5.2 MAJOR TOPICS RESPONSES

Several comments received on the Draft EIR addressed the same key topic areas and raised recurring themes. To provide a robust response to these frequently raised topics, major topic responses are provided here. While some of the topics discussed are not environmental topics under CEQA, they are covered here for informational purposes.

5.2-1 MR-1: Selection of Alternatives

Previous Planning Studies

Metro has been exploring options for transit service along the Metro-owned right-of-way (ROW) for several decades. Metro purchased the Harbor Subdivision from the precursor to the Burlington Northern Santa Fe Railway (BNSF) in the early 1990s. In 2009, Metro prepared an alternatives analysis that studied the potential for transit service along all or portions of the Metro ROW and identified the segment between the Redondo Beach (Marine) Station and the Torrance Transit Center as the highest priority project. Since then, several alignments and alternatives have been studied. The 2018 Supplemental Alternatives Analysis Report recommended two alignments to be carried forward into environmental analysis: the Metro ROW and the Hawthorne Boulevard alignments.

Draft EIR

After public scoping in 2021, an additional trench alignment option along the Metro ROW was added to the environmental study and included in the Draft Environmental Impact Report (EIR), in response to community input. The Draft EIR analyzed the Proposed Project, which is an Elevated/At-Grade Alignment within the Metro ROW, as well as a Trench Option and Hawthorne Option for the segment north of 190th Street. South of 190th Street, all alignments are the same and terminate at the Torrance Transit Center. In accordance with CEQA, the Draft EIR also analyzes a reasonable range of CEQA alternatives, including a No Project Alternative and two potentially feasible build alternatives – the High Frequency Bus Alternative and the 170th/182nd Grade-Separated Light Rail Transit Alternative – which were developed to substantially lessen or avoid significant project-related impacts, while still meeting most of the project's basic objectives.

Engagement & Community Input

Metro's commitment to meaningful community engagement has been central to the development of the project and to the process of shaping staff recommendations for the Locally Preferred Alternative (LPA). Metro has conducted extensive community engagement, both in person and virtually, throughout the environmental review process. Efforts to share information about the project included videos, interactive websites, and public meetings and briefings. Metro also actively gathered local feedback by conducting neighborhood walks and transit rider intercepts, listening to concerns, and responding to questions. All feedback was documented for transparency, and summary reports are available on Metro's project website.

Through these discussions, Metro staff found that attendees placed significant emphasis on protecting greenspace, ensuring safety for children and families walking and cycling in neighborhoods, and supporting greater access to economic development within the South Bay. The feedback from this engagement demonstrated strong community support for a rail extension to Torrance.

Public comments on the Draft EIR raised several key concerns, including noise from light rail trains and equipment near homes, safety concerns related to light rail trains crossing streets where residents – particularly school children – walk, potential delays to emergency responders caused by at-grade light rail crossings, and noise, vibration, and safety concerns regarding shifting existing freight tracks closer to

homes, including Breakwater Village, a senior living community adjacent to the Metro ROW. In addition to input from local residents, Metro received a recommendation from the California Public Utilities Commission (CPUC), which is a Responsible Agency for the project.[1] The CPUC recommended that Metro grade separate 170th and 182nd Streets due to the increased frequency of train activity at the two proposed light rail crossings and their close proximity to elementary schools within residential neighborhoods.

Selection of the LPA

Based on this extensive public engagement and input, Metro staff recommended that the Metro Board of Directors (Metro Board) select the 170th/182nd Grade-Separated Light Rail Transit Alternative, also referred to as the "Hybrid Alternative," as the LPA. At the May 23, 2024 Regular Board Meeting, the Metro Board adopted staff's recommendation and selected the Hybrid Alternative as the LPA. Being identified as the LPA means that the design of the Hybrid Alternative has been refined and advanced in the Final EIR. However, the other options and alternatives studied in the Draft EIR remain under consideration, and the final decision on the project will not be made until after the Final EIR is issued and the Metro Board holds a final public meeting on whether to certify the Final EIR and approve the project, including any of the options or alternatives evaluated in the EIR.

Responding to Community Concerns

The LPA addresses many of the public's concerns by eliminating the two at-grade light rail crossings by placing the light rail tracks below grade at 170th Street and 182nd Street. This, in turn, eliminates the Elevated/At-Grade Alignment's potentially significant and unavoidable noise impact caused by light rail crossing gate bells. It also avoids any potential for delays to emergency responders and prevents conflicts between light rail trains and pedestrians and cyclists, including along school routes. The LPA also avoids the construction-related significant impact to air quality generated by the Trench Option, which, if constructed, would require extensive excavation and truck hauling to remove soils. For the LPA, trench excavation would be limited to the two areas where short trenches would be constructed to grade separate 170th and 182nd Street. Relative to the Elevated/At-Grade Alignment, the LPA also eliminates the need to build a new freight bridge over Grant Avenue and avoids shifting the existing freight track closer to homes south of Artesia Boulevard, including Breakwater Village.

Similar to the Elevated/At-Grade Alignment and the Trench Option, construction of the LPA would be largely confined to the Metro ROW, which minimizes the real estate acquisitions needed to construct and operate the project north of 190th Street associated with the Hawthorne Option. The LPA identifies up to four non-residential parcels as permanent full acquisitions to locate Traction Power Substations (TPSS). Like the other alignments studied in the Draft EIR, the LPA is designed to avoid displacement of residents. The LPA would result in a construction duration approximately one year longer compared to the Elevated/At-Grade Alignment, but the overall construction duration would be within the five-to-seven year construction schedule range described in the Draft EIR.

The LPA is projected to attract about 4,690 new riders and 11,500 total daily project trips by 2042 (which also applies to the Elevated/At-Grade Alignment and Trench Option). Further, the LPA's projected cost of $2.23 billion (as estimated in 2022) is significantly lower ($730 million less) than that of the Hawthorne Option. For more information, see MR-21: Cost Estimates and Schedule.

[1] Under CEQA, a "Responsible Agency" is any public agency, other than the Lead Agency, that has discretionary approval power over a portion of the project (CEQA Guidelines Section 15381).

Challenges Related to Hawthorne Option

As noted in the May 23, 2024 Metro Board Report,[2] where the Metro Board voted to select the LPA, the Hawthorne Option presents several challenges for construction and implementation. It would require encroachment into Caltrans ROW and additional federal environmental clearance under the National Environmental Policy Act (NEPA), which could extend the project schedule by two to four years. Construction along Hawthorne Boulevard, which is a major regional thoroughfare with approximately 70,000 daily trips, would include lane closures and parking loss, which would exacerbate existing traffic congestion locally and across the South Bay during an extended five-to-seven-year construction period.

Approximately 170 commercial properties abut the Hawthorne Option, which serve approximately 350 businesses. The Hawthorne Option would require the greatest number of property acquisitions and result in the highest number of business displacements among the options studied. As identified in the 2023 Real Estate Acquisitions Report[3], the Hawthorne Option would require permanent full acquisition of seven commercial parcels and permanent partial acquisition of five commercial parcels north of 190th Street. Major utility relocations would also be required, including relocation of a major underground storm drain located beneath Hawthorne Boulevard, which would require lane closures to construct. In addition, the Hawthorne Option would require the high-voltage overhead transmission lines that traverse the corridor to be raised, to provide the required safety clearance between the wires and light rail system. These factors contribute to the Hawthorne Option's estimated construction cost of $2.96 billion (as estimated in 2022), the highest of the alignment options studied.

Further, the Hawthorne Option would not include enhancements proposed along the existing Metro ROW, such as freight noise, vibration, and safety enhancements, or the new neighborhood multi-use paths in Lawndale and Redondo Beach. It would also not provide a direct connection to the new Redondo Beach Transit Center, located a half-mile away. By contrast, the LPA provides a more balanced and cost-effective solution that still meets the project's objectives, ridership goals, and community and environmental priorities.

5.2-2 MR-2: Operational Noise Analysis Methodology and Impact Thresholds

The noise impact analyses were conducted in accordance with the Federal Transit Administration's (FTA) 2018 *Transit Noise and Vibration Impact Assessment Manual* (FTA Manual). This guidance is specifically designed to assess changes in noise conditions resulting from transit projects. The FTA Manual provides a comprehensive methodology to evaluate potential noise and vibration impacts from light rail operations, station activities, special trackwork, relocated freight tracks, grade crossings, and traction power substations. It also includes specific procedures for assessing daytime and nighttime noise at residences and other noise-sensitive locations. A full discussion of the noise methodology is included in Section 3.6-2.2 of the Draft EIR.

The following summarizes the key steps taken in identifying noise-sensitive land uses, measuring existing noise levels, and modeling the potential noise generated by the alignment options for the project. The noise levels are then assessed against the FTA noise impact thresholds to determine impacts.

[2] The relevant Board Report for the May 23, 2024 Metro Board Meeting is available at: https://metro.legistar.com/LegislationDetail.aspx?ID=6699075&GUID=B590F488-8363-4FE1-A9F2-93D0EB80DFEF&Options=&Search= (accessed October 31, 2024).

[3] The Real Estate Acquisitions Report (2023d) is available in the "Project Filing Cabinet" on Metro's website for the C Line Extension to Torrance: C Line Extension to Torrance - LA Metro

Identifying Sensitive Uses

All sensitive land uses (such as residences, schools, and parks) were identified within the FTA screening distances (350 feet from the alignment centerline for operation). The sensitive uses were grouped into modeling clusters for analysis, based on factors such as proximity to the alignment, existing noise conditions, and light rail system operating parameters (e.g., trackwork and light rail speed). Each cluster represents a group of land uses that have similar existing noise levels and would experience similar project-generated noise levels. Distances were measured from the nearest sensitive land use within each cluster to ensure that potential noise impacts were assessed conservatively. This approach accounts for the nearest and most affected receptors, providing a reasonable worst-case scenario for the analysis. Additional discussion of this identification process is provided on page 3.6-18 of the Draft EIR.

Establishing Existing Noise Levels

The Draft EIR measured existing noise levels and accounted for all existing sources of ambient noise using the methods outlined in the FTA Manual. Noise levels were recorded through 24-hour noise monitoring, capturing both daytime and nighttime ambient noise, as well as shorter, 1-hour representative measurements during the day. The monitoring was designed to account for all existing noise sources, including roadway traffic, aircraft flyovers, and freight activity. Monitoring locations were carefully selected to best represent existing conditions at sensitive receptors along the proposed alignments.

Noise was monitored at 27 locations, including daytime 30-minute measurements (1-hour representative) for FTA category 3 receptors (daytime institutional uses) and continuous 24-hour monitoring for FTA category 2 receptors (places where people sleep). To account for increased sensitivity to nighttime noise, a 10-dBA penalty was applied to all sound that occurred between 10:00 p.m. to 7:00 a.m. In the 24-hour noise calculation, the effect of the penalty is that each nighttime event is treated as equivalent to 10 daytime events. Further discussion of the existing noise methodology is included on page 3.6-17 of the Draft EIR. A discussion of the existing noise conditions, along with tables with monitored noise levels, and mapped noise monitoring locations, are included on pages 3.6-22 through 3.6-27 of the Draft EIR.

Modeling Project-Generated Operational Noise

The operational noise levels generated by the project options were modeled based on the frequency of service during different times of day, and the proximity of sensitive receptors from the alignment centerline. This modeling accounted for both light rail operations and freight operations on the relocated tracks. The freight operations on the relocated tracks were assumed to be the same as the freight's existing schedule. During nighttime hours, additional weighting, or a "penalty," was applied to noise levels to reflect increased sensitivity to noise during those hours.

Impact Thresholds for Operational Noise

Metro, as the CEQA lead agency, is responsible for selecting the appropriate significance criteria for the project and has chosen to apply the FTA's noise impact criteria. These criteria were specifically developed to address transit-related noise and are based on extensive research on human response to community noise. The FTA operational noise criteria consider both the change from the existing noise conditions and the extent to which noise generated by a project could result in noticeable changes in the ambient noise environment. The existing ambient noise levels serve as the baseline for determining moderate and severe impact criteria, defining the level of noise increase that would be considered moderate or severe. These criteria, including their relationship to ambient noise levels, are illustrated in

Figure 3.6-2 of the Draft EIR. If noise impacts are classified as either "moderate" or "severe" under the FTA criteria, the Draft EIR considers the impact to be "significant" under CEQA. Mitigation is required for all such significant impacts.

This approach contrasts with the "brightline" operational noise thresholds used by many local jurisdictions, which set fixed operational limits without considering existing noise levels. In many cases, these city thresholds have already been exceeded by existing conditions. The FTA's criteria, by comparison, account for existing noise conditions and help ensure that any noticeable increase is properly evaluated.

5.2-3 MR-3: Operational Noise Project Features and Mitigation Measures

In response to comments and to reflect changes in design made since circulation of the Draft EIR, the Final EIR includes refined mitigation measures to reduce potentially significant noise effects. In addition, Chapter 4, Corrections and Additions, of the Final EIR includes a detailed noise analysis for operation of the LPA, which grade separates the light rail tracks by eliminating the two at-grade crossings (at 170th Street and 182nd Street) that are included in the Elevated/At-Grade Alignment. Under the LPA, the light rail would cross below 170th and 182nd Streets in two short trenches, eliminating the need for light rail crossing gates and bells near homes.

The project design for the Metro ROW alignments includes project feature PF-NV-1 (Quiet Zone Equipment Installation), which applies to the design of the at-grade freight crossings. In addition, the Elevated/At-Grade Alignment – the only alignment with at-grade light rail crossing – includes project features PF-NV-2 (Crossing Bell Shrouds) and PF-NV-3 (Gate-Down-Bell-Stop Variance), which apply to the two proposed at-grade light rail crossings. These project features are described in Section 3.6-2.5 on pages 3.6-21 and 3.6-22 of the Draft EIR. The Draft EIR also recommends several mitigation measures to reduce the project's potentially significant noise impacts, as identified in Section 3.6-5 on pages 3.6-96 through 3.6-99 of the Draft EIR. The following summarizes the project features and mitigation measures.

Summary of Project Features (see Draft EIR Section 3.6-2.5 on pages 3.6-21 and 3.6-22 for full text)

- PF-NV-1 (Quiet Zone Equipment Installation): The eight at-grade freight crossings along the Metro ROW between Inglewood Avenue and 182nd Street would be designed and constructed to include Federal Railroad Agency (FRA)-required Supplemental Safety Measures and associated improvements and equipment that are needed to qualify for Automatic FRA Approval to establish a quiet zone. Crossing signal bells for freight would also be set to the minimum noise level of 75 dBA at 10 feet per American Railway Engineering and Maintenance-of-Way Association (AREMA) requirements. A quiet zone is a section of the rail corridor where train horns are not routinely sounded at crossings, provided that safety measures, such as gates, lights, and other barriers, are in place to protect motorists and pedestrians. The establishment of this quiet zone is anticipated to reduce freight noise overall along the corridor, as freight train horns typically produce noise levels of up to 110 dBA.
- PF-NV-2 (Crossing Signal Bell Shroud): For the Elevated/At-Grade Alignment, crossing signal bells at the two at-grade light rail crossings (170th Street and 182nd Street) would be equipped with shrouds to direct bell noise away from sensitive receivers and towards the crossings.
- PF-NV-3 (Gate-Down-Bell-Stop Variance): Also for the Elevated/At-Grade Alignment, Metro would apply for a gate-down-bell-stop variance at the two at-grade light rail crossings (170th Street and 182nd Street) to reduce the duration of bell ringing, limiting crossing signal noise to no more than 30 seconds.

Together, these project features are designed to minimize horn and bell-related noises near at-grade crossings. PF-NV-1 (Quiet Zone Equipment Installation) supports the seamless implementation of a quiet zone by the cities of Lawndale, Redondo Beach, and Torrance. It does not require discretionary action from the CPUC. PF-NV-2 (Crossing Signal Bell Shroud) and PF-NV-3 (Gate-Down-Bell-Stop Variance) would require CPUC coordination and approval, but based on Metro's past experience with CPUC on similar light rail transit projects, CPUC approval is anticipated, should the Metro Board approve the Elevated/At-Grade Alignment for implementation.

