

4.2 AIR QUALITY

This section describes the existing air quality conditions in the Project Area from the Final EIS/EIR or Study Area for the SEIS, and the potential impacts from construction of the tunneling method alternatives compared to the Project. This section focuses on the evaluation of the tunnel method alternatives compared to what was previously analyzed as part of the Final EIS/EIR. The analysis focuses on potential short-term impacts of emissions during construction of the tunneling method alternatives compared to the Project. While short-term construction impacts associated with the Project, Alternative A and Alternative B could result in potentially adverse air quality impacts, operation of the new transit project would result in a long-term air quality benefit compared to existing conditions due to decreased regional vehicle miles travelled.

Operationally, a qualitative assessment found that reduced emissions in some locations for Alternative B, the deeper alternative, would be more than offset by increased emissions associated with long term operational demands entering the 7th/Metro station and slower and less efficient transit operations.

4.2.1 Affected Environment

Section 93.123(c)(5) of EPA's Transportation Conformity regulation does not require CO, PM10 and PM2.5 hot-spot analyses for construction-related activities for temporary increases in emissions if such increases occur for less than five years at any individual site. Both construction method alternatives have an expected duration of less than five years. In order to examine potential air quality impacts during construction, this analysis draws on South Coast Air Quality Management District's (SCAQMD) regional CEQA thresholds of significance and Localized Significance Thresholds (LST's).

The air quality area of analysis includes the four-county region covered by the South Coast Air Basin (SoCAB), which includes all of Orange County and the urban, non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. The SoCAB area has high levels of air pollution, particularly from June through September. Pollutant concentrations in the SoCAB vary by location, season, and time of day. Concentrations of O₃, for example, tend to be lower along the coast and in far inland areas of the basin and adjacent desert and higher in and near inland valleys.

Over the past 30 years, substantial progress has been made in reducing air pollution levels in Southern California. Previously, the Environmental Protection Agency (EPA) designated SoCAB as a non-attainment area for all National Ambient Air Quality Standards (NAAQS) except sulfur dioxide (SO₂) (the SoCAB was designated as an attainment/maintenance area for SO₂ in 1979). The EPA now designates SoCAB as in attainment for nitrogen dioxide (NO₂), SO₂, and CO. Particulate matter (PM₁₀ and PM_{2.5}), Pb (lead), and ozone (O₃) levels, while reduced substantially from their peak, remain above relevant NAAQS and California Ambient Air Quality Standards (CAAQS), and PM₁₀ levels also remain above the CAAQS.

4.2.2 Environmental Consequences

In order to compare potential impacts during construction of the tunneling method alternatives to the Project, impacts from construction activities along Flower Street and Little Tokyo were analyzed. Impacts from construction activities for other portions of the Project Area were not analyzed because they would be the same for these alternatives as for the Project. The construction methods that would be employed for each of the alternatives are described in Chapter 2, Alternatives Considered.

Construction emissions from the two tunneling method alternatives were estimated using the same methodology that was used for the Final EIS/EIR, which is described in more detail in the Air Quality Impacts and Health Risk Assessment Technical Memorandum, which is incorporated into the Final EIS/EIR as Appendix Q. The emission calculations include reductions from the mitigation measures listed in Chapter 4.5, Air Quality, of the Final EIS/EIR.

4.2.2.1 Alternative A – EPBM/Open Face Shield/SEM Project Profile

Short-term regional and localized air quality impacts generated during construction were evaluated by comparing estimated peak daily emissions to SCAQMD's regional CEQA thresholds of significance and LST's, consistent with the Final EIS/EIR. The emissions estimate includes the following sources: off-road construction equipment, fugitive dust, construction worker commuting, and haul truck transport.

4.2.2.1.1 Construction Impacts

The estimated construction equipment use, soil excavation quantities, number of daily haul truck trips (for removal of excavation materials) and number of construction workers for each phase of Alternative A is listed in Table 4.2-1.

