emissions. However, increased congestion is anticipated to also increase these emissions. The minority and low-income populations of the Crenshaw/LAX Transit Corridor would be adversely impacted as a result. However, air quality impacts associated with increased congestion are spread over the entire region to all communities, regardless if they are minority or low-income.

Therefore, no disproportionate impacts associated with air quality are anticipated. (Section 4.5 Air Quality)

Noise and Vibration. The only substantial source of future noise levels under the No-Build Alternative would be increased automobile traffic on local arterials. Peak-hour noise levels are not expected to increase because traffic in the area is already at or above road capacity. Under these conditions, traffic speeds would be greatly reduced and noise levels would be correspondingly low. Ground-borne vibration levels from the increased number of rubber-tired vehicles would still be below the threshold of human perception because tires and shocks isolate vehicle vibrations from the roadway surface. No disproportionate adverse impacts associated with noise and vibration are anticipated. (Section 4.6 Noise and Vibration)

Historic, Archaeological, and Paleontological Resources. The No-Build Alternative would not include a major transit investment in the Corridor. Because no construction is associated with the No-Build Alternative, there is no potential to disturb archaeological or paleontological resources, or to demolish or alter historic or architectural resources within environmental justice-sensitive communities. Therefore, no disproportionate adverse impacts associated with historic, archaeological, or paleontological resources are anticipated.

Parklands and Community Facilities. The No-Build Alternative would not require the acquisition or use of parklands or community facilities. Therefore, no disproportionate adverse impacts associated with parklands and community facilities are anticipated within environmental justice-sensitive communities.

Economic Vitality and Employment Opportunities. The No-Build Alternative would not result in diminished or increased economic vitality and employment opportunities relative to the planned operations of Metro because no major physical change to the environment would occur (Section 4.13 Economic and Fiscal Impacts). No disproportionate adverse impacts associated with economic vitality and employment opportunities are anticipated.

Safety and Security. The No-Build Alternative would not involve major transportation investment in the Crenshaw/LAX Transit Corridor. As such, no disproportionate adverse impacts associated with safety and security are anticipated.

Construction Impacts. Under the No-Build Alternative there is no major capital investment in mass transit in the project area and, therefore, no disproportionate adverse impact associated with construction are anticipated.

In summary, the No-Build Alternative would not cause disproportionate adverse impacts related to displacements, community cohesion, aesthetics, health issues, historic, archeological, and paleontological resources, parklands and community facilities, economic vitality and employment opportunities, safety and security, and construction. However, the No-Build Alternative would have disproportionate adverse impacts related to transit service equity and traffic congestion as there would be no major transit investment in the minority and low-income communities of the Crenshaw/LAX Transit Corridor.

LPA

The LPA provides for a new mass transit line in the Crenshaw/LAX Transit Corridor to provide transit service to a predominantly minority and low-income area. Because the project would occur within a predominantly minority and low-income area, all the impacts caused by the proposed project would occur to primarily minority and low-income groups. The determination of effect for minority and low-income populations is evaluated on (1) whether there is an impact caused by the project and if so, (2) whether these groups are disproportionately affected by the project.

Transit Service Equity. The LPA would provide increased mobility options and access within the Crenshaw/LAX Transit Corridor, as well as to and from low-income and minority communities. Therefore, no disproportionate adverse effects related to transit service equity are anticipated. In fact, positive impacts related to increased mobility for minority and low-income residents are anticipated for the LPA.

Traffic Congestion. The LPA would provide an alternative means of transportation and offer increased mobility for the transit-dependent population in the study area. Therefore, no disproportionate adverse impacts associated with traffic congestion are anticipated for minority and low-income communities.

Parking. The LPA would result in the loss of 142 northbound and 166 southbound on-street parking spaces along Crenshaw Boulevard between 48th Street and 60th Street where the alignment would be at grade. There is a surplus of off-street parking available in this area that is provided by the commercial highway-oriented business that are located along this segment of the alignment. The loss of on-street parking would not cause a shortage in parking supply for the area. In addition, the Crenshaw/Slauson Station would provide the opportunity for increased access for these businesses and residents through the light rail line. Therefore, no adverse impacts associated with parking in minority or low-income communities are anticipated.