Summary of Operational Mitigation Measures (see Draft EIR Section 3.6-5, pages 3.6-96 through 3.6-99 for full text)

- MM-NOI-2 (Soundwalls): To mitigate operational noise impacts, the project would install soundwalls at identified impacted receptors. This would reduce noise by blocking the path of travel of noise from the light rail transit vehicle to sensitive receptors. The locations of the proposed soundwalls are shown in the Draft EIR, which include: pages 3.6-51 to 3.6-53 for the Elevated/At-Grade Alignment, pages 3.6-55 to 3.6-57 for the Trench Option, and pages 3.6-78 to 3.6-80 for the Hawthorne Option. The locations of the LPA soundwalls are shown in pages 4-115 to 4-119 of this Final EIR and are consistent with either the Elevated/At-Grade Alignment or Trench Option, depending on the alignment configuration at the given location.
- MM-NOI-3 (Low-Impact Frogs): Low-impact frogs would be installed at light rail crossovers identified as contributing to noise impacts. Frogs are specialized track components located where rails intersect or change direction within a crossover. Traditional frogs, which allow train wheels to pass from one rail to another, have gaps that produce a loud "clickety-clack" noise and cause vibration when train wheels pass over them. Low-impact frogs incorporate mechanisms, such as spring-loaded devices, to close these gaps as the train passes, significantly reducing noise and vibration.
- MM-NOI-4 (Quiet Zone Establishment for the Metro ROW alignments): Metro would cooperate with the cities of Lawndale, Redondo Beach, and Torrance to establish a quiet zone(s) along the Metro ROW from north of Inglewood Avenue to south of 182nd Street. As noted, the establishment of this quiet zone is anticipated to reduce freight noise overall along the corridor, as freight train horns typically produce noise levels of up to 110 dBA.
- MM-NOI-5 (Wheel Squeal Noise Monitoring for the Hawthorne Option): Wheel squeal is a high-pitched noise caused by friction between train wheels and rails on tight curves. This mitigation measure requires Metro to conduct noise monitoring at curves with a radius of less than 1,000 feet near sensitive receptors, which only occurs along the Hawthorne Option (there are no light rail and freight curves with a radius of less than 1,000 feet along the Metro ROW alignments). If the monitoring detects wheel squeal, Metro shall use wayside rail lubrication as necessary to reduce friction and prevent the noise from occurring. Note that this mitigation measure is only applicable to the Hawthorne Option because only that option has curve radii tight enough to cause wheel squeal.

Summary of Potential Impacts After Mitigation and With or Without the Project Features

With implementation of the above-described mitigation measures, including the implementation of a quiet zone, operational noise impacts of the LPA, Trench Option, and the Hawthorne Option would be reduced to less than significant levels. For the LPA and Trench Option, this includes the combined freight and light rail noise. For the Elevated/At-Grade Alignment, residual significant impacts would remain at some sensitive receptors, as shown in Figure 3.6-21 through Figure 3.6-24, and described in Section 3.6-6.1.2 on pages 3.6-100 to 3.6-103 of the Draft EIR. These residual significant impacts are due to the need for audible warning devices for the at-grade crossing at 170th Street, which is in close proximity to

sensitive receptors (homes). See Section 4.21 of Chapter 4, Corrections and Additions, of the Final EIR, which includes additional details for the 170th/182nd Grade-Separated Light Rail Transit Alternative (LPA) noise analysis.

For the Metro ROW alignments, the Draft EIR also discloses the potential for noise impacts if a quiet zone (PF-NV-1) is not established and/or if the CPUC did not approve the crossing signal bell shroud (PF-NV-2) and gate-down-bell-stop variance (PF-NV-3). As shown in Table 4 on page 18 of Appendix 3.6-B (Noise Analysis Detail Appendix), if quiet zones are implemented and soundwalls (MM-NOI-2) and low-impact frogs (MM-NOI-3) are in place, but the CPUC does not approve bell shrouds or gate-down-stop project features, four clusters would exceed the FTA noise criteria under the Elevated/At-Grade Alignment. No clusters would exceed the FTA noise criteria for the Trench Option or the LPA, as those alignments feature full light rail grade separations and do not require bell warnings at two crossings.

If, however, soundwalls (MM-NOI-2) and low-impact frogs (MM-NOI-3) are implemented, but quiet zones (MM-NOI-4) are *not* established and the CPUC also does not authorize the bell shroud (PF-NV-2) and gate-down-stop (PF-NV-3), the number of clusters exceeding the FTA noise criteria would increase substantially: 98 clusters for the Elevated/At-Grade Alignment, 99 clusters for the LPA, and 95 clusters for the Trench Option.

For the Hawthorne Option, which would not share a corridor with freight and would be fully grade-separated, implementation of mitigation measures MM-NOI-2 (soundwalls), NOI-3 (low-impact frogs), and MM-NOI-5 (wheel squeal noise monitoring) would reduce operational noise impacts to less than significant.

5.2-4 MR-4: Potential Negative Health Effects Related to Noise, Vibration, and Air Quality

Some commenters expressed concerns about potential negative health effects of the project related to noise, vibration, and air quality. These topics are addressed below.

Noise

The Draft EIR includes a comprehensive analysis of noise impacts and addresses potential health effects.

With the exception of hearing damage (discussed below), there are no quantifiable standards available to form the basis for an impact assessment of noise impacts on health. However, the FTA criteria used in the Draft EIR are based on well-established research into human responses to community noise. These criteria are designed to limit exposure to levels that prevent significant interference with normal activities, such as communication and sleep, and to reduce the likelihood of long-term annoyance. While the FTA criteria are not explicitly health based, they are generally considered protective of public health because annoyance typically occurs at lower levels than those associated with physiological harm. Therefore, compliance with FTA criteria is widely regarded as sufficient to prevent adverse health effects. Where application of the FTA criteria indicates significant impacts, the Draft EIR identifies mitigation measures to reduce those impacts and further minimize any potential health risks.

It is not scientifically feasible to directly correlate project-related noise impacts with specific health outcomes, due to the wide variability in how individuals respond to noise. Factors such as age, health status, pre-existing conditions, and personal sensitivity to noise vary greatly. Scientific studies, including the ones cited by commenters, generally establish broad patterns of how long-term exposure to high levels of noise may increase the risks of stress, cardiovascular disease, or sleep disturbance, but they do not provide a direct, one-size-fits-all correlation between specific decibel levels and individual health impacts. Moreover, transit-related noise is intermittent (e.g., from train pass-bys), making it difficult or

impossible to model the cumulative effect of short bursts of noise over time as compared to continuous, high-level noise exposure found in occupational settings.

In terms of hearing loss, the Occupational Safety and Health Administration (OSHA) has established an action level of 85 dBA for continuous noise exposure over an 8-hour period to protect against hearing damage (29 CFR 1910.95). As shown in Section 3.6-4 of the Draft EIR, unmitigated noise from light rail pass-bys at speeds of 50 miles per hour, which is the maximum speed through residential areas, would be approximately 78 dBA—well below the OSHA action level. Moreover, because light rail pass-bys are brief, typically lasting less than a minute, the noise exposure would not be continuous throughout the day, further reducing the potential for any risk of hearing loss. Even during peak periods, when trains pass by every five minutes, the equivalent noise level over a 1-hour period would be approximately 63.7 dBA without mitigation. This further demonstrates that noise from train operations would not pose a risk of hearing loss. These predicted noise levels represent exterior conditions. Actual interior noise would be lower, as standard building construction typically reduces noise by 10 dB with windows open and by 20 dB with windows closed.

While it is unlikely that project-generated noise would result in hearing loss, the Draft EIR acknowledges that elevated noise levels could increase stress, disrupt sleep, and interfere with speech at affected sensitive uses (see pages 3.6-2, 3.6-48). To address noise impacts, the Draft EIR includes mitigation measures (MM-NOI-2 through MM-NOI-5) to reduce noise where feasible, such as installing soundwalls and other noise-reducing features designed to keep noise levels below FTA thresholds.

As summarized in Sections 3.6-6 and 4.5-3.6.2 of the Draft EIR, implementation of mitigation measures, including the establishment of a quiet zone, would reduce operational noise impacts as follows:

> To below the FTA criteria at all clusters for the LPA, Trench Option and Hawthorne Option.

> To below the FTA criteria at all clusters except two near 170th Street for the Elevated/At-Grade Alignment.

By reducing most of the significant operational noise impacts to below the FTA criteria, Metro's mitigation measures are likewise expected to reduce the potential for long-term noise-related health impacts.

Potential health effects related to construction noise are discussed on page 3.6-34 of the Draft EIR. OSHA and the State's Division of Occupational Safety and Health (Cal/OSHA) regulations establish permissible noise exposure limits for workers to prevent hearing loss and hearing damage, with an average allowable exposure levels of 90 dBA (Leq) over an 8-hour period (OSHA Standard 1910.95; 8 Cal. Administrative Code, Section 5096). As shown in Table 3.6-15 of the Draft EIR (page 3.6-42), hourly noise levels from the loudest construction equipment could exceed 90 dBA at a distance of 50 feet. However, this equipment would not typically operate at 100% power or in close proximity to sensitive receptors for the full 8-hour period. As a result, average daily construction noise levels would remain below occupational thresholds.

Importantly, hearing loss is primarily an occupational hazard and is not anticipated for community members temporarily exposed to elevated construction noise. In some instances, stress may increase temporarily near active construction sites. However, MM-NOI-1 (Noise Control Plan) requires Metro's contractor to prepare and implement a detailed, site-specific Noise Control Plan prior to initiating any localized construction activities. The plan must demonstrate compliance with the FTA's 1-hour Leq construction noise thresholds (90 dBA during the day and 80 dBA at night for residential areas), which are designed to minimize harmful community exposure to noise. The plan must be prepared by a board-certified acoustical engineer and approved by Metro before work begins. To ensure impacts are reduced

to the maximum extent feasible, MM-NOI-1 requires the contractor to conduct continuous noise monitoring and implement corrective actions when thresholds are exceeded. The measure also mandates the use of feasible noise-reducing construction techniques such as the use of temporary noise barriers, high-performance mufflers, and electric (rather than diesel) equipment. Impact equipment is to be minimized or replaced with quieter alternatives, and nighttime work must comply with local ordinances or obtain necessary variances demonstrating mitigation.

By requiring adherence to FTA construction noise standards, proactive monitoring, and application of best available noise-reducing technologies, MM-NOI-1 (Noise Control Plan) would reduce the potential for adverse health effects, such as stress and sleep disruptions, while ensuring construction noise impacts are mitigated to the extent feasible. Although construction noise impacts would remain significant and unavoidable under CEQA, they would be temporary, intermittent, and not a type or intensity likely to cause lasting health effects.

Vibration

Similar to noise, it is not currently feasible to directly correlate vibration impacts of the project to specific health outcomes. Existing studies of vibration-related health effects primarily focus on occupational exposures, which involve sustained, high-intensity contact with vibrating surfaces and tools over long periods. For instance, workers operating jackhammers and heavy machinery for long durations sometimes develop what is referred to as hand-arm or whole-body vibration syndrome. Studies and guidance that have documented this phenomenon as an occupational hazard include but are not limited to the National Institute for Occupational Safety and Health *Publication 83-110 Vibration Syndrome* (1983) and The Navy and Marine Corps Force Health Protection Command *Human Vibration Guide* (2023). In contrast, transit-related vibration is intermittent, typically occurs at lower levels, and does not involve direct contact with vibrating surfaces, making it difficult to apply these occupational health findings to residential or community settings. Furthermore, individual sensitivity to vibration varies widely, influenced by factors such as personal health, age, and location within a building. As a result, there is no reliable method for linking specific vibration levels to health outcomes for the general population.

The operational vibration analysis in the Draft EIR calculates vibration levels at nearby buildings using equations from the FTA Manual, which accounts for the type and speed of transit vehicle and the distance from tracks to vibration-sensitive structures. Resulting values were compared to FTA vibration impact thresholds for damage and annoyance. For residential structures exposed to high frequency train activity (more than 70 events per day), the FTA's annoyance impact threshold is 72 VdB. See Draft EIR sections 3.6-2.3 and 3.6-2.4 for more detail regarding the methodology.

Similarly, construction vibration impacts are not expected to cause direct health effects, as the types of vibration experienced near construction sites are short-term and temporary, and do not reach the intensity or duration necessary to result in conditions like those seen in occupational exposure to high-vibration equipment.

The Draft EIR concludes that vibration levels of the Hawthorne Option would not exceed the FTA vibration annoyance thresholds. With implementation of mitigation measures MM-VIB-4 (Low Impact Frogs), MM-VIB-5 (Resilient Fasteners), and MM-VIB-6 (Ballast Mats), the Elevated/At-Grade Alignment, the Trench Option, and the LPA also would not exceed the FTA annoyance thresholds. Therefore, operational vibration impacts would be less than significant and, accordingly, would not likely result in adverse health effects. The Elevated/At-Grade Alignment, the Trench Option, and the LPA would similarly not exceed the FTA annoyance thresholds. Therefore, operational vibration impacts are not expected to result in adverse health effects.

The Draft EIR concludes that construction vibration levels would exceed FTA vibration damage criteria for the Elevated/At-Grade Alignment, and the FTA vibration annoyance criteria for all of the alignments studied in the Draft EIR. However, these temporary vibration impacts are not expected to cause health effects. Construction vibration would be short-term and would not reach the intensity or duration necessary to trigger the types of known occupational health risks described above. At most, vibration could contribute to temporary annoyance or sleep disruption in sensitive individuals. However, given the limited duration and frequency of exposure, these effects would not be expected to lead to lasting health effects. Additionally, Metro would limit construction to daytime hours near sensitive uses to the extent feasible.

For these reasons, the levels and duration of vibration associated with construction and operation of the project (all options) are not expected to result in adverse health impacts.

Air Quality

The air quality analysis in the Draft EIR was conducted in accordance with state regulations and guidance issued by the South Coast Air Quality Management District (SCAQMD), the regional agency responsible for overseeing air pollutant emissions from CEQA projects. The analysis uses the thresholds of significance adopted by SCAQMD for criteria pollutants. These thresholds are closely linked to the California Ambient Air Quality Standards (CAAQS) and the National Ambient Air Quality Standards (NAAQS), which are established to protect health and welfare. The SCAQMD thresholds include limits for pollutants such as nitrogen oxides (NOx), particulate matter (PM_{10} and $PM_{2.5}$) and volatile organic compounds (VOCs), which are associated with respiratory and cardiovascular health risks when present at high levels. SCAQMD's thresholds account for both regional and localized impacts. SCAQMD's thresholds for regional emissions include specific mass daily limits for various pollutants, while SCAQMD's localized significance thresholds (LSTs), are specifically designed to assess the impact of pollutants on nearby sensitive receptors, such as residences, schools, and hospitals.

As shown in Table 3.4-15 and Table 3.4-21, and discussed in Section 4.5-3.4.1, the Draft EIR found that the construction of the Elevated/At-Grade Alignment, the Hawthorne Option and the LPA would not exceed any applicable SCAQMD thresholds. However, the Draft EIR found that construction of the Trench Option would exceed SCAQMD's mass daily threshold for NOx emissions during periods of maximum daily trucking activities. None of the options or alternatives would cause exceedances of the SCAQMD LTSs, as described in Section 3.4-4.3 and Section 4.5-3 of the Draft EIR and Sections 4.8 and 4.21 of this Final EIR.

During operation, each option and alternative evaluated in the Draft EIR would result in a net decrease in regional pollutant emissions (as shown in Table 3.4-18), due to passenger vehicle trips being displaced in lieu of community members utilizing the new transit system. Furthermore, the proposed light rail system would not generate operational emissions related to rail propulsion, as the light rail cars would be powered by electricity. Therefore, the project would contribute to improved air quality in the region, rather than cause adverse air-quality related health impacts.

The Trench Option would result in a temporary significant air quality impact during construction. To ensure that air pollutant emissions remain minimal during construction, the project includes robust project features, as summarized in Section 3.4 of the Draft EIR. All contracted construction activities would be required to comply with the provisions of SCAQMD Rule 403 – Fugitive Dust Best Management Practices (PF-AQ-2), as well as Metro's Green Construction Policy (PF-AQ-1). These include, but are not limited to, measures to stabilize soil, water disturbed areas, cover haul trucks, and utilize Tier-4 off-road diesel-powered construction equipment greater than 50 horsepower.