Air Quality Plan Consistency

Because construction of Alternative A would not result in a population increase, Alternative A would not conflict with the growth projections used to develop the 2012 Air Quality Management Plan (AQMP). Growth projections from local general plans adopted by cities in the SoCAB and VMT projections developed by the SCAG are some of the inputs used to develop the AQMP. Construction of Alternative A would not conflict with the implementation of the AQMP, and there would be no impact.

Ambient Air Quality Standard Violation

Peak daily emissions from activities along Flower Street during construction of Alternative A are compared to SCAQMD's CEQA significance thresholds to evaluate potential regional air quality impact, as presented in Table 4.2-2. The emissions estimate includes the following sources: off-road construction equipment, construction worker commuting, haul truck trips, and fugitive dust from earthmoving activities.

As presented in Table 4.2-2, peak daily emissions for construction activities along Flower Street exceed the SCAQMD's regional CEQA significance threshold for NO_x of 100 pounds per day. With implementation of proposed mitigation measures, mass daily emissions of NO_x would be reduced but

would remain adverse. Therefore, emissions of NO_x generated during construction of Alternative A have the potential to contribute substantially to an existing or projected air quality violation. Regional air quality impacts related to emissions of NO_x remain adverse and unavoidable.

Table 4.2-1: Estimated Construction Equipment, Soil Excavation, and Vehicle Trips for Alternative A

Construction Phase	Construction Equipment	Soil Excavation (cubic yards)	Daily Haul Truck Trips	Construction Workers
Alternative A				
Earth Pressure Boring Under Flower Street, West Bound	2 dozers (357 hp) 4 excavators(168 hp) 2 cranes (399 hp) 5 flatbeds (479 hp)	13,917	20	20
Earth Pressure Boring Under Flower Street, East Bound	2 dozers (357 hp) 4 excavators(168 hp) 2 cranes (399 hp) 5 flatbeds (479 hp)	13,917	20	20
Jet Grouting on Flower Street	4 drill/injection rigs (755 hp) 4 generators (689 hp) 4 compressors (207 hp) 5 flatbeds (479 hp)	0	0	40
Open Face/Shield Tunneling Under Flower Street	2 dozers (357 hp) 4 excavators(168 hp) 2 cranes (399 hp) 5 flatbeds (479 hp)	17,373	20	20
Sequential Excavation Method Tunneling Under Flower Street	2 dozers (357 hp) 4 excavators(168 hp) 2 cranes (399 hp) 5 flatbeds (479 hp)	19,097	20	20
Cut and Cover Along Flower Street	2 dozers (357 hp) 4 excavators(168 hp) 2 cranes (399 hp) 1 drill rig (291 hp) 5 flatbeds (479 hp)	20,925	20	30

Source: The Connector Partnership, 2014

With implementation of mitigation measures, construction of Alternative A, similar to the Project, would still result in a cumulatively considerable contribution to regional air quality. Therefore, regional air quality impacts under NEPA would be adverse.

Peak daily on-site emissions during each construction phase for Alternative A were also compared with the emissions from the SCAQMD Localized Significance Thresholds (LST) look-up tables, as

presented in Table 3-4 of the Air Quality Appendix C. The emissions used from the SCAQMD look-up tables were for a one-acre site and a distance of 25 meters to the closest receptor, because these were the smallest size and shortest distance available in the LST look-up tables. Note that the LST values in Tables 3-1 through 3-5 of Appendix C have been updated using the 1-acre values consistent with the guidance from the SCAQMD. However, the updates do not change the impact determination and mitigation measures described in the Draft SEIS and discussed below. Peak daily on-site emissions from construction of Alternative A did not exceed the values from the look-up tables. Therefore, on-site construction emissions from Alternative A would not be anticipated to cause an LST to be exceeded.