Displacement. To construct the LPA, 97 total parcels would be affected, including 59 parcels that would be acquired in full, 31 parcels would be acquired in part, four parcels that would require permanent underground easements, and three parcels that would be used as temporary construction laydown areas (for staging equipment and materials). The acquisitions range in area from 130 square feet to over 74,000 square feet. In terms of minority ownership or lease, it is likely that most of the properties that would be displaced are owned or leased by minorities or low-income populations. These displacement effects occur uniformly along the alignment and do not disproportionately affect a minority or low-income population. The choice of properties to displace is based on the alignment and the engineering needs of the station areas and rights-of-way. Metro will comply with the Uniform Relocation Act to find adequate relocation sites for the owned-businesses and for the leases that qualify. No disproportionate adverse impacts associated with displacement of minority or low-income communities would occur.

Community and Neighborhoods. The LPA would introduce elements, such as street closures and displacement that can have adverse effects related to community cohesion, access, and exclusion. Community cohesion can also be adversely affected by loss of jobs

or services. As discussed above, there are several parcels that would be displaced as part of the LPA. Along the Harbor Subdivision, the displacement of industrial uses, may result in the loss of jobs to the community. Along Crenshaw Boulevard, displacement would include commercial areas which may be important to the provision of jobs and services within the community. However, as discussed in Section 4.3 Community and Neighborhood Impacts, these effects would not be adverse with the implementation of mitigation measures. Specifically, these effects would be dispersed along the corridor and would not be disproportionate to a particular minority or low-income community or neighborhood within the corridor.

Aesthetics. The LPA would introduce visual elements that do not currently exist in the corridor, including the removal of land uses near the Exposition Boulevard/Crenshaw Boulevard intersection, a fixed guideway in the middle of Crenshaw Boulevard with overhead wires and OCS poles, removal of landscape medians and elimination of frontage roads, portal structures on the street median, and aerial crossings over the I-405 Freeway /La Cienega Boulevard, Manchester Avenue, and Century Boulevard. All of these elements of the LPA would change the visual character of the area. These visual elements would not differ from other light rail transit projects that Metro has implemented in other areas. These new visual elements occur throughout the entire length of the alignment and do not disproportionately affect an environmental justice-sensitive community. Input received from community concerns over the visual element of the aerial structure in Hyde Park resulted in replacement with a below-grade configuration. With the implementation of mitigation measures no adverse effects to aesthetics would occur. Therefore, minority and low-income populations would not be adversely affected.

Health Issues. Health Issues evaluated under the LPA include air quality, and noise and vibration. Water quality and exposure to contaminated soils are other health issues that are not addressed because the proposed project does not include elements which could affect environmental justice populations for these areas.

Air Quality. The impacts of the LPA on criteria pollutants are discussed in Section 4.5 Air Quality. The LPA would reduce automobile VMT and increase bus and light rail VMT in the transportation system. The LPA would result in no adverse effects to air quality. Therefore, no impacts to minority and low-income populations would occur.

Noise and Vibration. Under the LPA, there is the potential for noise and vibration impacts from four sources: passby noise from LRT vehicles, warning signals at grade crossings, and areas of special trackwork. The impacts for each of these sources are discussed in Section 4.6 Noise and Vibration. There are single-family residences and a health care facility along La Colina which are located in minority and low-income areas that could be subject to noise effects from warning signals, and passby noise. However, with implementation of mitigation measures, the LPA would not result in adverse effects to noise and vibration. Therefore, no impacts to minority and low-income populations would occur.