Additionally, measures such as pre-watering before grading, limiting vehicle speeds on unpaved surfaces, and ensuring all stockpiled materials are covered are expected to substantially reduce fugitive dust emissions (by between 36% to 91%), compared to construction activities where such controls are not applied. Actual reductions would vary depending on the specific activity and site conditions. These compliance measures are among the most stringent emission control methods available and would ensure that the project minimizes contributions to air pollutants during the construction phase. In some cases, additional dust suppressants may be utilized to further reduce dust generation.

Although construction of the Trench Option would exceed SCAQMD mass daily threshold for NOx during periods of maximum daily trucks, it is unlikely that these temporary and intermittent exceedances would cause health impacts. Most significant health effects from air pollutants are associated with long-term, continuous exposure rather than short-term, intermittent spikes. The most common health risks associated with NOx exposure, such as respiratory irritation and exacerbation of asthma, are typically tied to longer-term exposure. Furthermore, NOx emissions are subject to dispersal in the atmosphere, particularly in outdoor environments where air circulation and wind can dilute localized pollutant concentrations. This natural dispersion reduces the intensity of exposure, making it less likely that temporary increases in NOx would reach levels that could cause adverse health outcomes for nearby residents. This conclusion is further supported by the conclusion in the Draft EIR that construction of the Trench Option would not exceed SCAQMD's localized significance thresholds. It is not feasible to further correlate the Trench Option's significant and unavoidable NOx impact with impacts to human health due to the variability in individual susceptibility, the complex pathways of pollutant exposure, and the limitations in existing air quality models to link specific concentrations of pollutants directly to individual health outcomes.

5.2-5 MR-5: Vibration Impact Types and Impact Thresholds

Some commenters expressed concerns about vibration impacts. The vibration impact analysis was conducted in accordance with the FTA Manual, which addresses two separate types of impacts (annoyance and damage) for both temporary construction activity as well as long-term operations of rail facilities, as described below.

Vibration Annoyance

The FTA impact thresholds for vibration annoyance (construction and operation) are provided in Table 5.2-1 below. The limit of human perception for ground-borne vibration is generally considered to be about 65 VdB, but may vary from person to person. The FTA impact threshold depends on the number of events that occur per day; as the number of events increases, the threshold decreases (i.e. becomes more stringent). This reflects the fact that an increased number of events increases the potential for annoyance. For infrequent events (less than 30 events per day), the impact threshold for residential land uses is 80 VdB. When the frequency of events increases to 70 events per day or more (typical for light rail systems), the impact threshold decreases to 72 VdB, meaning that any projected vibration exceeding 72VdB is considered an impact. Table 5.2-1 depicts the relationship between human/structure response and typical vibration levels.

Table 5.2-1. Ground-borne Vibration (GBV) Impact Criteria for General Vibration Annoyance Assessment

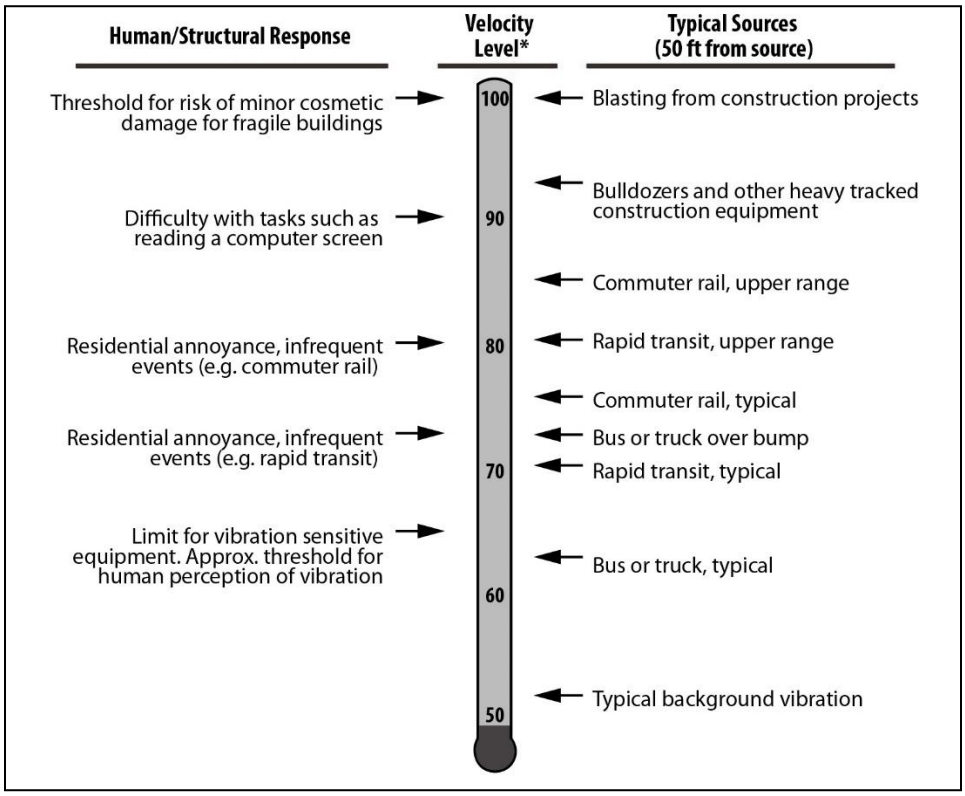
Land Use Category	GBV Impact Levels (VdB re 1 micro-inch/sec)		
	Frequent Events	Occasional Events	Infrequent Events
Category 1. Buildings where vibration would interfere with interior operations.	651	65*	65*
Category 2. Residences and buildings where people normally sleep.	72	75	80
Category 3. Institutional land uses with primarily daytime use.	75	78	83

Source: FTA 2018, Table 6-3.

Note: For frequency of events, Frequent Events = more than 70 events per day, Occasional Events = 30 to 70 events per day, and Infrequent Events = less than 30 events per day.

[1] This criterion limit is based on levels that are acceptable for most moderately sensitive equipment, such as optical microscopes. For equipment that is more sensitive, a Detailed Vibration Analysis must be performed.

Figure 5.2-1 Human/Structural Response to Typical Vibration Sources



Source: FTA, 2018

*RMS Vibration Velocity Level in VdB relative to 10^{-6} inches/second

In addition to the FTA guidance outlined above, the Draft EIR also acknowledges that some of the cities' municipal codes (Torrance and Redondo Beach) include sections covering vibration, generally stating that operating machinery that generates perceptible vibration at the adjacent property line is prohibited. However, using the limit of perceptibility at the property line would be an inappropriate threshold for two reasons. First, as stated above, the limit of human perception for ground-borne vibration is generally considered to be approximately 65 VdB (though may vary from person to person).

Like noise, perceptibility does not equal annoyance. The 65 VdB perceptibility level is more restrictive than the FTA vibration annoyance impact threshold of 72 VdB at residential properties for frequent events, which is a level that the FTA guidance considers to be barely perceptible. Second, ground-borne vibration is more typically experienced as an annoyance from within structures, where the vibration could cause rumbling, rattling of windows and shaking of items on shelves and walls. Lower levels of vibration in outdoor areas, such as at a property line, are not as perceptible and not normally evaluated for annoyance impacts. As stated in the FTA Manual, "Ground-borne vibration is almost never a problem outdoors. Although the motion of the ground may be perceived, without the effects associated with the shaking of a building, the motion does not provoke the same adverse human reaction." Section 3.6 of the Draft EIR discloses the areas which would be impacted by construction and/or operational vibration at the nearest vibration-sensitive structures (which would normally include human living spaces, but not garages or workshops), and various mitigation measures have been proposed to mitigate vibration levels below the FTA threshold of significance. The precise type and extent of required vibration mitigation in these areas would be determined in the final design phase, per FTA guidance and the results of the more detailed analysis.

Vibration Damage to Structures

The level of vibration that could potentially result in structural or architectural damage has been studied for several decades on a wide variety of vibration-producing projects. The building vibration damage criteria established by FTA (shown in Table 5.2-2), are generally more conservative than thresholds set by other agencies, ensuring a higher level of protection against potential damage. The building/structure categories identified in the first column account for different impact thresholds based on the type of structure. For this analysis, residential structures in the project area were classified as Category III structures, with a potential damage threshold of 0.2 inches/second. This threshold is appropriate for typical wood framed construction with interior drywall and exterior stucco or wood siding, which are characteristics broadly representative of residential buildings in the area, including older homes. It also encompasses structures with more vibration-sensitive materials, such as plaster walls, which may be present in homes built prior to the widespread use of modern drywall. The Category III classification is consistent with the general age and construction types found throughout the South Bay, where most housing development occurred after World War II. Accordingly, the analysis conservatively assumes Category III for residential structures in the project vicinity.

Table 5.2-2. FTA Ground-Borne Vibration (GBV) Impact Criteria for General Vibration Assessment

Building/Structural Category	PPV, IN/sec	Approximate L_v
I. Reinforced concrete, steel, or timber (no plaster)	0.5	102
II. Engineered concrete and masonry (no plaster)	0.3	98
III. Non-engineered timber and masonry buildings	0.2	94
IV. Buildings extremely susceptible to vibration damage	0.12	90

Source: FTA 2018.
Note Lv = RMS velocity in decibels, VdB re. 1 micro-in/sec.

Regarding construction impacts, each type of construction equipment needed for the project was assessed for its potential to generate vibration, taking into account both the level of vibration and the distance over which the vibration could extend and potentially cause architectural or structural damage. This information was compared against the FTA ground-borne vibration criteria to determine which equipment, if any, could exceed the threshold for Category III residential buildings and cause structural damage.

Regarding operational impacts, ground-borne vibration from light rail trains is not typically a concern during operations because vibration generated by light rail trains would not exceed the FTA vibration damage criteria. The vibration generated by light rail trains would be mitigated to levels that would not exceed the annoyance vibration threshold (72 VdB/0.015 inches per sec.) for residential structures, which is well below the range for vibration damage potential (94 VdB/0.21 inches per sec.) for most residential structures. Mitigation measures that would be implemented during operation include MM-VIB-4 (Low Impact Frogs), MM-VIB-5 (Resilient Fasteners), and MM-VIB-6 (Ballast Mats). The full text of the mitigation measures is included in Section 3.6-5, Noise and Vibration, of the Draft EIR. Therefore, mitigating vibration annoyance impacts would also mitigate any operational damage impacts.

5.2-6 MR-6: Vibration Analysis During Final Design

The vibration analysis conducted for the Draft EIR follows the FTA Manual for a "General Analysis," which is appropriate when multiple project alternatives or options are still under consideration. Appendix 3.6-C of the Draft EIR includes detailed maps showing the specific construction operational vibration impacts of the Elevated/At-Grade Alignment, the Trench Option, and the Hawthorne Option. Maps depicting the vibration impacts for the LPA are included in Section 4.21 of Chapter 4, Corrections and Additions, of this Final EIR. The level of analysis is sufficient to identify and compare the potential vibration impacts associated with each alignment option.

For instance, the Draft EIR identifies specific types of construction equipment likely to cause vibration levels at specific distances exceeding the damage thresholds for nearby structures, most of which are residential buildings that fall within Category III of the FTA guidelines. Additionally, the Draft EIR evaluates vibration annoyance impacts to residences (the only Category II land uses within close enough proximity to the alignment to experience annoyance impacts). This level of detail is sufficient to identify the potentially significant vibration damage and annoyance impacts at sensitive receptors along each of the alignment options under consideration.

The EIR also provides detailed mitigation measures with specific performance standards to address the impacts to the maximum extent feasible. For example, Mitigation Measure MM-VIB-1 (Vibration Control Plan) requires the contractor to develop a comprehensive plan that includes vibration monitoring, demonstrating compliance with FTA's vibration annoyance criteria, and using alternative construction methods where feasible. Similarly, MM-VIB-2 establishes specific limits on the operation of high-vibration equipment, such as vibratory rollers and pile drivers, near sensitive structures. It requires the use of alternative techniques, like Cast-In-Drilled-Hole (CIDH) piles, which significantly reduce vibration impacts in most instances. This mitigation measure ensures that construction activities are modified in real-time to minimize impacts.

While the Draft EIR conservatively assumes that impact pile driving for the Elevated/At-Grade Alignment may be necessary to reconstruct the Grant Avenue freight bridge, MM-VIB-3 is included to mitigate the risk of structural damage by requiring pre- and post-construction surveys. These surveys would ensure that any damage caused by construction vibration is identified and repaired. However, for the Elevated/At-Grade Alignment, it is acknowledged that one damage impact to a residential structure near Grant Avenue may remain unavoidable. The LPA, Trench Option, and Hawthorne Option would not construct a new freight bridge at Grant Avenue and would avoid vibration damage impact to the residential structure near Grant Avenue.

The Draft EIR acknowledges that some annoyance impacts from construction could remain, as not all high-vibration equipment could be feasibly replaced. For operational impacts, all vibration damage and annoyance impacts would be mitigated or avoided. Importantly, the Draft EIR does not defer the analysis or mitigation of these impacts. Instead, the mitigation measures include specific, enforceable

standards to limit the effects of vibration. Once the final alignment is selected, a more "detailed" vibration analysis (as defined by the FTA Manual) could be conducted, which would include empirical vibration testing (also referred to as transfer mobility testing) at key locations. This testing would provide higher-resolution data on future vibration levels for the selected alignment and vehicle types, allowing the project to fine-tune vibration mitigation measures to ensure operational vibration levels are reduced to less than significant levels. The detailed analysis would serve to refine and confirm the results of the Draft EIR's General Analysis, which has already identified all significant vibration impacts and proposed sufficient mitigation measures to address them.

5.2-7 MR-7: Utility Relocation and Hazardous Materials Safety

Some commenters expressed concern over the risks related to relocation of underground utilities and pipelines within the Metro ROW, particularly those carrying petroleum or other hazardous materials. These concerns include potential hazards from accidental damage to underground infrastructure during construction. Commenters also raised concerns about the long-term safety of operating relocated freight trains and light rail trains above existing or relocated underground utilities and pipelines. These risks would be addressed through established design and construction processes, as described below.

Verification of Utility Locations

Metro has extensive experience overseeing the design and construction of light rail projects and has successfully managed utility protection-in-place and relocations in coordination with third parties for complex transit projects throughout the region. As with all Metro projects, licensed engineers would be engaged throughout the design and construction process to oversee utility relocations and ensure that industry standards are followed. These engineers are experienced in evaluating the stability of existing onsite soils and underground utilities and developing solutions that avoid long-term impacts to utility lines and infrastructure and maintain their integrity. The project design would take into account the specific characteristics of the onsite soils and underground utilities, including the location, type, and sensitivity of each utility. Where necessary, Metro would work with third party owners of utilities to incorporate necessary reinforcements and protective casings to ensure long-term stability and avoid any future issues.

As described in Section 3.11-2.4 of the Draft EIR, the project includes Project Feature PF-US-1, Utility Identification and Coordination, which outlines measures to ensure proper coordination with utility owners. Utility verification is a rigorous, iterative process that occurs throughout all phases of the design process. It begins with requesting and reviewing available utility data and as-built drawings and continues during the future more detailed design phases with the collocation of more detailed data. This may include obtaining utility owners' in-line inspection[4] records, which provide precise and up-to-date information on the horizontal and vertical locations of pipelines and other infrastructure. Additionally, exploratory work, such as utility potholing, is performed to physically confirm the depth and locations of underground utilities and minimize uncertainties before construction begins.

It is important to note that some utility information, including exact locations and specifications, is not publicly disclosed due to confidentiality and security considerations. For the Draft EIR, petroleum pipelines and other utilities were identified based on available records, advanced conceptual engineering (ACE) drawings and coordination with utility companies. Select utilities, including petroleum pipelines, are shown in the cross-sections of Appendix 2-A of the Draft EIR. While these cross-sections

[4] Utility owners periodically conduct in-line inspections of their lines using sensors that travel through the lines to detect potential defects as part of their maintenance procedures; this data can be used to precisely locate utility lines.

are not intended for final design-level mapping, they provide sufficient information to identify the general location and configuration of utilities within the Metro ROW for environmental analysis.

The level of detail provided in the Draft EIR is appropriate for evaluating potential environmental impacts associated with utility and pipeline relocation. The analysis accounts for temporary construction-related emissions, disruptions to roadway circulation, and possible service interruptions. To ensure a conservative assessment, the Draft EIR also accounts for design-level uncertainties inherent in early phases of project development. This approach ensures that the environmental analysis adequately identifies potential impacts related to utilities and utility relocations while maintaining flexibility for final engineering refinements.