Table 4.2-2: Peak Daily Construction Emissions (Mitigated), lb/day – Alternative A

Emission Source	VOC	NOx	CO	SO ₂	PM ₁₀	PM _{2.5}
Construction Equipment ¹	45.5	307.7	360.4	1.7	7.4	0.1
Construction Worker Commuting	0.2	0.6	7.0	0.0	3.3	0.0
Haul Trucks	1.7	7.4	7.6	0.0	0.7	0.7
Total =	47	316	375	2	11	1
SCAQMD Significance Threshold	75	100	550	150	150	55

Note: Values that exceed the SCAQMD significance threshold are in **bold** and shaded.

¹ Fugitive dust emissions generated during earthmoving activities are included in the daily PM10 and PM2.5 emissions for construction equipment.

Source: AECOM, 2014

Cumulatively Considerable Air Quality Impact

The SoCAB is classified as nonattainment for O₃, PM₁₀ and PM_{2.5}. Table 4.2-2 shows that peak daily emissions of NOx, which is an O₃ precursor, exceed the SCAQMD’s CEQA significance threshold. Therefore, construction of Alternative A could result in a cumulatively considerable net increase of O₃ precursor emissions. These impacts would occur over the duration of construction and would be temporary. Mitigation measures including use of model year 2014 off-road equipment would be implemented, which would reduce NOx construction emissions, but impacts would remain adverse. Thus, the cumulative impact from these emissions is expected to remain adverse and unavoidable.

Sensitive Receptor Exposure to Substantial Pollutant Concentrations

Construction activities would include operation of diesel-fueled off-road equipment, resulting in emissions of diesel particulate matter (DPM), a recognized toxic air contaminant (TAC). However, because carcinogenic DPM health risk is estimated using the annual average concentration over long exposure periods (40 to 70 years), the Office of Environmental Health Hazard Assessment (OEHHA) does not suggest estimating carcinogenic health risk for exposure periods less than nine years. Construction of Alternative A, over an estimated duration of approximately 4 years, would be less than the nine-year exposure period indicated by OEHHA. The most conservative distance to evaluate exposure to sensitive receptors is 25 meters (80 feet). As discussed above, emissions generated

during construction of Alternative A would not exceed the LSTs and, therefore, would not substantially affect nearby receptors. The impact would not be adverse.

Objectionable Odors

Construction of Alternative A would not result in any major sources of odor, and would not involve operation of any of the common types of facilities that are known to produce odors (e.g., landfill, coffee roaster, wastewater treatment facility). Diesel exhaust, which could be considered an objectionable odor source, would be associated with construction equipment operation, but it would be intermittent and temporary and would dissipate rapidly from the source with an increase in distance. Thus, Alternative A construction would not expose sensitive receptors to odorous impacts, and this impact would not be adverse.

4.2.2.2 Alternative B – EPBM/SEM Low Alignment

As described in Section 4.2.2.3, short-term regional and localized air quality impacts generated during construction were evaluated by comparing estimated peak daily emissions to SCAQMD’s regional CEQA thresholds of significance and LST’s, are consistent with the Final EIS/EIR.

4.2.2.2.1 Construction Impacts

The estimated construction equipment use, soil excavation quantities, number of daily haul truck trips and number of construction workers for each phase of Alternative B is listed in Table 4.2-3.

Table 4.2-3: Estimated Construction Equipment, Soil Excavation, and Vehicle Trips for Alternative B

Construction Phase	Construction Equipment	Soil Excavation (cubic yards)	Daily Haul Truck Trips	Construction Workers
Alternative B				
Earth Pressure Boring Under Flower Street	2 dozers (357 hp) 4 excavators (168 hp) 2 cranes (399 hp) 5 flatbeds (479 hp)	44,292	20	20
Jet Grouting on Flower Street	2 drill/injection rigs (755 hp) 2 generators (689 hp) 2 compressors (207 hp) 5 flatbeds (479 hp)	0	0	20
Sequential Excavation Method Tunneling Under Flower Street	2 dozers (357 hp) 4 excavators (168 hp) 2 cranes (399 hp) 5 flatbeds (479 hp)	22,487	20	20