Water Quality. The Crenshaw/LAX Transit Corridor is heavily urbanized with impervious surfaces. The LPA would include structures that could increase runoff

(bridge structure, aerial platform). However, mitigation measures and best management practices have been identified that would result in impacts that are not adverse. No disproportionate adverse impacts associated with water quality are anticipated. (Section 4.9 Water Resources)

Soil Contamination. The LPA would include excavation of soils for the station platforms, the removal of mature trees, and for the aerial structures. Some of the soils encountered have the potential for contamination, particularly at the Harbor Subdivision tracks. As this area is predominately minority, low-income, and these populations would be affected by the existing contamination. Mitigation measures are included that would result in impacts that are not adverse. Therefore, no disproportionate adverse impacts associated with soil contamination are anticipated. (Section 4.8 Geotechnical/Subsurface/Seismic/Hazardous Materials)

Historic, Archaeological, and Paleontological Resources. The LPA would not impact known historic, archaeological or paleontological resources. Design modifications were made to preserve structures which were eligible historic properties. Therefore, no impacts to minority and low-income populations would occur.

Parklands and Community Facilities. The LPA would not impact known parklands or community facilities. Therefore, no impacts to minority and low-income populations would occur.

Economic Vitality and Employment Opportunities. The LPA would result in the loss of approximately 1,370 jobs through acquisition of property.[7] The LPA would create approximately 2,000 employment opportunities during the five year construction period and an additional 272 during operation of the LPA. However, these additional jobs may not necessarily cater to the local residents. There is a possibility that the LPA could increase commercial growth at the station areas, which would positively impact the communities around them. No net adverse impacts associated with diminished economic vitality and employment opportunities are anticipated.

Safety and Security. Community input regarding environmental justice and equity received by Metro since the inception of the Crenshaw/LAX Transit Corridor Project has consistently emphasized the topic of safety and security of the transit technologies being considered for the corridor. Safety of the at-grade LRT sections is a key community concern. Safety considerations have played a key role in the design of the LPA and Metro has implemented a wide array of safety features for vehicles and pedestrians which are described in Section 4.14, Safety and Security. To systematically address the issue of grade separating transit service, Metro developed a Grade Crossing Policy for Light Rail Transit in 2003. Since its adoption by the Metro Board, this policy has been in use as a planning and engineering assistance tool and it requires that rail and highway crossings be analyzed in a sequence of steps at increasing levels of detail. This policy is applied to

[7] Assumes a rate of one employee per 700 square feet for industrial uses and one employee per 500 square feet of commercial use.

all Metro project corridors regardless of the socioeconomic status or race/ethnicity of adjacent neighborhoods.[8]

Within the Crenshaw/LAX Transit Corridor, the LPA alignment reflects the results of the application of the grade crossing policy. The grade separations included in the LPA alignment were based on the analysis that light rail could operate at-grade safely in these portions of the alignment. Key to the consideration of environmental justice is whether bias or arbitrary action has influenced the location of these LPA at-grade segments that are of concern to the community. Metro uniformly applies its Grade Crossing Policy to all corridors within its jurisdiction. Transit corridors with similar rail frequency headways, crossing traffic volumes, and adjacent pedestrian-generating land uses are treated in the same manner. LRT corridors currently being constructed and considered by Metro, including Exposition Phases I and II, the Gold Line Eastside Extension, and the Gold Line Foothill Extension, each include at-grade sections that adjoin neighborhoods of various socioeconomic statuses (Table 4-70). Ultimately, the California Public Utilities Commission (CPUC) is the final determinant of grade separated locations, as well as the vehicle and pedestrian safety features placed at each grade crossing, based on a public hearing and an evidentiary process. With these processes and procedures in place, there would not be a willful and disproportionate safety effect on minority and low-income communities within the Crenshaw/LAX Transit Corridor. In addition, Metro has responded to community concerns regarding safety of at grade sections by including grade separated design options in key sections of the corridor with the exception of the segment on Crenshaw Boulevard from 48th Street to 60th Street where LRT operations have been determined to operate safely without the need of a grade separation. This is due to the width of the Crenshaw Boulevard at this point, traffic signal proposed operation modifications, and proposed street geometry changes.