Pipeline Hazardous Materials Safety Through Design and Construction

To the greatest extent possible, the project requires pipelines and utilities to be protected in place during construction, rather than relocated. Determining whether a utility could remain in place depends on several factors, including its burial depth and distance from the proposed track. Pipelines that cross the tracks but meet the necessary clearance requirements would be protected by both the depth of burial and by casings[5] that extend across the entire width of the Metro ROW. Pipelines that run parallel to the track would generally not need to be encased, provided they meet applicable minimum safe distance and depth standards, including relevant safety regulations and utility owner standards. These measures are consistent with the current industry practices for underground pipeline protection. Metro is coordinating closely with utility owners to ensure that protection-in-place measures reflect applicable safety requirements and current engineering standards. In some cases, this coordination may involve confirming that existing facilities meet current clearance and safety criteria, or identifying additional protective measures as needed, such as, but not limited to, longer encasements. Where a pipeline cannot remain in place due to project design constraints or the need to maintain access for future maintenance, it would be relocated within the railroad corridor in compliance with applicable federal, state, and local safety and design standards. During construction, Metro and its contractors would follow established utility protection protocols and construction techniques and procedures to prevent accidental damage to underground utilities. Any necessary design variances would be coordinated with the relevant owning and regulatory agency through their formal variance process. Prior to excavation, Metro and its contractors would be required to locate existing underground utilities in accordance with California Government Code 4216.2 to minimize risk. Only certified contractors would be permitted to relocate utilities, and they would be required to notify the utility owners in advance and follow all owners' standard operating procedures. These procedures include marking designated utility relocation areas with flags, using hand-digging techniques at certain depths to minimize the risk of hitting underground lines, and ensuring that on-site inspectors monitor construction activities to verify compliance with safety protocols.

Some commenters raised concerns that construction-related vibration would damage existing underground utilities. However, the levels of ground-borne vibration expected during project construction are not anticipated to exceed the levels at which damage to underground utilities could occur. Most pipelines are buried at depths where vibration from surface construction dissipates significantly and are designed to withstand vibration associated with urban development and roadway construction. Moreover, geotechnical engineers and licensed contractors routinely evaluate soil conditions, pipeline depth, and distance from equipment when selecting construction methods, and incorporate design safeguards accordingly. As discussed below with respect to operational vibration

[5] A pipeline casing is a large-diameter steel pipe that encases the utility line, which takes the load from the trains above and protects the pipeline from damage.

effects, Caltrans' Transportation and Construction Vibration Guidance Manual (2020) similarly finds that even high-impact activities such as mine blasting rarely produce vibrations intense enough to damage buried pipelines. Therefore, with implementation of standard engineering and construction practices, the risk of vibration-related damage to underground utilities would be minimal and would not constitute a significant hazardous impact.

Some commenters also raised concerns that unstable soils could increase the risk of subsidence or inadvertent pipeline exposure, potentially leading to hazardous material releases during construction. As discussed in Section 3.8-4.2 of the Draft EIR, Metro and its contractors would implement industry-standard construction techniques such as sloping, benching, or shoring to stabilize soils during excavation activities, including trench construction and utility relocation. These are well-established methods used to prevent soil movement and maintain structural integrity in areas with loose or unstable soils. Metro recognizes that proper soil stabilization is essential to maintaining the safety of both construction workers and surrounding infrastructure, particularly in areas where underground utilities are present. Through the application of appropriate stabilization methods, the risks of subsidence or inadvertent pipeline exposure would be effectively managed, preventing accidental damage to underground utilities and minimizing the risk of hazardous materials releases during construction. This would be a less than significant impact. For additional information regarding these techniques, see MR-13: Soil Stability and Sink Holes.

The analysis in Section 3.9-4.2.1 was revised in Section 4.13 of Chapter 4, Corrections and Additions, of the Final EIR, to include expanded descriptions of the steps that Metro would take during utility verification and construction, which would minimize the risk of hazardous material release during construction.

Pipeline Hazardous Material Safety During Operation

Once operational, the light rail and freight trains would not pose a risk to underground utilities, including high-pressure gas pipelines. Any utilities affected by the project would have either been relocated during construction in compliance with utility setback requirements or protected in place using appropriate engineering measures. For this project, pipelines within the Metro ROW would be buried at minimum depths of at least three feet below the tracks.

Vibration levels generated by the operation of light rail transit vehicles and freight trains would remain well below thresholds known to cause damage to buried pipelines. At a depth of three feet, a light rail vehicle traveling at 50 miles per hour (mph) would generate a vibration level of approximately 85 VdB, corresponding to a peak particle velocity (PPV) of 0.07 inches per second. A freight train traveling at 20 mph would generate a vibration level of approximately 88 VdB, corresponding to a PPV of 0.10 inches per second. Both of these values are significantly below international safety standards for buried utilities. For example, the British Standard BS-7385-2, *Evaluation and measurement for vibrations in buildings – Guide to damage levels from ground borne vibration*, identifies a conservative damage threshold of 1.2 inches per second (30 mm/s), which is more than ten times higher than the project's expected vibration levels. Additional research cited in this standard, such as studies by Dowding and Akayya (2013) and Francini and Baltz (2008), identified safe vibration levels for buried structures ranging from PPV levels of 5 to 10 inches per second.

Other technical sources support these findings. The Caltrans *Transportation and Construction Vibration Guidance Manual* (2020), which is a well-researched and highly regarded technical reference used in a variety of projects, explains that buried pipelines are generally protected by the surrounding soil and bedding materials, which help absorb and dissipate vibration. As a result, buried pipelines can withstand significantly higher vibration levels than those generated by typical train operations. The manual cites

evidence that even extreme activities such as mine blasting, do not generate vibration levels that damage buried pipelines. For example, the manual cites a case in which an explosive buried near a pipeline generated a PPV of 25 inches per second, yet no damage to pipelines occurred. This level of vibration is far greater than the vibration levels expected from the project operations and also exceeds the FTA vibration damage criteria used in the Draft EIR (see Table 5.2-2 of MR-5, above). Similarly, a cased water well and a standard water well were exposed to PPVs ranging from 5.44 to 8 inches per second with no recorded damage. These examples illustrate that the vibration levels associated with project operations, which are orders of magnitude lower than these thresholds, would not produce a risk to underground pipelines.

With respect to concerns about the long-term effects of vibration on pipelines, the available evidence does not support the idea that repeated exposure to low-level vibrations gradually weakens underground pipelines over time. Vibration-induced damage typically occurs as a single event when vibration levels exceed a structure's specific threshold, rather than accumulating over time. Although there are a few specialized scenarios where long-term vibration exposure could cause wear-and-tear (e.g., the thin metal fuselage on aircraft subjected to continuous pressurization and depressurization), oil and gas pipelines are fundamentally different. They are typically made of thick metal, often 1 to 2 inches thick, and in many cases would be further protected as part of this project by steel encasements. These materials are designed to withstand far greater force than the low levels of vibration generated by light rail and freight train operations, even over the long term.

5.2-8 MR-8: Light Rail and Freight Train Safety

Some commenters expressed concern about rail safety in and around the Metro ROW, particularly regarding increasing the number of trains in the corridor, the potential for freight train derailment, and the risk of accidental release of hazardous materials being transported by freight. They also questioned whether the Metro ROW is wide enough to safely accommodate two new light rail tracks and a freight track. Engineering analyses confirm that, with design tailored to the corridor's constraints and conditions, including limited widening in certain locations, the Metro ROW can be configured to safely accommodate both light rail and freight operations. Metro is committed to enhancing safety throughout the corridor and would implement infrastructure improvements and operational protocols in compliance with applicable federal, state, and local safety standards. As described below, the project has been, and would be, designed to meet established regulatory standards, safety protocols, and structural requirements to ensure the safe coexistence of light rail and freight operations within the Metro ROW.

Metro ROW Width

In the residential areas of Lawndale and Redondo Beach, the Metro ROW is generally about 100 feet wide, with some exceptions. It is narrowest between 170th Street and Artesia Avenue, where it is 75 feet wide, and just south of 182nd Street, where it is between 83 and 84 feet wide. Metro conducted a property survey in Spring 2025 to verify Metro's property boundaries, as reflected in the Final EIR, Appendix B, Select Advanced Conceptual Engineering Drawings - Locally Preferred Alternative. Throughout the entire corridor, the Metro ROW is sufficiently wide to accommodate project elements safely, including tracks, retaining walls, and soundwalls. Safety spacing informed by requirements established by Metro, BNSF, and CPUC have been and would be incorporated into the project design to ensure safe operations. These include:

> Distance between freight track to the nearest wall or structure: The design follows a minimum distance of 10 feet between the freight track and a wall/fence/post, and eight feet between the

freight track and trench wall. These distances are consistent with CPUC General Order 26-D regarding minimum side clearances.

> Distance between light rail track to the nearest wall or structure: Metro's design standards require eight feet.

> Distance between the northbound and southbound light rail tracks: Metro's design standards require 14 feet between the centerlines of the two light rail tracks.

Taking these distances together, a minimum "envelope" of 50 feet would be needed for the at-grade light rail and freight track, and 48 feet for the trench configurations. This is well within the Metro ROW, which is at least 75 feet wide through Lawndale and Redondo Beach. The remaining space outside the rail elements is typically used for utility corridors and maintenance access. With the addition of the light rail tracks, these utility corridors and maintenance access would be reconfigured within the Metro ROW. Their design would be developed in consultation with BNSF, CPUC, utility owners, and other third parties. As described more fully below, these relocations are expected to be accommodated within the existing Metro ROW, with the exact configuration, including any needed design variances, determined as design advances, and with safety the paramount consideration. In limited locations, such as south of 190th Street, partial permanent acquisitions are planned to provide additional space for BNSF storage needs; none would involve the acquisition of homes.

The representative cross-sections below (Figure 5.2-2, Figure 5.2-3, and Figure 5.2-4) show examples of how the light rail and freight guideways, along with other elements such as retaining walls, soundwalls, maintenance walkways, utility corridors, and a multi-use path, fit safely within the available ROW. Even with all these additional elements, there is sufficient space to accommodate both the project and freight operations safely.

Figure 5.2-2. Representative At-Grade Cross-Section

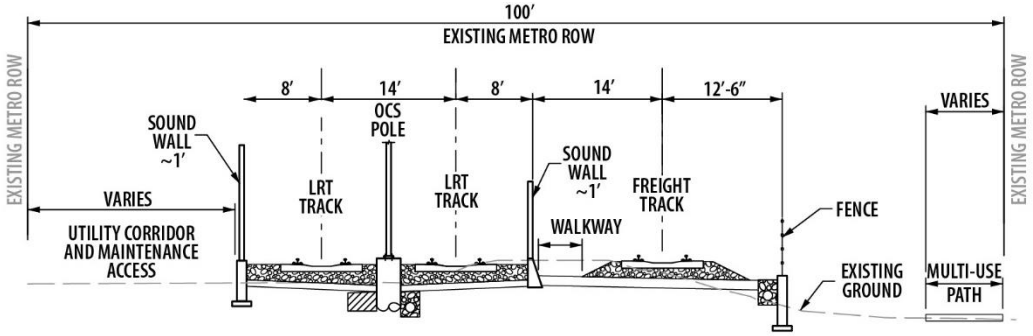


Figure 5.2-3. Representative Trench Cross-Section

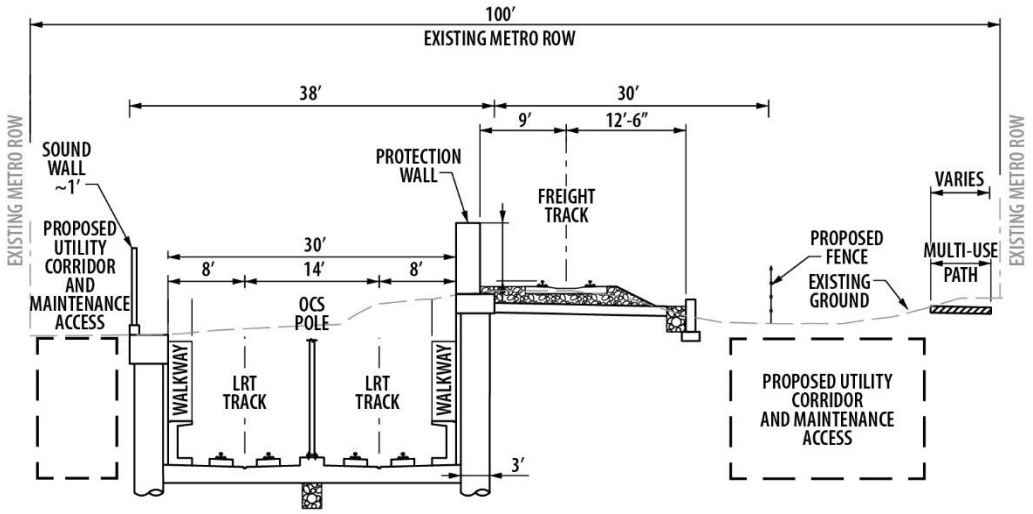
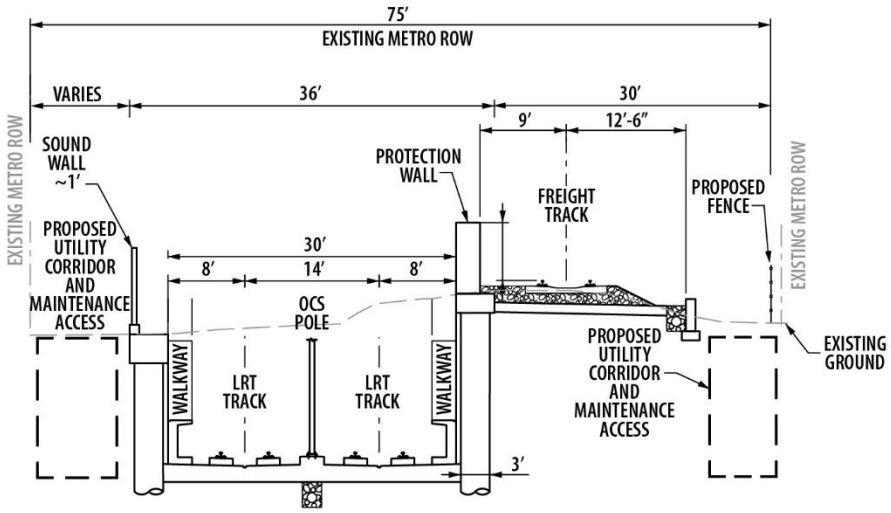


Figure 5.2-4. Representative Cross-Section at Narrowest Areas of the ROW



Utility Proximity to Tracks

As indicated, existing pipelines and other underground utilities run parallel to the freight tracks within the Metro ROW and operate under license agreements with Metro. These agreements authorize Metro to direct utility owners to remove or relocate their facilities at any time, although Metro does not plan to exercise that authority. Advanced conceptual engineering shows that, while some freight tracks and pipelines will need to be shifted within the corridor, there is sufficient space to accommodate the proposed light rail infrastructure, the BNSF freight tracks, and the utilities. South of 190th Street, the conceptual engineering plans include partial permanent acquisitions to widen the rail corridor in certain areas to address BNSF storage needs. Elsewhere, the ROW width would remain unchanged and the project would not require permanent acquisition of homes to accommodate the project.

Metro has received comments expressing concern that Metro could not meet BNSF's *Utility Accommodation Policy* (February 12, 2025) without acquiring adjacent residential properties. The BNSF

Policy applies only to utilities on BNSF-owned property (Part 1, Section A.1). With the exception of segments in Torrance south of 190th Street, the Metro ROW is owned entirely by Metro. Although BNSF's policy does not govern Metro property, Metro intends to use it as a design guideline and follow its provisions where safe and practical.

Part 2, Section C.5.b.i of the Policy generally requires that any pipeline parallel to BNSF property be located within 10 feet of the property line and at least 40 feet from the nearest track. While this spacing is feasible in rural or new greenfield corridors, it is impractical in older, urban rail corridors such as the Metro ROW (the historic Harbor Subdivision railroad corridor, constructed in the late 1800s), where many existing pipelines are much closer—sometimes only a few feet from the current freight tracks. Recognizing these realities, Part 1, Section A.4 of the Policy allows exceptions where hardships exist and alternative protective measures can achieve the Policy's safety intent. Metro would apply this flexibility where necessary to ensure designs remain both safe and practicable.