Table 4.2-3: Estimated Construction Equipment, Soil Excavation, and Vehicle Trips for Alternative B

Construction Phase	Construction Equipment	Soil Excavation (cubic yards)	Daily Haul Truck Trips	Construction Workers
Cut and Cover Along Flower Street	2 dozers (357 hp) 4 excavators (168 hp) 2 cranes (399 hp) 1 drill rig (291 hp) 5 flatbeds (479 hp)	16,231	20	30

Source: Regional Connector Partnership, 2014

Air Quality Plan Consistency

Because construction of Alternative B would not result in a population increase, Alternative B would not conflict with the growth projections used to develop the 2012 AQMP. Growth projections from local general plans adopted by cities in the SoCAB and VMT projections developed by the SCAG are some of the inputs used to develop the AQMP. Construction of Alternative B would not conflict with the implementation of the AQMP, and there would be no impact.

Ambient Air Quality Standard Violation

Peak daily emissions from activities along Flower Street during construction of Alternative B were compared to SCAQMD's regional CEQA significance thresholds to evaluate potential air quality impacts, as presented in Table 4.2-4. Peak daily emissions include the following sources: off-road construction equipment, construction worker commuting, haul truck trips, and fugitive dust from earthmoving activities.

Table 4.2-4: Peak Daily Construction Emissions (Mitigated), lb/day – Alternative B

Emission Source	VOC	NOx	CO	SO ₂	PM ₁₀	PM _{2.5}
Construction Equipment ¹	37.0	186.8	256.3	1.2	4.4	4.0
Construction Worker Commuting	0.1	0.4	5.3	0.0	0.1	0.3
Haul Trucks	1.1	7.4	4.5	0.0	2.9	0.3
Total =	38	195	266	1	7	5
SCAQMD Significance Threshold	75	100	550	150	150	55

Note: Values that exceed significance threshold are in **bold** and shaded.

¹ Fugitive dust emissions generated during earthmoving activities are included in the daily PM10 and PM2.5 emissions for construction equipment.

Source: AECOM, 2014

As presented in Table 4.2-4, peak daily emissions for construction activities along Flower Street exceed the CEQA significance threshold for NOx of 100 pounds per day. With implementation of proposed mitigation measures, mass daily emissions of NOx would be reduced but would remain adverse. Therefore, emissions of NOx generated during construction of Alternative B have the potential to

contribute substantially to an existing or projected air quality violation. Regional air quality impacts related to emissions of NO_x remain adverse and unavoidable.

With implementation of mitigation measures, emissions of peak daily NO_x would not be reduced below a level of significance. With implementation of mitigation measures, construction of Alternative B, similar to the Project, would still result in a cumulatively considerable contribution to regional air quality. Therefore, regional air quality impacts under NEPA would be adverse.

Peak daily on-site emissions during each construction phase for Alternative B were also compared with the emissions from the SCAQMD LST look-up tables, as presented in Table 3-5 of the Air Quality Appendix C. The emissions used from the SCAQMD look-up tables were for a one-acre site and a distance of 25 meters to the closest receptor, because these were the smallest size and shortest distance available in the LST look-up tables. Note that the LST values in Tables 3-1 through 3-5 of Appendix C have been updated using the 1-acre values consistent with the guidance from the SCAQMD. However, the updates do not change the impact determination and mitigation measures described in the Draft SEIS and discussed below. Peak daily on-site emissions from construction of Alternative B would not exceed the values from the look-up tables. Therefore, on-site construction emissions from Alternative B would not be anticipated to cause an LST to be exceeded.