Regarding security, as discussed in Section 4.14 Safety and Security, Metro transit service and transit stations are served by the Los Angeles County Sheriff's Department. There is no distinction made in the level of service provided between transit corridors or routes based on demographic or socioeconomic status. Community concerns were raised regarding the elevated structure between 60th Street and the Harbor Subdivision. Community input has focused on existing security and crime issues in the area that is generally called Hyde Park. The proposed below-grade alignment would satisfy these community concerns and would not result in an adverse safety effect. There is no evidence that there is a consistent pattern to LRT projects under consideration by Metro to disproportionately place at-grade sections in minority or low income neighborhoods. Therefore, no disproportionate adverse impacts on minority or low income communities regarding safety and security are anticipated.

Construction Impacts. The construction impacts for each of the topics in the FEIS/FEIR are discussed in Section 4.15 Construction Impacts. Construction of the project within the Crenshaw Boulevard right-of-way would be temporary, however, would have the potential to disrupt these businesses through the loss of access, changes to local circulation, loss of street parking, and restricted use of access. Mitigation measures are proposed to address these types of changes.

[8]Metro, *MTA Grade Crossing Policy for Light Rail Transit*, 2003.

Mitigation measures are provided in Section 4.15 Construction Impacts.

The MOS-King Alternative would result in a shortened alignment that would result in a northern terminus at the Crenshaw/King Station. The segment from Crenshaw/King Station to Exposition would eliminate the short term effects to the minority and low-income populations along this segment, but would eliminate the long-term benefits of transit service and mobility compared to the LPA. No disproportionate impacts would occur under the MOS-King Alternative.

The MOS-Century Alternative would result in a shortened alignment that would result in a southern terminus at the Aviation/Century Station. The segment from Century Boulevard to the Metro Green Line is no located near an environmental justice population. The removal of this segment would result in a substantial reduction in regional connectivity and would degrade the transit service to the minority and low-income populations within the corridor compared to the LPA. No disproportionate impacts would occur under the MOS-Century Alternative.

Design Options

The Partially-Covered LAX Trench Option would be a below grade trench in front of the LAX runways with uncovered sections that are not directly in front of the runways. The uncovered portions of the trench would not create any additional impacts to minority and low-income communities. Therefore, no adverse effects would occur.

The Below-Grade Crossing at Centinela Option would locate a depressed trench within a railroad right-of-way, adjacent to residences, a park, and nursing facility. The trench would allow for better traffic and transit circulation on Centinela Avenue compared to the at-grade alternative. The trench would eliminate the need for the warning signals for an at-grade crossing, which would reduce the noise effects to the surrounding sensitive receptors. The trench at Centinela Avenue would also improve pedestrian safety during operations compared to the at-grade crossing under the LPA. No disproportionate adverse impacts to minority and low-income communities are anticipated.

The Optional Aviation/Manchester Station would locate a station in the vicinity of the Manchester Boulevard aerial structure. This area is predominantly industrial and no adverse impacts would result to minority and low-income communities.

The Below-Grade Crenshaw/Vernon Station Option is located in an area that has a mix of residential and commercial uses. The addition of an additional underground station would not cause more disruption than that which would already occur due to the below-grade part of the alignment. This design option would require six additional full takes, three additional partial takes, and 23 additional underground easements. All of these parcels are commercial parcels, and the parcels that would be fully taken include retail and restaurants. The inclusion of a station near Leimert Park would provide the primarily minority small business owners and residents, an opportunity for future transit-oriented development that could be compatible with the village character of the area. No disproportionate adverse impact to minority or low-income communities under this design option.

The Alternative Southwest Portal at Crenshaw/King Station would place the entrance portal to the Crenshaw/King Station in front of the WalMart building. This option would not require additional displacement in a primarily minority area and, therefore, would not result in disproportional adverse impacts to minority and low-income communities.

4.18.4 Measures to Minimize Harm

No-Build Alternative

No feasible mitigation exists to reduce adverse impacts associated with transit service equity (assuming all other projects in the Long Range Transportation Plan are implemented) under the No-Build Alternative.

LPA

No mitigation measures related to environmental justice are required for the LPA or MOSs.

Design Options

No mitigation measures related to environmental justice are required for the design options.

4.18.5 Impacts Remaining After Mitigation

No-Build Alternative

Disproportionate adverse impacts would remain associated with transit service equity and traffic congestion.

LPA

The LPA or MOSs would result in no disproportionate adverse effects.