In dense urban settings, such alternative measures can include steel casing around pipelines, reinforced concrete utility trenches, specialized trench backfill materials, crash walls, or sheet piling between tracks and pipelines to protect against surcharge loading. These approaches have been used successfully on other Metro rail projects and would be incorporated into the final design of the C Line Extension to ensure the corridor's safety.

Metro would not design or construct any improvements that would create a condition less safe than what exists today.

Safety Infrastructure Improvements

Prior to commencing revenue service, Metro would implement a suite of safety features designed to enhance rail safety, prevent unauthorized access, and improve pedestrian and vehicle protection at at-grade rail crossings, as applicable. These features include:

> Vehicle gates and pedestrian gates: Gates would be installed at at-grade crossings to help prevent vehicles and pedestrians from crossing the tracks when a light rail vehicle and/or a freight train is approaching. For the Elevated/At-Grade Alignment, the gates would apply to both light rail and freight trains, while for the Trench Option and LPA the gates would be installed for freight only, as there would be no at-grade light rail roadway crossings.

> Warning signals: Visual and audible signals would be installed at all at-grade crossings to alert pedestrians and drivers when a train is approaching. Similar to gate installations, signals would apply to both light rail and freight for the Elevated/At-Grade Alignment, and to freight trains only for the Trench Option and LPA.

> ADA-compliant sidewalks and ramps: Pedestrian access across freight tracks would be improved through the installation of ADA-compliant sidewalks and ramps, ensuring safe and accessible crossings for all Metro ROW alignment options.

> Fencing and soundwalls: The light rail guideway would be fully enclosed with fencing, soundwalls, or a combination of both for all alignment options. These barriers would restrict unauthorized access to both the light rail and freight tracks, enhancing security. The soundwalls would also serve as noise mitigation.

Safety elements would also be provided at the proposed light rail stations. The stations would incorporate the latest safety enhancements and follow the principles of Crime Prevention Through Environmental Design (CPTED). CPTED principles promote open sight lines, discourage enclosed spaces out of public view, and integrate other design features to deter crime and improve public safety. See

MR-9: Light Rail Security for more information. Additional safety features implemented at the proposed stations would include:

> Canopies to provide weather protection and shelter;

> Station lighting to improve security and enhance visibility;

> Wayfinding signage to help passengers navigate stations safely and efficiently; and

> Security equipment, such as closed-circuit televisions (CCTV), public announcement systems, passenger assistance telephones, and variable message signs providing real-time updates.

Metro would also implement a public safety outreach program to educate the community about rail safety, particularly about at-grade crossings. This program would inform residents of all ages and backgrounds of safe corridor practices, train operations, and best practices for pedestrian and vehicle safety near the rail corridor.

By incorporating these and other safety features and complying with existing safety regulations and standards, Metro would enhance safety throughout the corridor and ensure that the project would not introduce unacceptable safety risks.

Risk of Freight Derailment

Some commenters raised concerns regarding the potential risk of freight train derailments and associated possibility of hazardous materials releases. However, derailment risks within this corridor are already low, and the project would not introduce any elements that would increase this risk.

Freight derailments are primarily caused by three critical factors: (1) improper wheel and vehicle maintenance; (2) excessive speeds that exceed the track design limits; and (3) track discontinuities (such as special trackwork, joints in the track, and obstructions on the track). Industry-wide investments in safety technology, training, and equipment maintenance have contributed to a 42% reduction in mainline freight accidents between 2000 and 2023 (Association of American Railroads, 2025), demonstrating the effectiveness of modern freight safety practices even as local investment levels may vary.

Freight derailments, when they happen, overwhelmingly occur in railroad yards or on freight industry tracks, where frequent switching maneuvers and high train-traffic volumes increase risks. Derailments on mainline freight tracks, such as those that run through this corridor, are uncommon. For example, between 2020 and 2024, approximately 430 freight derailments occurred in California, with over 70% occurring within yards and industry tracks. Crucially, for all types of derailments, there were zero injuries or fatalities (FRA 2025).

Safety is integral to the project's design. The project would comply with applicable safety standards, including those established by FRA, Metro, the CPUC, and BNSF Railway. These entities set rigorous standards for infrastructure condition, track spacing, protective barriers, fencing, and crossing infrastructure to minimize derailment risks and protect nearby communities.

The project would also incorporate multiple safety improvements, including:

> Optimized track spacing: Freight and light rail tracks would be spaced appropriately to maintain sufficient separation, reducing the risk of collisions;

> Upgraded freight rail infrastructure: Where freight tracks would be relocated, Metro would install new and upgraded rail infrastructure wherever physically feasible. Between 2020 and 2024, approximately 25% of derailments in California were caused by track defects, such as rail or switch

issues (FRA 2025). Replacing aging freight rails with modern rails would reduce the risk of track-related incidents;

> Protective fencing and barriers: Fencing and other physical barriers would be installed along the entire alignment to prevent unauthorized access and reduce the potential for obstructions on the track;

> Intrusion detection system: A real-time monitoring system would be installed to detect freight and/or light rail derailments, allowing for immediate intervention;

> Enhanced at-grade crossing safety: The project would implement state-of-the art safety infrastructure at all at-grade freight crossings, including signals, gates, and pedestrian protections, to help prevent vehicle or pedestrian incursions on the tracks, reducing the risk of collisions that could create track obstructions;

> Improved communication protocols: Metro would establish direct coordination procedures with freight operators to ensure immediate response in the event of a derailment or other emergency;

> Emergency responder training: Metro would provide specialized training for emergency responders on derailments and other rail-related emergencies. Regular drills and exercises would be conducted to ensure readiness in the unlikely event of an emergency.

The project would not increase the risk of derailment. In fact, through compliance with the safety standards and implementation of the project elements, above, the project would likely reduce existing risks by improving track infrastructure, introducing state-of-the-art intrusion detection technology, and enhancing emergency preparedness. Because the project would not increase the risk of freight derailment, it would also not increase the risk of hazardous material releases resulting from a freight derailment.

Finally, as previously indicated, in the unlikely event of a derailment, the low freight train speeds within this corridor (approximately 20 miles per hour) would substantially minimize the momentum and distance a train could shift off the tracks, thereby reducing the likelihood of severe damage or hazardous material release.

5.2-9 MR-9: Light Rail Security

Some commenters expressed concern that the project could increase security risks by providing new access points in the area for individuals who may engage in criminal activity and/or build encampments along the Metro ROW.

Metro takes public safety very seriously. In June 2024, the Metro Board of Directors unanimously approved the establishment of the Metro Transit Community Public Safety Department (TCPSD). The objectives of the Metro TCPSD are increased visibility, accountability, and consistent service delivery throughout the Metro system. In May 2025, Metro selected William Scott to serve as the agency's first Chief of Police and Emergency Management. The department is designed to support a safer transit experience through a specialized transit community public safety workforce trained specifically to address the needs of transit riders, as well as employing care-based strategies. CEQA is designed to address the physical environmental impacts of a project, such as noise, air quality, and biological resources. Social and economic issues, such as crime, are not within the scope of CEQA's required analysis (CEQA Guidelines, Section 15382). However, Metro acknowledges the community's concerns and wants to ensure community members are aware of the unparalleled steps the agency is taking to ensure the transit system is safe, clean, and easy to navigate.

The project design incorporates the best practices of CPTED, ensuring that the proposed stations are designed to be safe and secure. Key features of CPTED in the project's proposed station designs include open sight lines to enhance visibility and the elimination of isolated or disjointed spaces where individuals could be concealed. In addition to these physical design elements, security equipment would be installed at all stations and light rail vehicles. This equipment includes security cameras for continued monitoring and emergency phones for passengers to access help quickly when needed. See MR-8: Light Rail and Freight Train Safety, which also discusses project safety features.

In addition to incorporating CPTED principles, Metro continues its commitment to improving public safety with a three-point plan:

> Enhanced Visible Security Presence: Metro aims to keep our employees and customers safe and ensure they feel safe through an increased visible presence of uniformed personnel, station improvements and improved bus safety measures;

> Ensuring Proper System Usage: To ensure the system is being used only for its intended purpose of transit, Metro is making improvements to fare gate systems and enforcing stricter measures to prevent trespassing; and

> Collaboration: Metro continues to partner with the County, the Cities and Regional Agencies to address societal issues such as housing insecurity, untreated mental illness, and drug addiction, to ensure that transit safety is part of a larger community-wide effort to address these complex challenges.

As part of this strategy, Metro's law enforcement partners have expanded their visible presence on the rail system and increased the number of Transit Security Officers (TSOs) to enforce Metro's Customer Code of Conduct on both the bus and rail systems. Metro Ambassadors are also deployed on Metro's six rail lines and five of the busiest bus lines, to provide support to customers and keep a watchful eye out for problems in order to identify potential safety issues before they escalate.

5.2-10 MR-10: Changes to Community Character

Some commenters expressed concerns that the project could result in changes to community character. These concerns include the potential loss of green space, perceived division of community due to the light rail operating along the Metro ROW within the City of Lawndale, and the assertion that light rail within the Metro ROW contradicts city general plans. Additionally, some commenters worried that the light rail system could negatively affect quality of life in the surrounding area.

It is important to note that CEQA does not require an analysis of "community character" as an environmental impact in and of itself. CEQA requires analysis of physical environmental impacts, such as impacts to land use, aesthetics, air quality and noise, not subjective or social changes like shifts in community identity or character.

However, although community character is not a stand-alone impact under CEQA, the Draft EIR addresses related concerns, including in Section 3.2, Land Use, and Section 3.3, Aesthetics.

Land Use

The CEQA Guidelines recognize that economic or social effects of a project may be considered when determining the significance of a physical change caused by the project. According to Section 15131(b) of the CEQA Guidelines, "if construction of a new freeway or rail line divides an existing community, the construction would be the physical change, but the social effect on the community would be the basis for determining that the effect would be significant." Therefore, an EIR should examine how a project might create physical barriers that disrupt or alter the connectivity of a community.

For this project, the Elevated/At-Grade Alignment, Trench Option, and LPA would run within the existing freight corridor through a predominantly residential area in Lawndale. In some locations, safety fencing along this corridor is not maintained or has been breached, allowing unauthorized crossings by residents. Additionally, along portions of Condon Avenue which lack sidewalks, some residents use the freight corridor for recreational activities, which is neither authorized nor compliant with freight safety standards. With the introduction of a light rail line and reconstruction of the freight line on new tracks, residents would no longer be able to freely cross the Metro ROW where existing fencing has been breached. The project would include new or repaired security fencing, as well as other barriers such as soundwalls (as described in Section 3.6, Noise and Vibration of the Draft EIR) adjacent to the light rail tracks to meet rail safety standards.

Although these safety improvements would restrict unauthorized pedestrian access into the Metro ROW, they would not physically divide the community. Residents would still be able to cross the Metro ROW at the existing street crossings (Inglewood Boulevard, Manhattan Beach Boulevard, 159th, 160th, 161st, 162nd, and 170th Streets in Lawndale and 182nd Street in Redondo Beach), which would all be rebuilt with upgraded freight safety infrastructure. As these existing crossings would remain open and functional, the project would not result in the physical division of an existing community.

For the Hawthorne Option, the alignment would be entirely elevated, running parallel to I-405 and continuing southbound in the median of Hawthorne Boulevard. No conflicts would exist between street and light rail crossings. Although changes to the roadway configuration along Hawthorne Boulevard would be needed to support an elevated guideway, crosswalks would be maintained, replaced, or added, ensuring no impediment to crossing from one side of the community to the other. The primary changes to the roadway would involve reconfiguring intersections to relocate left turn lanes and reducing median parking due to conflicts with the guideway's support columns. While this may alter traffic flow, it would not prevent vehicles or pedestrians from crossing Hawthorne Boulevard, and therefore, there would be no physical division of the existing community.

Regarding consistency with local general plans, Sections 3.2-4.2 and 4.5-3.2 of the Draft EIR analyze whether the Proposed Project (Elevated/At-Grade Alignment), Options and CEQA Alternatives would cause a significant environmental impact due to a conflict with any land use plans, policies, and regulations adopted for the purpose of avoiding or mitigating an environmental impact. The analysis concludes that both construction and operation of the Elevated/At-Grade Alignment, Trench Option, Hawthorne Option, and LPA would result in less than significant impacts.

Some commenters asserted that the project would conflict with Lawndale's General Plan, particularly its designation of the Metro ROW as "open space." To clarify, at the time Metro issued the Draft EIR in January 2023, the City of Lawndale's General Plan designated the Metro ROW as "Public Facilities/Schools," not open space. This designation is shown on Figure 3-3 (Existing General Plan Land Use Map), of the City's Draft EIR for its General Plan Update (Lawndale 2023). CEQA did not require Metro to consider the project's consistency with the then-*draft* General Plan Update. (C*haparral Greens v. City of Chula Vista* (1996) 50 Cal.App.4th 1134, 1145, fn. 7 (no requirement to evaluate consistency with draft plans).)

In addition, Metro, as a legislatively created regional transportation authority, is not subject to local zoning and planning requirements. Although Metro considers the concerns of local jurisdiction, it retains the legal authority to carry out projects in accordance with its statewide transportation mandate. Metro, not the City of Lawndale, has jurisdiction over the Metro ROW. While Metro acknowledges that the City of Lawndale's General Plan Update includes the Metro ROW within its open space inventory, the Metro ROW has long been used as an active rail corridor dating back to the 1880s and introducing

light rail within this corridor is consistent with its former Public Facilities/Schools designation, as well as with its historic and current use. Recreational use of the Metro ROW has never been authorized, as the Metro ROW is part of an active transportation corridor. Any suggestion that the Metro ROW is a designated recreational area or parkland is inaccurate.

The City of Lawndale's reclassification of the Metro ROW from Public Facilities/Schools to Open Space in the General Plan Update could reflect the intent to recognize the corridor's potential for multiple uses, including transportation infrastructure and authorized public access. The introduction of light rail would not inherently conflict with the community's long-term goals for public and open spaces. In fact, the project would enhance public access by introducing safe, multi-use paths parallel to the rail tracks in two segments of the alignment. These paths would offer dedicated walking and biking space in areas, such as along Condon Avenue in Lawndale, where sidewalks do not currently exist, thereby enhancing the functionality and safety of the corridor for pedestrians. The project is also consistent with other aspects of Lawndale's General Plan Update, including the transit-supportive policies and implementation actions identified to achieve Goal M-5, which works to provide a comprehensive public transportation system, which would include light rail service.

More broadly, introducing light rail into the Metro ROW would advance the objectives of local and regional plans aimed at reducing reliance on single-occupancy vehicles, lowering emissions, and improving public transit. By supporting these broader goals, the project would be consistent with and promote the overarching objectives of the prior Lawndale General Plan, the Lawndale General Plan Update, and other relevant local and regional planning frameworks.

Aesthetics

Appendix G of the CEQA Guidelines distinguishes aesthetic impacts in non-urbanized areas from those in urbanized areas. For non-urbanized settings, a project is evaluated based on its potential to degrade the existing visual character or quality of public views of the site and its surroundings. In contrast, for urban settings, the evaluation focuses on whether the project would conflict with applicable zoning and other regulations governing scenic quality.

As the project would occur within an urbanized area, the Draft EIR appropriately analyzes the project's potential for impact based on zoning/regulation conflicts. To ensure a comprehensive analysis, the Draft EIR includes a detailed evaluation of potential visual changes caused by the introduction of the project. This assessment uses the Federal Highway Administration's (FHWA) methodology for evaluating visual quality, based on three criteria: vividness (the memorability of the landscape), intactness (the extent to which the landscape is free from visual intrusions), and unity (the coherence and harmony of the landscape).

As described in Section 3.3, Aesthetics of the Draft EIR, the project corridor is already highly urbanized, with a mix of residential, industrial, and commercial land uses, as well as the existing freight rail infrastructure. There are no designated scenic vistas or notable natural landscapes within the project's vicinity. Due to existing development and infrastructure, the existing visual quality in the area is generally low for vividness, intactness, and unity.