Cumulatively Considerable Air Quality Impact

The SoCAB is classified as nonattainment for O₃, PM₁₀ and PM_{2.5}. Table 4.2-4 shows that peak daily emissions of NO_x, which is an O₃ precursor, exceed the SCAQMD's CEQA significance threshold. Therefore, construction of Alternative B could result in a cumulatively considerable net increase of O₃ precursor emissions. These impacts would occur over the duration of construction and would be temporary. Mitigation measures including use of model year 2014 off-road equipment would be implemented, which would reduce NO_x construction emissions, but would remain adverse. Thus, the cumulative impact from these emissions is expected to remain adverse and unavoidable.

Sensitive Receptor Exposure to Substantial Pollutant Concentrations

Construction activities would include operation of diesel-fueled off-road equipment, resulting in emissions of DPM, a recognized TAC. However, because carcinogenic DPM health risk is estimated using the annual average concentration over long exposure periods (40 to 70 years), OEHHA does not suggest estimating carcinogenic health risk for exposure periods less than nine years. Construction of Alternative B, over an estimated duration of approximately 4 years, would be less than the nine-year exposure period indicated by OEHHA. The most conservative distance to evaluate exposure to sensitive receptors is 25 meters (80 feet). As discussed above, emissions generated during construction of Alternative B would not exceed the LSTs and, therefore, would not substantially affect nearby receptors. The impact would not be adverse.

Objectionable Odors

Construction of Alternative B would not result in any major sources of odor, and would not involve operation of any of the common types of facilities that are known to produce odors (e.g., landfill, coffee roaster, wastewater treatment facility). Diesel exhaust, which could be considered an

objectionable odor source, would be associated with construction equipment operation, but it would be intermittent and temporary and would dissipate rapidly from the source with an increase in distance. Thus, Alternative B construction would not expose sensitive receptors to odorous impacts, and this issue would not be adverse.

4.2.3 Mitigation Measures

Mitigation measures to reduce the potential regional air quality impacts during construction were identified in the Final EIS/EIR. Implementation of mitigation measures AQ-1 through AQ-22 from the Final EIS/EIR for the Project would apply for Alternatives A and B. Below is a summary of these mitigation measures and a detailed description can be found in Appendix H:

- AQ-1: Adherence to SCAQMD standards for off-road engine emissions
- AQ-2: Requirement to use equipment that meets current standards for criteria pollutant emissions
- AQ-3: Adherence to SCAQMD Rule 403 for fugitive dust
- AQ-4: Dirt at construction sites to not exceed 25 feet and street sweeping shall be co-ordinated with local businesses
- AQ-5: Requirement of contractor to utilize SCAQMD Rule 403 Section(d)(5) for material removal
- AQ-6: Haul trucks shall not fill materials all the way to the top during removal of sand, soil, etc
- AQ-7: Haul trucks shall be covered during removal of sand, soil, etc
- AQ-8: Traffic speeds on unpaved roads to be restricted to 15 mph
- AQ-9: Proper implementation of SCAQMD Rule 403 when gusts exceed 25 mph
- AQ-10: Suspension of heavy equipment operations during second stage smog alerts
- AQ-11: Watering and/or covering of on-site debris, dirt, or rusty materials
- AQ-12: Utilization of LADWP electricity rather than diesel or gas generators
- AQ-13: Heavy-duty trucks shall not idle and regular inspections shall be performed
- AQ-14: Construction worker parking shall be configured to minimize traffic interference
- AQ-15: Construction activity that affects traffic flow shall be limited to off-peak hours
- AQ-16: Ongoing maintenance and adherence of specifications of construction equipment
- AQ-17: Dedicated turn lanes for movement of trucks where appropriate
- AQ-18: Requirement of construction equipment to meet EPA standards
- AQ-19: Maintenance and cleanliness of all trucks and construction equipment
- AQ-20: Use of low-sulfur fuel where possible
- AQ-21: Stations and project to be constructed consistent with Energy and Sustainability Policy
- AQ-22: Appropriate detour routes for minimal idling

As with the Project, potentially adverse construction related air quality effects would remain after implementation of these mitigation measures for Alternatives A and B.