Design Options

The design options would result in no disproportionate adverse effects.

4.19 Other NEPA Considerations

4.19.1 Short-Term Uses vs. Long-Term Productivity

NEPA requires analysis of the relationship between a project's short-term impacts on the environment and the effects those impacts may have on the maintenance and enhancement of the long-term productivity of the affected environment. The proposed project would result in both short- and long-term environmental effects. The LPA would follow along existing streets and rights-of way in an already highly urbanized area. However, these short-term adverse environmental effects and uses of resources would be outweighed by the project's long-term benefits, which include the following:

- Enhanced regional connectivity to the Metro transit system
- Improved transit access to employment, commercial, and recreational centers
- Decreased traffic congestion

Therefore, the implementation of the proposed project is not expected to alter long-term productivity or result in inefficient use of designated land, or pose long-term risks to public health and safety.

4.19.2 Irreversible and Irretrievable Commitment of Resources

The LPA, design options, and MOSs would require the commitment of irreversible and irretrievable resources. Irreversible resources would occur from the use of land, fill and gravel resources, electrical energy, fuel, and labor. The commitment of energy and labor for construction is considered irretrievable and irreversible. Although these resources are not in short supply, the use of these resources would not have an adverse effect on continued availability of these resources. Construction of the alternative sites would require an expenditure of both State and/or federal funds, which are not retrievable. The land acquired for the proposed project would be considered an irreversible commitment of resources. However, the land required for the project represents a small portion of land in the surrounding region and is consistent with the uses in the highly urbanized area. The commitment of these non-renewable resources is based on the premise that area residents would benefit from the improved quality of the transportation system, which would result in a reduction of vehicle miles traveled. The commitment of these resources would not be adverse.

4.19.3 Railroad Abandonment Requirements

The U.S. Department of Transportation, Surface Transportation Board, under the provisions of 49 CFR1152, requires an environmental review of the effects of railroad abandonment. As discussed previously in this report, a portion of the BNSF, in Los Angeles County, California, known as the Harbor Subdivision, may be abandoned in conjunction with the Crenshaw/LAX Transit Corridor Project, to allow for greater design flexibility, more efficient track and station layout, and to minimize additional land acquisitions. The Harbor Subdivision segment to be abandoned would, as a minimum, extend from Milepost 13.20 to Milepost 8.03, a distance of 5.17 miles. Essentially, this

would encompass the railroad segment between Imperial Highway on the Southwest and Crenshaw Boulevard on the Northeast. This segment is characterized by a single freight-rail gage track with several abandoned or disconnected sidings. There are 18 grade crossings within this segment and grade separation overpass bridges at I-405 and at Century Boulevard. Currently, the BNSF track, while not dormant, is used infrequently. It is Metro's understanding that there are no active sidings within this segment of the Harbor Subdivision. The environmental review presented in Chapter 4.0 of this Statement, documents the potential effects of proposed transit improvements within the Harbor Subdivision right-of-way. These improvements have included the relocation of the BNSF tracks within the Harbor Subdivision. This BNSF track relocation adds to project cost and contributes to complex grade crossings, signage and warnings at existing grade crossings. The abandonment of the BNSF track would allow the creation of more straight forward grade crossings, improving the safety environment and increasing the design flexibility of the transit project. Chapter 4.0 of this report also indicates that there are no adverse effects to existing environmental resources within the Harbor Subdivision, including endangered species, ecological habitats and wetlands, historic and archaeological properties, and floodplains. The DEIS/DEIR has been circulated to the appropriate federal agencies responsible for oversight of these resources and no adverse impacts have been identified or commented on. Under Section 106, of the Historic Preservation Act, the State Office of Historic Preservation has concurred that there are no adverse effects to historic resources. The abandonment and removal of the BNSF track, while achieving the benefits cited above, would not result in additional or more severe impacts to the environment.