As described in Section 3.3-4.3.2, although at each key viewpoint the project would introduce permanent visual changes, the changes would be neutral as they would not degrade the existing visual quality. The project elements, including the structures, stations, and soundwalls, would be designed to reflect and complement the surrounding communities and to minimize visual intrusion. For example, fencing and soundwalls would be visually integrated to reduce contrast, and station architecture

retaining walls, and other infrastructure would incorporate design treatments that reduce visual massing and enhance overall compatibility with the existing visual landscape.

Consistent with the Metro Tree Preservation Policy, Metro would preserve existing trees along the corridor where feasible and replace trees at a minimum of a 2:1 ratio where preservation is not feasible. For heritage trees, the replacement ratio is 4:1. In addition, new trees and landscaping would be incorporated along the corridor to enhance visual quality. These elements would provide greenery and soften the appearance of the new infrastructure and contribute positively to the visual character of the corridor. The Metro Tree Preservation Policy has been incorporated as a project feature into this Final EIR as PF-BIO-1. Metro Tree Policy.

Moreover, the project is not anticipated to conflict with any local zoning or other policies governing scenic quality. Metro's commitment to thoughtful, high-quality design would help ensure that the project remains visually compatible with surrounding neighborhoods.

In summary, while the project would introduce new transit infrastructure, the visual impact analysis confirms that these changes would not degrade the existing visual character or quality of the community.

5.2-11 MR-11: Traffic Delay and Level-of-Service

Level of Service

Some commenters expressed concerns regarding the adequacy of traffic analysis, specifically related to potential traffic delays at intersections. Specific concerns included changes in roadway configurations, shifts in traffic patterns from vehicles accessing the Metro light rail stations, the introduction of new traffic signals (particularly under the Hawthorne Option), and increased delays for the Elevated/At-Grade Alignment on 170th and 182nd Streets due to proposed at-grade light rail crossings and extended railroad safety gate down times, as well as increased pedestrian crossings and associated impacts.

As explained on Page 3.1-3 of the Draft EIR, traffic congestion or delay (often measured by level of service, or LOS) is no longer considered a significant environmental impact under CEQA. Instead, CEQA now focuses on VMT to assess transportation impacts (see Pub. Resources Code, Section 21099(b)(1) and CEQA Guidelines, Section 15064.3). The rationale for this shift is that LOS analyses primarily measure congestion and delay from the perspective of drivers, which could lead to projects that promote vehicle use over more sustainable alternatives like transit, biking, and walking. By contrast, VMT focuses on reducing the number of miles driven by vehicles, promoting projects that align with California's goals of reducing greenhouse gas emissions, improving air quality, and promoting active transportation.

Although LOS is no longer used in CEQA to determine environmental impacts, Metro separately published the 2023 Transportation Detail Report[6] to analyze local traffic conditions. This report describes present traffic conditions, evaluates future conditions with and without the project, and assesses how the Elevated/At-Grade Alignment, the Trench Option, and the Hawthorne Option would affect traffic circulation, bus route integration and public on-street parking. These issues were studied to ensure the project design takes into consideration local traffic operations, road safety, and access for emergency services, regardless of CEQA requirements.

[6] The Transportation Detail Report (2023e) is available in the "Project Filing Cabinet" on Metro's website for the C Line Extension to Torrance: C Line Extension to Torrance - LA Metro

Traffic Delays

Hawthorne Boulevard serves as a major regional arterial and carries approximately 70,000 vehicle trips per day. Some comments related to the Hawthorne Option raised concerns about intersection operations along the segment of Hawthorne Boulevard between Redondo Beach Boulevard and 182nd Street, where additional traffic signals and roadway modifications are proposed. Primary changes proposed to the streets for the Hawthorne Option include:

- Modification to left turn lanes on Hawthorne Boulevard from 164th Street through 186th Street to accommodate support columns for the elevated light rail structure.
- Signalization of the intersection of Hawthorne Boulevard and 164th Street.
- Installation of a new mid-block crossing approximately 360 feet south of Artesia Blvd to provide access to proposed station.
- Reduction of the northbound left turn pockets on Hawthorne Boulevard at 177th Street from two turn lanes to one turn lane.
- Signalization of the intersection of Hawthorne Boulevard and 179th Street.
- Closure of the median at Hawthorne Boulevard and 180th Street to prevent unsafe left turns, which would permanently detour to 179th Street (northbound) or 182nd Street (southbound) to reverse direction.

Commenters generally opposed the addition of new signals and left-turn modifications based on the concern that these changes would increase vehicle delays in the area. In particular, several comments cited the proposed reduction from two to one northbound left-turn lanes from Hawthorne Boulevard onto westbound Artesia Boulevard as a potential source of congestion.

All of these Hawthorne Option-related changes to traffic operations at signalized and unsignalized intersections are addressed in the 2023 Transportation Detail Report. That analysis used a detailed transportation microsimulation model to analyze changes to automobile traffic on roadways to provide detailed LOS and vehicle queueing metrics. The 2023 Transportation Detail Report used forecast peak hour traffic volumes, which is customary for traffic studies, and accounted for potential traffic rerouting resulting from the Hawthorne Option's modifications to the median access.

The analysis concluded that, at major intersections, average delay would generally increase compared to the 2042 No Project scenario. At some intersections, vehicle queues may also increase. The location of the most substantial increase was the northbound left-turn queue at Hawthorne Boulevard and 179th Street. The increase in queues is caused by the closure of the median at 180th Street, which causes some northbound turn volumes to divert to 179th Street, which would become a signalized intersection. Similarly, queues would increase at the southbound left turn lane at 182nd Street as a result of the 180th Street median closure. At most other intersections, vehicle queues would either increase or decrease by a proportionate number of vehicles, depending on where traffic shifts occur.

Some commenters opposed the proposed new traffic signals and crosswalks intended to improve access to the proposed station area on Hawthorne Boulevard, south of Artesia Boulevard. Currently, the distance between pedestrian crossings near the South Bay Galleria is over 1,000 feet (between Artesia Boulevard and 177th Street). The proposed pedestrian improvements would reduce this gap and improve safety and accessibility. Signal spacing of less than 360 feet is not uncommon in Los Angeles County, including other segments of Hawthorne Boulevard north of 162nd Street. Moreover, the proposed signals, including the proposed mid-block pedestrian crossing at the South Bay Galleria Station, could be integrated into the existing traffic signal coordination system that regulates vehicle

flow on Hawthorne Boulevard. This signal coordination would help maintain vehicle flow and reduce potential delays, while also ensuring that the crossing remains clear of vehicles for safe pedestrian crossing.

Left-turn queues are managed through a combination of available storage space (such as lane and turn pocket lengths) and traffic signal timing. Signal timing and phasing could be adjusted over time in response to evolving traffic patterns, helping to ensure that left-turn queues do not exceed the available storage space between signal cycles. This operational flexibility allows for efficient traffic management and minimizes potential congestion at intersections.

Parking Loss

Some comments raised concerns about the potential loss of parking along Hawthorne Boulevard under the Hawthorne Option. The 2023 Transportation Detail Report identifies approximately 20 median parking spaces that would be lost to accommodate the columns for the elevated light rail structure within the City of Lawndale. Within the City of Torrance, the Hawthorne Option would require widening a segment of Hawthorne Boulevard between 175th Street and 179th Street (and narrowing the parallel frontage road) which would result in the loss of approximately 12 overnight parking spaces. These changes are limited in scope and are necessary to accommodate the elevated structure within the existing public right-of-way and avoid acquisition of private properties.

5.2-12 MR-12: Emergency Access

Some comments asserted that the at-grade crossings along the Metro ROW would be blocked too frequently by passing trains, potentially leading to delays in emergency response. It is important to note that the only light rail alignment evaluated in the Draft EIR that includes at-grade light rail crossings is the Elevated/At-Grade Alignment. The light rail system under the Trench Option, the Hawthorne Option, and the LPA would all be fully grade-separated and would not include any new at-grade light rail crossings.

As noted on page 3.1-58 of the Draft EIR, the Elevated/At-Grade Alignment would include two at-grade crossings at 170th Street and 182nd Street, which would have gates that temporarily lower when a train passes. These gate-down events would typically last between one and two minutes for light rail. As discussed in Section 3.1-4.4.2 of the Draft EIR, during these gate-down events, emergency responders could either wait briefly or reroute to the next available crossing. Under CEQA, the threshold for determining a significant impact is whether the project would result in inadequate emergency access, not merely temporary delays. Occasional short-term delays at crossings do not rise to the level of a significant environmental impact.

Emergency response times are influenced by many factors beyond just the road network, such as the location of emergency responders, traffic conditions, and the nature of the emergency. Even if an emergency required crossing the Metro ROW, not every emergency would require crossing the tracks at an at-grade light rail crossing, and not every emergency vehicle would encounter a passing train during a response.

Although the Elevated/At-Grade Alignment would increase the frequency of gate-down events relative to existing freight service, this situation is common in Los Angeles County where emergency responders have adapted effectively to the introduction of at-grade light rail crossings. For example, in Lawndale, seven at-grade freight crossings currently experience gate-down times with existing freight operations, and local emergency responders have developed practices and training for maintaining effective response times when a crossing is briefly blocked.

Metro's experience in other parts of Los Angeles County further confirms that new at-grade crossings do not cause significant emergency access issues. For example, Los Angeles Fire Department Station 59, located less than 2,000 feet from the at-grade crossing of the Metro E Line on Barrington Avenue, reported average EMS response times of 4:26 before the line opened in 2016 and 4:25 at peak ridership in 2019.[7] Non-EMS response times also remained consistent, with only minor variations (10 or less seconds) across years.

The geographic context of the 170th and 182nd Street crossings, which are located near jurisdictional boundaries (Lawndale/Redondo Beach and Redondo Beach/Torrance) also supports the conclusion that the Elevated/At-Grade Alignment would not compromise emergency access. The crossing at 170th Street is located approximately 550 feet to the east of the border between Lawndale and Redondo Beach. Lawndale is served by the Los Angeles County Fire Department, while Redondo Beach is served by its own fire department. As a result, first responders from these two departments would likely approach from opposite directions on either side of the grade crossing and would not typically need to cross at 170th Street. Additionally, the nearest Los Angeles County Fire Department stations to the City of Lawndale are located to the north, where there is ample time for firefighters to select alternative routes that avoid the grade crossing on 170th and reach the southwestern area of the City of Lawndale.

Similarly, the Elevated/At-Grade Alignment's proposed 182nd Street at-grade light rail crossing is located near the border of the City of Redondo Beach and the City of Torrance, which are served by different emergency responders. The City of Torrance is located entirely to the east of the grade crossing, so the Torrance Fire Department would not need to cross the grade crossing, and there would be a limited area of the City of Redondo Beach that would require that city's fire department to cross at the grade crossing or use an alternative route.

In summary, while occasional delays at the two proposed at-grade light rail crossings for the Elevated/At-Grade Alignment may occur, the frequency and duration of gate-down events are expected to be minimal. Emergency responders are experienced in managing such conditions and have the ability to reroute if necessary. The introduction of light rail is not expected to result in inadequate emergency access, as the project would preserve sufficient crossing options to maintain access and ensure timely emergency response.

As previously noted, the Trench Option and LPA would grade separate light rail at 170th Street and 182nd Street, eliminating any new at-grade crossings for light rail at these intersections. The Hawthorne Option also fully grade separates light rail.

5.2-13 MR-13: Soil Stability and Sinkholes

Some commenters expressed concerns about the stability of the soils within the Metro ROW, with some commenters referencing a reported sinkhole near Grant Avenue in Redondo Beach and attributing it to maintenance activities conducted by an owner of underground utilities. According to the utility owner, this sinkhole was the result of a broken irrigation line in a residential flower bed and was a localized issue that has since been repaired. Although Metro cannot independently confirm the exact cause, available information suggests it was unrelated to underlying geologic conditions. Sinkholes could occur naturally in areas with collapsible soils, or as a result of human activities that alter soil stability, such as leaking utilities or poor drainage. Factors such as inadequate engineering, poor construction techniques, or alterations to soil compaction and groundwater conditions could also contribute to their formation.

[7] Published response time data for City of Los Angeles Fire Department is available at lafd.org.

Section 3.8, Geology, Soils, and Paleontological Resources, of the Draft EIR describes the types of soils and geologic conditions present within the project area. These conditions are typical of much of Los Angeles County and do not indicate unusual risks. As discussed in Sections 3.8-3.11 and 3.8-3.12, there is a low potential for issues related to soil expansion, subsidence, or settlement. In response to public comments, as shown in Section 4.12 of Chapter 4, Corrections and Additions, of the Final EIR, Section 3.8 of the Draft EIR has been revised to further clarify that the likelihood of encountering collapsible soils, which are those most susceptible to sinkhole formation, is also low.

Whether soil is considered collapsible depends on the types of sand and silt particles that are present and their structure. Naturally occurring collapsible soils consist of sand and silt sized particles arranged in a loose "honeycomb" structure held together by weak bonds, such as clay, calcium carbonate, or capillary suction (Caltrans 2024). These bonds generally have enough strength to support loads, but they could weaken and collapse when water is introduced. Water sources could include changes in groundwater level, leaks from nearby pipelines, and rainwater.

A review of existing geotechnical data, including prior studies and available subsurface investigations, such as a boring near Artesia Boulevard, indicates a low potential for naturally occurring collapsible soils within the project area. This conclusion is supported by findings in the City of Lawndale's General Plan (Lawndale 2023) and the City of Redondo Beach's General Plan Program EIR (Redondo Beach 2024), both of which identify a low likelihood of collapsible soils in their respective jurisdictions. Data from the boring near Artesia Boulevard suggests that the subsurface soils predominantly consist of sands with minor layers of silty clays. These soils are medium dense near the surface and become more compact with depth, meaning they generally do not exhibit characteristics of loose soils. However, the soil's potential for collapsibility would be verified during the preliminary engineering phase of design through site-specific field investigations. At the time of the boring, groundwater was encountered at 77 feet below the surface, a depth that is unlikely to pose stability issues.

As outlined in Section 3.8-2.5 of the Draft EIR, the project includes Project Feature PF-GEO-1 (Metro Geotechnical Design Standards) to ensure compliance with established engineering and safety criteria, including the Metro Rail Design Criteria (MRDC), as well as Caltrans and the California Building Code's design criteria for bridges, aerial structures, and building structures. Collectively, these standards provide a rigorous framework for evaluating and addressing site-specific geotechnical conditions to ensure both temporary and long-term stability and safety.

The MRDC establishes detailed requirements for geotechnical investigations and design integration throughout the design and construction process. Specifically, Section 5.6 of the MRDC outlines methodologies for evaluating subsurface hazards and addressing potential risks such as settlement, soil instability, and liquefaction. Required geotechnical investigations would include pre-construction site-specific assessments, such as borings and laboratory testing, to characterize soil strength, composition, and consistency, and to evaluate potential impacts from groundwater. The resulting geotechnical report would identify soil types and engineering properties, establish design parameters, and include recommendations to proactively address potential risks. The recommendations of the geotechnical report would be directly incorporated into the project's plans and contractor's specifications, ensuring that the final design adequately addresses subsurface conditions and geotechnical hazards throughout the project's lifecycle. In addition, the project would be designed to minimize permanent changes to subsurface drainage and groundwater conditions, further reducing the potential for soil-related impacts.

For collapsible soils in particular, Metro would conduct site-specific field investigations prior to construction to assess whether such soils are present. These investigations would include identifying perched or static groundwater water; visually inspecting for "honeycomb" soil structure or cementation;

and laboratory testing for collapsibility. If collapsible soils are identified, the design team would evaluate their depth and lateral extent, evaluate the potential for future wetting, and estimate the potential collapse settlement under anticipated loading conditions. This information would be used to inform final engineering design and ensure that any risks are effectively addressed so that the project remains structurally stable over time. Design strategies could include soil stabilization, the use of artificial fill, deep foundations, and enhanced drainage measures.

During construction, Metro would implement a range of construction techniques tailored to the site-specific conditions to ensure that soils are stabilized and groundwater is properly managed. These methods, required by Metro's Baseline Specifications, could include the following:

> Proper earthwork methods would provide compacted soil beneath any foundations to ensure the finished condition would remain stable during operations. This requires the removal and replacement of poor soils with proper fill, under the discretion of qualified inspection personnel.

> For areas with deeper excavation (such as the trenches for the Trench Option and LPA), construction techniques include sloping or benching the excavation, and shoring trench walls with support to avoid unstable soils during the construction phase. Construction methods for any structures would be chosen during the design phase based on soil type, such as using deeper foundation methods for areas where collapsible soils may be present.

> Appropriate construction methodologies would be selected that minimize permanent changes to sub-surface drainage conditions or groundwater pressures. This could include installation of dewatering wells outside trench walls, sump pumps within the trench, and deep secant pile walls to minimize excavation base instability, soil heaving on the upgradient side of the trench, fluidization, and erosion.

> Soil settlement may be monitored during construction of embankments, to ensure proposed fill is settled before construction of tracks or other settlement-sensitive structures.

In addition, the MRDC and associated Metro Supplemental Seismic Design Criteria (SSDC) provide specific criteria for ensuring that slopes, embankments, and aerial guideways are designed to prevent long-term deformation or failure, including the evaluation of seismic events. These standards provide methods to limit lateral deformation, manage groundwater levels, and prevent settlement-related impacts under normal and seismic conditions.

In summary, the soils within the project area present a low risk for naturally occurring sinkholes, and Metro would apply established geotechnical standards and construction practices to prevent sinkhole formation and other stability-related concerns.

Lastly, some commenters asserted that the Draft EIR is deficient because full geotechnical investigations were not undertaken prior to its preparation. Under CEQA, environmental review is typically conducted at a level of detail commensurate with the planning phase of the project. Conducting full geotechnical investigations prior to project approval would be premature and impractical. Detailed site-specific work, such as borings, laboratory soil testing, and groundwater monitoring, is closely tied to the final design and construction methods, which are not completed until after project approval. These investigations are resource-intensive and must be scoped according to specific engineering requirements that emerge later in project development. For CEQA purposes, Metro appropriately relies on existing geotechnical data, prior studies, and established regional soil profiles to evaluate the potential for geological hazards. This approach is consistent with CEQA's intent to provide a reasonable, good-faith analysis of potential impacts. Site-specific geotechnical investigations would be conducted during the next phase of

engineering to confirm subsurface conditions and ensure the project is designed in compliance with applicable safety and engineering standards.

5.2-14 MR-14: Property Values and Impacts to Businesses

Some commenters expressed concerns over the potential for a decrease in property values as a result of the proximity of the project, and potential impacts to businesses during construction.

CEQA does not require an evaluation of changes to property values and the direct economic effects of a proposed project (Pub. Resources Code, Section 21080(e)(2), 21082.2(c), CEQA Guidelines, Sections 15064(e), 15131). CEQA is focused on environmental impacts, and fluctuations in property values are considered social and economic issues, which generally fall outside of the scope of environmental analysis under CEQA.

However, multiple studies (Shankar, P., Young, L., Haas, P., & Esling, P., 2019; Noh, Y., & Li, W., 2024; Rennert, L., 2022) have shown that residential and commercial properties located within a half-mile radius of transit stations tend to experience increased property values. This is typically attributed to the enhanced accessibility provided by transit systems, offering greater access to destinations, such as employment centers, schools, and entertainment hubs. Proximity to transit stations tends to improve community livability by fostering accessibility, which is increasingly valued in residential markets.

Regarding property acquisition, the light rail alignment options and alternatives studied in the Draft EIR, including the LPA, were designed to minimize the need to acquire property as much as possible and avoid displacement of residents. If the Metro Board votes to certify the Final EIR and approve an alignment for implementation, Metro will finalize the list of any properties that may need to be acquired for the selected alignment and will begin outreach with property owners to discuss real estate needs.

Metro is also committed to helping small businesses continue to operate during and after construction. Metro provides support to businesses affected by major rail projects through initiatives like the Business Interruption Fund, which helps eligible businesses cover certain operating expenses and marketing support during construction to help ensure their continued success. More information about these programs is available on the Metro website at https://www.metro.net/about/business-interruption-fund/ and https://eat-shop-play-lametro.hub.arcgis.com/.

5.2-15 MR-15: Metro Ridership Forecasting Methodology

Some commenters expressed concerns about ridership levels for the project and the overall Metro system.

As a part of the project analysis, Metro conducted a ridership analysis to forecast future ridership, travel patterns, time savings, and congestion benefits (measured as a reduction of vehicle miles traveled or "VMT"). The methodology and findings are documented in the 2023 Ridership Summary Report, published concurrently with the Draft EIR. [8]

Metro's travel demand model uses socioeconomic data from the Southern California Association of Governments (SCAG) projected for 2042. According to these forecasts, ridership for the LPA is expected to match that of the Metro ROW alignments, with about 4,690 new riders and 11,500 total project trips per day by 2042. Metro's travel demand model calculates projected ridership for a typical weekday and applies an "annualization factor" of 318 to compute annual ridership. An annualization factor of 318 corresponds to 245 days of typical weekday ridership, and 120 days of weekend/holiday ridership at

[8] The Ridership Summary Report (2023a) is available in the "Project Filing Cabinet" on Metro's website for the C Line Extension to Torrance: C Line Extension to Torrance - LA Metro

around 60% of weekday ridership. Ridership projections show that riders from the greater South Bay and Palos Verdes Peninsula would use the system to connect to the regional rail network.

The model also accounts for telecommuting, which has been on the rise, and accelerated during the COVID-19 pandemic. Metro conducted preliminary testing using SCAG's Activity Based Model (ABM) to understand and predict telecommuting trends and found that the number of telecommuters is expected to be smaller than originally predicted. This is likely attributable to the fact that many industries cannot support a large fraction of telework.

Metro is seeing trends that indicate many transit riders do not have the option to telework, which suggests that transit ridership will continue to recover and grow as telework trends stabilize. Since ridership levels dropped during COVID-19 in 2020, Metro's ridership has increased in the last few years. In February 2025, Metro reported 311 million boardings in 2024, an 8% increase over 2023 annual ridership numbers and the first time the agency has reached this level of ridership since before Covid-19 pandemic. Metro will continue to study telecommuting and ridership data to inform the project and ensure that ridership trends are appropriately reflected in future analyses.

5.2-16 MR-16: Response to Lawndale and Redondo Beach Community Letter

Some commenters from Lawndale and Redondo Beach submitted the same form letter that expressed a preference for the Hawthorne Option and concerns regarding the Metro ROW alignments.

The letter included comments on the following topics, and responses to each are provided below.

1 – **Opposition to Metro ROW Alignments.** The commenter's opposition to the Metro ROW alignments and preference for the Hawthorne Option is noted. In May 2024, the Metro Board selected the Draft EIR's 170th/182nd Grade-Separated Light Rail Transit Alternative (also known as the "Hybrid Alternative") as the LPA. The Hybrid Alternative was identified as the LPA based on a comprehensive evaluation of all options, including considerations of community impacts, travel benefits, costs, and ability to meet the project's objectives. The Metro Board will make a final decision on the project alignment following the completion of the Final EIR. This decision will consider the Final EIR's findings, including all public comments received and the responses provided.

2 – **Neighborhood Quality of Life.** The commenter's concern about potential impacts to neighborhood quality of life are noted. Metro acknowledges that introduction of a light rail system to residential areas may bring changes to the surrounding environment, including increased noise and vibration. As disclosed in the Draft EIR, significant and unavoidable noise and vibration impacts are anticipated during construction for all rail alignments. However, Metro would implement every feasible mitigation measure to minimize these impacts to the maximum extent feasible. During operation, with implementation of mitigation measures, noise and vibration levels for the LPA, Trench Option and Hawthorne Option would be reduced to less than significant. For additional information regarding these topics, see Major Topic Responses MR-5: Vibration Impact Types and Impact Thresholds, and MR-10: Changes in Community Character.

3 –**Proximity of Realigned Freight Track to Residences.** As part of the Metro ROW alignment options, Metro would realign the existing freight track in specific segments of the corridor to accommodate two new light rail tracks and ensure that the overall design meets safety standards.

Freight derailment risk is very low, and the project would not increase the risk of derailment. See MR-8: Light Rail and Freight Train Safety. As part of the project, Metro would rebuild existing freight tracks in several areas throughout the corridor, upgrading them to meet modern engineering and safety

standards, and would implement other safety features such as fencing and crossing improvements that would enhance the overall safety along the corridor.

The project's design is informed by FRA and Metro standards and criteria for parallel track operations, including appropriate track spacing to ensure an adequate and safe distance between freight and light rail along the corridor. Tracks would be spaced to minimize the potential for any interference between the freight and light rail operations, allow sufficient room for the installation of safety barriers, and provide buffer zones to help contain any unlikely incidents, such as a minor derailment within the Metro ROW. The spacing would take into account train speeds, freight types, and site-specific conditions.

In addition, communication protocols between freight operators and Metro would be established to ensure rapid response and efficient management in the unlikely event of a derailment. Metro would also coordinate directly with local emergency responders and provide them with real-time information to ensure that they are prepared to act quickly. This coordination would include regular communications and training.

Metro will continue to prioritize community safety as the project advances through design and implementation. For additional information on this topic, see MR-8: Light Rail and Freight Train Safety.

4 – **Utility Relocation and Hazard Risks.** The existing utilities, including high-pressure petroleum pipelines within the Metro ROW, would either be protected in place or relocated, following stringent safety protocols and engineering standards. During the next design phases, detailed geotechnical assessments would be conducted to evaluate soil conditions thoroughly, including potential stability issues that could affect utility safety. These evaluations would guide the implementation of specific construction techniques, such as shoring, protective barriers, and stabilization methods, to ensure that construction activities do not compromise pipeline integrity.

The project would follow applicable safety regulations and standards for utility protection, and Metro and its contractors would coordinate with utility owners to comply with all operational and safety requirements to minimize risks during construction and ensure that pipelines are adequately protected after the project becomes operational.

For additional information on these topics, see MR-7: Utility Relocation and Hazardous Material Safety, and MR-13: Soil Stability and Sinkholes.

5 – **Metro ROW.** The Metro ROW is an active freight corridor and is not designated as public green space or authorized for recreational use. Some residents have used parts of the Metro ROW informally for recreation, which is not consistent with freight safety standards and is prohibited due to the risk associated with proximity to an active rail corridor.

To enhance safety and mitigate noise impacts, the project would include new or upgraded security fencing and soundwalls along the light rail tracks. These soundwalls, discussed in Section 3.6, Noise and Vibration, of the Draft EIR, would be designed to meet light rail and freight rail safety standards while reducing potential noise impacts on nearby residences. The exact height and material of the soundwalls would be finalized in later design phases and would feature aesthetic treatments to help minimize their visual impact and blend with the surrounding environment, as described in Section 3.3, Aesthetics, of the Draft EIR.

To further support recreational opportunities, the project would include multi-use recreational paths along Condon Avenue in the City of Lawndale and between Grant Avenue and 182nd Street in the City of Redondo Beach. The new paths would improve mobility within the neighborhoods where no sidewalks exist today, and provide safe, designated areas for walking, biking, and other activities. Pursuant to

Metro's Tree Policy (2022b), trees would be preserved where feasible and replaced at a ratio of 2:1 (or 4:1 if the tree is considered a heritage tree). Additionally, new landscaping, shade trees, and other design elements would be introduced to enhance the natural character of the corridor and support a unified, visually appealing environment. Metro's Tree Policy has been incorporated into this Final EIR as Project Feature PF-BIO-1. Metro Tree Policy.

For additional information, see MR-10: Changes to Community Character.

6 – **Hawthorne Option Ridership Benefits.** Concurrent with the Draft EIR, Metro published the 2023 Ridership Summary Report, which analyzes travel benefits of the routes studied in the Draft EIR (Metro ROW and Hawthorne Boulevard). The Hawthorne Option was projected to have higher total project trips and new riders. However, the Metro ROW alignments had greater reductions in VMT and higher travel time savings per trip. Metro analyzed these benefits in combination with construction cost estimates to better understand cost effectiveness. The project objectives, as stated in the Draft EIR, include improving mobility in the South Bay and delivering a cost-effective project. The travel benefit-to-cost analysis found that the Elevated/At-Grade Alignment and LPA performed better than the Hawthorne Option and Trench Option. See summary table below, which was provided to the Metro Board in the April and May 2024 Board Reports during the selection of the LPA.

Comparison	Metro ROW (Elevated/ At-Grade)	Trench Option (ROW)	Hybrid Alt (ROW)	Hawthorne Option	High Frequency Bus Alt
Annual Project Trips	~3.68M	~3.68M	~3.68M	~4.96M	~1.29M
Annual New Riders	~1.49M	~1.49M	~1.49M	~1.74M	~396K
Annual VMT Reduction	~19.51M	~19.51M	~19.51M	~19.39M	~2.28M
Travel Time Savings/Trip (minutes)	22	22	22	19.7	18.2
Cost/ Annual New Riders	$1,318	$1,905	$1,497	$1,695	$338
Cost/ Annual Project Trips	$534	$772	$607	$595	$103
Cost/Annual VMT Reduced	$101	$146	$115	$153	$59

Source: Metro (2024)

As noted in the May 23, 2024, Metro Board Report,[9] where the Metro Board voted to select the LPA, the Hawthorne Option presents several challenges for construction and implementation. It would require encroachment into Caltrans ROW and additional federal environmental clearance under the National Environmental Policy Act (NEPA), which could extend the project schedule by two to four years. Construction along Hawthorne Boulevard, which is a major regional thoroughfare with approximately 70,000 daily trips, would include lane closures and parking loss, which would exacerbate existing traffic congestion locally and across the South Bay during an extended five-to-seven-year construction period.

Approximately 170 commercial properties abut the Hawthorne Option, which serve approximately 350 businesses. The Hawthorne Option would require the greatest number of property acquisitions and result in the highest number of business displacements among the options studied. As identified in the

[9] The relevant Board Report for the May 23, 2024 Metro Board Meeting is available at: https://metro.legistar.com/LegislationDetail.aspx?ID=6699075&GUID=B590F488-8363-4FE1-A9F2-93D0EB80DFEF&Options=&Search= (accessed October 31, 2024).

2023 Real Estate Acquisitions Report, the Hawthorne Option would require permanent full acquisition of seven commercial parcels and permanent partial acquisition of five commercial parcels north of 190th Street. Major utility relocations would also be required, including relocation of a major underground storm drain located beneath Hawthorne Boulevard, which would require lane closures to construct. In addition, the Hawthorne Option would require the potential relocation or elevation of high-voltage overhead transmission lines that traverse the corridor. These factors contribute to the Hawthorne Option's estimated construction cost of $2.96 billion (as estimated in 2022), the highest of the alignment options studied.

Further, the Hawthorne Option would not include enhancements proposed along the existing Metro ROW, such as freight noise, vibration, and safety enhancements or the new neighborhood multi-use paths. It would also not provide a direct connection to the new Redondo Beach Transit Center, located a half-mile away. By contrast, the LPA provides a more balanced and cost-effective solution that still meets the project's objectives, ridership goals and community and environmental priorities.

The LPA is projected to attract about 4,690 new riders and 11,500 total daily project trips a day by 2042 (which also applies to the Elevated/At-Grade Alignment and Trench Option). Because construction would be staged within the existing Metro ROW, the LPA would require minimal property acquisitions in the segment north of 190th Street, with up to four non-residential parcels identified for permanent full acquisitions to locate a TPSS. Like the other alignments studied, the LPA is designed to avoid the displacement of residents. Further, the LPA's projected cost of $2.23 billion, as estimated in 2022, is significantly lower ($730 million less) than that of the Hawthorne Option.

Relative to the Elevated/At-Grade Alignment, the LPA's under-crossings at 170th and 182nd Streets would eliminate long-term operational noise impacts, facilitate uninterrupted emergency response, enhance safety along school routes, and create a fully grade-separated light rail line for improved operational efficiency.

The Metro Board will make a final determination on the project alignment after reviewing the Final EIR and considering all public comments, including those submitted on the Draft EIR and the responses provided in the Final EIR.

7 – **Long-Term Planning.** Metro acknowledges the commenter's concerns and the importance of considering both financial and non-financial costs, such as community and environmental impacts, in selecting the best option for the Metro C Line Extension. In selecting the Hybrid Alternative as the LPA, the Metro Board considered multiple factors, including the environmental impacts presented in the Draft EIR, the extensive community input, the long-term benefits of each option, and the estimated construction costs.