4.20 Significant and Irreversible Changes and Unavoidable Significant Impacts

4.20.1 Environmentally Superior Alternative

Section 15126.6(e)(2) of the CEQA Guidelines requires that an environmentally superior alternative be identified among the selected alternatives, excluding the No-Build Alternative. As described in Section 2.0 Alternatives Considered, the Metro Board of Directors adopted a Locally Preferred Alternative which included a LRT project in December 2009 for the Crenshaw/LAX Transit Corridor. Therefore, the LPA in this FEIS/FEIR had been previously selected as an environmentally superior alternative for transit improvements in the Crenshaw/LAX Transit Corridor. As part of the FEIS/FEIR preparation process, Metro is considering design options and MOSs for the proposed project.

The environmentally superior design options are discussed below.

The Partially-Covered LAX Trench Option would neither be inferior nor superior to the LPA. The optional station at Manchester would result in increased acquisition of property and construction impacts from an additional station. This option would not be environmentally superior to the LPA. The Below-Grade Crossing at Centinela option would result in increased construction impacts from additional excavation and traffic detours. However, in the long term, this option would be environmentally superior to the at-grade configuration in the LPA because the grade separation would result in a lower potential for pedestrian-train conflict and would facilitate the flow of vehicular traffic. The optional below-grade station at Vernon would result in increased acquisition of property and construction impacts from cut-and-cover construction of a below-grade station. This option would not be environmentally superior to the LPA. The alternative southwest portal at the Crenshaw/King Station would require less acquisition that the base portal location, but would be located adjacent to the Broadway Historic building and would result in a de minimus use with an underground connection to the basement of the Broadway building. With implementation of mitigation measures, no impacts would occur to the Broadway building. However, this design option would not be environmentally superior to the LPA.

The MOSs would not be environmentally superior to LPA with the exception that these shorter route options would result in less excavation and subsequent acquisition and construction-related impacts. The impacts of the MOS-King and MOS-Century Alternatives would be essentially the same as the LPA with traffic, parking and circulation impacts being redistributed to the new terminal station locations at King and Century, respectively. The greatest station area impacts would result from the MOS-King where the ridership and parking demand would increase by 211 daily boardings and 26 parking demand spaces at the Crenshaw/King Station terminus. Under MOS-Century, the ridership would decrease by 150 daily boardings and decrease parking demand by 10 spaces at the Aviation/Century Station terminus. The other key distinction of these shorter alignment options is that they reduce the beneficial effects from the full route

LPA particularly in the areas of air quality, energy resources, and regional connectivity. The full-length LPA would be environmentally superior.

4.20.2 Significant and Irreversible Changes

Section 15126(c) of the CEQA Guidelines requires that an EIR describe any significant irreversible environmental changes that would be caused by the project alternatives should they be implemented. In the case of the LPA, implementation of the proposed project would convert the existing Harbor Subdivision and median of Crenshaw Boulevard to a public transit guideway. Implementation of the project would allow construction activities that would entail the commitment of nonrenewable and/or slowly renewable energy resources, human resources, and natural resources such as lumber and other forest products, sand and gravel, asphalt, steel, copper, lead, other metals, and water. The resulting consumption of fossil fuels would incrementally reduce existing supplies of fuel oil, natural gas and gasoline. An incremental increase in energy demand would also occur during post-construction activities including lighting. This commitment of resources would be representative of resource commitments normally associated with urban development that would occur within the region. Development of a light rail system is a long-term irreversible commitment of the land and it is improbable that the site would revert to its existing use due to the large capital investment that would already have been committed.

4.20.3 Significant and Unavoidable Impacts

As indicated in Chapter 3.0 and 4.0, most of the significant and/or potentially significant impacts can be mitigated to less-than-significant levels. The significant and unavoidable environmental impacts that would result from the project alternatives are listed below.

Traffic

A significant and unavoidable intersection impact would occur for the LPA, design options, and MOSs at the Crenshaw Boulevard/54th Street intersection for the 140-, 130-, and 120-second cycle lengths.

Air Quality Construction (CEQA Only)

A significant and unavoidable air quality impact would occur for the LPA, design options, and MOSs during construction when the regional construction emissions would exceed the NO_X significance threshold and localized emissions would exceed the NO_X, $PM_{2.5}$, and PM_{10} significance thresholds.

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