Metro recognizes the permanent nature of this project and its potential to shape the community for generations. The Metro Board will continue to carefully weigh all relevant factors as they review the Final EIR and make a final decision on whether to certify the Final EIR and approve one of the alignment options under consideration.

5.2-17 MR-17: Response to Torrance Community Letter

Some commenters from Torrance submitted the same form letter that expressed a preference for the use of the Metro ROW for the project.

The letter included comments on the following topics, and responses to each are provided below.

1 – Benefits of the ROW Alternative. The commenter notes the benefits of the Elevated/At-Grade Alignment, including lower costs, shorter construction time, reduced traffic impacts to Hawthorne

Boulevard, and the benefit of connecting the transit centers in Redondo Beach and Torrance. Following the close of the public comment period on the Draft EIR, the Metro Board selected the Draft EIR's 170th/182nd Grade-Separated Light Rail Transit Alternative (also referred to as the "Hybrid Alternative") as the LPA. As detailed in this Final EIR, the LPA would have similar benefits and impacts as the Elevated/At-Grade Alignment, including direct connections between the transit centers. The LPA is similar to the Trench Option in that it minimizes potential noise impacts through the elimination of the at-grade light rail crossings at 170th and 182nd Streets with two short trenches. When the Metro Board considers certification of the Final EIR, it will further evaluate the environmental and community impacts of the LPA to make a final determination on project approval. The comments related to economic and cultural benefits do not raise any significant environmental issues requiring a response.

2 – Impacts along Hawthorne Boulevard. The commenter expresses concern regarding potential impacts of the Hawthorne Option, including disturbance to neighborhoods, impacts to businesses, and possible use of eminent domain. The Draft EIR and other analysis performed for the project recognize that the Hawthorne Option would involve construction impacts along a busy commercial corridor and regional throughfare, which has approximately 70,000 daily vehicle trips. Construction of the elevated light rail structure would require lane closures during construction, which would affect traffic flow and result in potential disruptions to businesses. Approximately 170 commercial properties support approximately 350 businesses, which abut the project alignment along Hawthorne Boulevard. The Hawthorne Option would require the permanent acquisition of several commercial properties along Hawthorne Boulevard, including gas stations, auto repair shops, self-storage, furniture store, and auto dealerships, to accommodate the elevated alignment and stage construction. The Hawthorne Option also requires some temporary construction easements that would affect businesses, including an auto dealership, to construct the support structures for the elevated structure. Metro follows and prioritizes negotiations with property owners to reach fair purchase agreements; exercise of eminent domain is only considered as a last resort when an agreement cannot be reached.

Compared to the Hawthorne Option, the alignment options along the Metro ROW, including the LPA, minimize permanent property acquisition needs by utilizing the ROW corridor for construction and operations. The Metro ROW alignments would avoid the potential permanent acquisition of commercial properties along Hawthorne Boulevard.

3 – Ridership Considerations. The commenter emphasizes the importance of ridership from Torrance and suggests that this contribution should weigh in favor of the Metro ROW alignments. The ridership projections set forth in the 2023 Ridership Summary Report estimate average weekday boardings in the year 2042. While the Hawthorne Option showed higher estimated project trips than the ROW alignments, it was found to be less cost-effective when ridership benefits were evaluated in relation to construction costs. Ridership and cost-effectiveness are among the many factors that the Metro Board will consider when making a final decision on project approval.

5.2-18 MR-18: Homelessness

Some commenters expressed concerns about the presence of unhoused individuals on Metro's train system. Social and economic impacts are outside CEQA's purview; this major topic response is provided for informational purposes. Metro is committed to providing a safe, clean, and welcoming transit experience for all riders, and has developed programs to address homelessness on the system. In 2018, Metro's Board of Directors voted to fund Homeless Outreach Teams to engage with unhoused riders and connect them to resources and supportive services. These multidisciplinary teams are part of Metro's broader public safety strategy, which also includes Metro Ambassadors, law enforcement partners, security personnel, and cleaning crews.

Since that time, Metro has tripled the number of homeless outreach staff and expanded service delivery in partnership with the Los Angeles Department of Health Services and key community-based organizations. These Homeless Outreach Teams are diverse and come from the communities Metro serves. They are experienced in engaging people experiencing homelessness, and the essential resources they provide help people find housing and other critical resources.

Importantly, Metro Homeless Outreach Teams are not security officers and do not replace existing security personnel or law enforcement. Rather, they are an added workforce that collaborates with other Metro departments in order to support a care-based safety model, improve customer experience and help make the system feel safer for our riders.

Metro Homeless Outreach Teams:

> Engage unhoused riders through a person-centered approach that builds connections and establishes trust.

> Connect individuals with a variety of services and resources through a multidisciplinary, housing-first approach.

> Place people into housing, ensuring that they no longer seek shelter on Metro's system.

Metro Homeless Outreach Teams are deployed across our bus and rail system and are easily identified in their purple Metro Outreach vests.

More information on Metro's recent response to homelessness can be found here: https://boardagendas.metro.net/board-report/2023-0683/

5.2-19 MR-19: Project Benefits

Some commenters questioned whether the project would provide any benefits to the South Bay or the region as a whole. Although CEQA does not require an EIR to discuss the benefits of a project, the following discussion is provided for informational purposes. The South Bay is a major employment hub in Los Angeles County, facing critical challenges, including congested roadways, limited transit options, and high housing costs. The affordable housing crisis exacerbates regional congestion as workers commute long distances to access jobs. According to the Southern California Association of Governments (SCAG), job growth in the region is expected to outpace population growth, further intensifying the jobs-to-housing imbalance. By 2045, congestion is projected to worsen by 30 percent, negatively impacting air quality, energy consumption, and greenhouse gas (GHG) emissions. The South Bay currently lacks fast, frequent, and reliable transit connections to the rest of Los Angeles County, limiting access to jobs, services, and key destinations. The project addresses these challenges by offering an efficient transit solution that would benefit the South Bay and the entire county through:

> Expanding access to opportunities with ~3.6 million project boardings per year

> Attracting ~1.5 million new riders to the Metro system,

> Generating over 15,000 jobs (8,600 construction and 6,400 non-construction),

> Reducing travel times across the region,

> Connecting two new bus transit centers to the expanding rail network,

> Helping address climate change by shifting drivers to transit and reducing:

- Auto travel/congestion: ~19.5 million vehicle miles traveled per year,
- GHG emissions: ~2,370 metric tons of CO_2 equivalent per year,

- Regional energy use: ~41 million megajoules per year

The project would also expand mobility options in Equity Focus Communities (EFCs), which are areas identified by Metro as having the greatest transportation needs based on three characteristics:

> Low-income households,

> Black, Indigenous, and other People of Color (BIPOC) residents, and

> Households with no access to a car.

Prioritizing transit investments in historically underserved communities is consistent with Metro's Equity Platform, which seeks to expand access to economic opportunities, improve mobility for transit-dependent riders, and reduce transportation barriers for EFCs. The project would provide reliable, high-quality transit connections in many EFCs in the South Bay and beyond, connecting the riders to major employment hubs and services, helping to address economic disparities in access to jobs, education and essential services while supporting equitable economic development and climate goals. Prioritizing jobs in disadvantaged communities strengthens local economic development in many EFCs through the creation of construction, operation, and maintenance jobs. With the recently adopted K Line operating plan, this southern extension would create significant travel time savings and improve transit frequency—benefits that would extend beyond the immediate project area, improving mobility and quality of life across Los Angeles County. Additionally, Metro has engaged in extensive public outreach to ensure that community perspectives are reflected in the project's development.

5.2-20 MR-20: Proximity Impacts of Relocated Freight Tracks

Some commenters expressed concerns regarding potential impacts related to the proximity of the relocated freight tracks to residences. The Draft EIR evaluates these proximity-related impacts, including in Sections 3.2, Aesthetics; 3.3 Air Quality and GHG; 3.4 Noise and Vibration; and 3.8 Hazards and Hazardous Materials. The following discussion summarizes, amplifies, and clarifies the findings of these analyses, and demonstrates that although minor shifts in freight track location would occur, the project would not introduce new or substantially more severe impacts from freight operations compared to existing conditions.

Aesthetics

As discussed in Section 3.3, Aesthetics, of the Draft EIR, the existing Metro ROW is characterized by transportation infrastructure, including freight operations, and at-grade freight crossings. The visual quality along the Metro ROW is low to moderately low, with no designated scenic vistas or sensitive visual resources within the area.

The analysis in Section 3.3-4.2 of the Draft EIR determined that the relocation of freight tracks would not introduce a substantial change in the corridors' visual character. Although the proximity of freight tracks to some residential and retirement communities would increase slightly, the relocated tracks would remain within the existing Metro ROW and at the same grade as the current freight line. The fundamental visual context of the corridor as an active transportation corridor, would remain unchanged. Additionally, the project includes new safety infrastructure at at-grade freight crossings, which would be visually similar to existing infrastructure and designed in accordance with applicable standards. A visual simulation (Figure 3.3-62 of the Draft EIR) provides an example of this modification, illustrating how the freight track would be relocated slightly westward while maintaining a consistent visual profile. The project would also be consistent with local policies regarding visual quality.

Because the freight track relocation would not introduce a new use or significantly change the appearance of the corridor, and because new infrastructure would be consistent with existing conditions

and applicable design policies, aesthetic impacts from the freight track realignment would be less than significant.

Air Quality

Some commenters raised concerns that relocating the freight track within the Metro ROW could increase exposure of nearby residences to air pollutants from freight operations. However, freight activity in this corridor occurs infrequently (typically one to two times a day through the residential sections), and the primary factors influencing freight-related emissions— such as train frequency, train length, and fuel type—would remain unchanged, Because the project would not increase the number or intensity of freight trips, nor alter the type of locomotives used, the associated emissions of criteria pollutants and toxic air contaminants, such as diesel particulate matter (DPM), would remain the same.

Moreover, DPM and other freight emissions disperse rapidly in outdoor environments. The minor change in distance between the freight tracks and adjacent residences is not sufficient to cause a measurable change in localized air pollutant concentrations or to meaningfully increase exposure risk for nearby residents. Soundwalls required for the project would further reduce localized exposure by acting as physical barriers that promote dispersion and reduce the accumulation of particulates near sensitive receptors. Therefore, the project would not result in a significant air quality impact related to freight relocation.

Air quality in the region is also expected to continue improving due to ongoing regulatory efforts and emission controls. The SCAQMD 2024 *South Coast Air Basin Plan for the 2012 Annual PM2.5 Standard* established an attainment target date of 2030, and monitoring data recorded at sites throughout the Los Angeles County portion of the South Coast Air Basin have demonstrated a decreasing trend over the past decade. The 2024 PM2.5 plan accounts for particulate matter emissions from freight train activity at a regional scale. The project would not introduce new freight activity and would not interfere with regional attainment efforts.

Both light rail and freight train operations generate small amounts of dust due to braking friction and resuspended particulates from trains passing over unpaved areas. However, these emissions would be minor and not substantially increase localized particulate matter concentrations along the alignment. As part of the project's mitigation measures, soundwalls would be installed along portions of the corridor where residential developments are closest to the tracks, specifically south of Manhattan Beach Boulevard and north of 190th Street. These soundwalls would act as physical barriers, helping to reduce the dispersion of airborne particulates into surrounding communities. The analysis in Section 3.4-4.3.2 was revised in Section 4.8 of Chapter 4, Corrections and Additions, of the Final EIR, to include expanded descriptions on brake dust.

For these reasons, the relocated freight tracks within the Metro ROW would not expose nearby sensitive receptors to substantial pollutant concentrations. Therefore, operational impacts related to air quality would remain less than significant.

Noise and Vibration

Section 3.6, Noise and Vibration, of the Draft EIR analyzes the noise impacts of the relocated freight track combined with the light rail, in Section 3.6-4.1.2, Operational Impacts. With implementation of Mitigation Measures MM-NOI-2, MM-NOI-3, and MM-NOI-4, all operational impacts would be reduced to less than significant for the Trench Option. For the Elevated/At-Grade Alignment, significant noise impacts would remain at the 170th Street at-grade crossing. However, this remaining significant noise impact for the Elevated/At-Grade Alignment is not attributed to the freight being in closer proximity to residences (note the freight track would only be relocated approximately three feet near the 170th

Street at-grade crossing). Instead, as discussed in Section 3.6-6.1.2 of the Draft EIR, the freight noise impact is attributed to the freight horn blowing at the at-grade crossings, rather than trains passing by. For this same reason, the LPA would not result in significant noise impacts resulting from the proximity of the freight tracks to residences.

Section 3.6, Noise and Vibration, of the Draft EIR also analyzes potential vibration impacts from the relocated freight track in Section 3.6-4.3.2, Operation Vibration Impacts. Table 3.6-24 summarizes these findings, demonstrating that, with implementation of Mitigation Measures MM-VIB-4 (Low Impact Frogs), MM-VIB-5 (Resilient Fasteners), and MM-VIB-6 (Ballast Mats), operational vibration impacts would be reduced to less than significant. It should also be noted that, where freight tracks would be relocated, Metro would install new and upgraded rail infrastructure where feasible, such as continuously welded rail; this type of rail eliminates rail joints by welding sections together, which results in smoother rail surfaces. This technology would likely reduce both noise and vibration compared to existing freight operations.

Hazards

Section 3.9, Hazards and Hazardous Materials, of the Draft EIR analyzes potential impacts related to hazardous materials, including the risk of accidental release of hazardous materials resulting from project operations. Section 3.9-4.2.1 has been revised in Section 4.13 of Chapter 4, Corrections and Additions, of the Final EIR, to further clarify that the project would not introduce any elements that could increase the risk of derailment.

Freight rail already operates safely within the Metro ROW, and the relocation of freight tracks would not alter freight operations, train frequency, or the types of materials transported. In fact, the relocated freight tracks would be rebuilt with new and upgraded track infrastructure, improving safety and reducing potential risks compared to existing conditions.

Although freight tracks would be relocated slightly closer to some residences, proximity alone does not increase the probability of derailment, nor does it necessarily result in greater risks to adjacent communities. As discussed in MR-8: Light Rail and Freight Train Safety, freight safety data indicates that the vast majority of derailments occur in railroad yards or on freight industry tracks, where frequent switching, complex maneuvers, and high train volumes increase the likelihood of incidents. By contrast, derailments along mainline freight corridors, such as the Metro ROW at issue, are rare, and injuries or fatalities are even rarer.

For additional information, see MR-8: Light Rail and Freight Train Safety.

5.2-21 MR-21: Cost Estimates and Schedule

CEQA does not require an EIR to provide cost estimates. However, in 2022 Metro prepared cost estimates and published the C Line (Green) Extension to Torrance Cost Estimates Summary10 concurrent with the Draft EIR in January 2023. As stated, Metro follows the FTA's guidelines for cost estimating, and the estimate underwent peer review prior to publication. The cost estimate is based on the advanced conceptual design available for the Draft EIR, and it includes the construction costs (which were prepared in 2022 dollars), an escalation factor to account for future inflation and market fluctuations, and a contingency to accommodate potential known and unknown risks that could increase costs during construction. In accordance with FTA guidelines, the cost estimates include multiple categories such as track guideway, stations, sitework, utility relocations, potential environmental

[10] The Cost Estimates Summary (2023c) is available in the "Project Filing Cabinet" on Metro's website for the C Line Extension to Torrance: C Line Extension to Torrance - LA Metro

investigations, right-of-way acquisitions, and systems. The contingency is approximately 40% based on the current level of design, in accordance with FTA guidelines. As the project design advances, the contingency would be adjusted.

The 2023 Cost Estimates Summary also provides the preliminary construction schedule for each of the alignment options, with the Elevated/At-Grade Alignment anticipated to be completed in Fall 2033, the Trench Option in early 2035, and the Hawthorne Option in Fall 2035. The construction schedules in the 2023 Cost Estimates Summary include contingency as part of the construction duration per FTA guidelines. In April and May 2024, Metro presented the cost estimates and construction schedule for the LPA (the Hybrid Alternative) to compare with the other alignments. The LPA is estimated to take approximately a year longer than the Elevated/At-Grade Alignment. The construction duration for the LPA reflects these adjustments and is described in Chapter 2, Description of the Locally Preferred Alternative, of the Final EIR.

Metro has refined cost estimates, posted to the project website, to share with the Metro Board as part of the consideration to approve the project and certify the Final EIR.