



APPENDIX I. ENVIRONMENTAL JUSTICE TECHNICAL MEMORANDUM

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MEMO



To: Project File
From: Joshua Matthews
Date: March 2016
RE: **South Central Light Rail Extension Project**
Environmental Justice Technical Memorandum

1.0 INTRODUCTION

This memo evaluates the potential impacts on low-income and minority populations resulting from the Build and No-Build Alternatives for the proposed South Central Light Rail Extension Project. For a full description of the alternatives considered, refer to Chapter 2.0 of the South Central Light Rail Extension Environmental Assessment (EA).

2.0 REGULATORY SETTING

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires that federal agencies consider and address disproportionately high and adverse environmental effects of proposed federal projects on the health and environment of minority and low-income populations to the greatest extent practicable by law. Following the direction of EO 12898, federal agencies developed guidelines for implementing environmental justice (EJ). U.S. Department of Transportation (USDOT) Order 5610.2(a) defines the fundamental principles of EJ as follows:

- Avoid, minimize or mitigate disproportionately high and adverse human health or environmental effects, including social and economic effects, on minority and low-income populations.
- Ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
- Prevent the denial of, reduction in or significant delay in the receipt of benefits by minority and low-income populations.

USDOT Order 5610.2(a) requires the following:

- Identifying and evaluating environmental, public health and interrelated social and economic effects of USDOT programs, policies and activities.
- Proposing measures to avoid, minimize and/or mitigate disproportionately high and adverse environmental and public health effects and interrelated social and economic effects and providing offsetting benefits and opportunities to enhance communities, neighborhoods and individuals affected by USDOT programs, policies and activities, where permitted by law and consistent with EO 12898.

- Considering alternatives to proposed programs, policies and activities where such alternatives would result in avoiding and/or minimizing disproportionately high and adverse human health or environmental impacts, consistent with EO 12898.
- Eliciting public involvement opportunities and considering the results thereof, including soliciting input from affected minority and low-income populations in considering alternatives.

3.0 EVALUATION METHODOLOGY

Federal Transit Administration (FTA) Circular 4703.1 defines “minority” as any individual who is a member of any of the following populations groups: American Indian, Alaska Native, Asian, Native Hawaiian and other Pacific Islander, Black or African American or Hispanic or Latino. Low-income is defined as a person whose median household income is at or below 150 percent of the poverty level as determined by the U.S. Department of Health and Human Services. The methodology for analyzing the effects of the Build Alternative on EJ populations (any identifiable population group meeting the requirements for minority or low-income) consisted of the following steps:

- Define the unit of geographic analysis affected by the Build Alternative. The boundaries of the geographic unit should be large enough to include the area likely to experience adverse effects, but not so large as to artificially dilute the minority and/or low-income population.
- Gather relevant demographic data from a reliable source such as U.S. Census data or American Community Survey data at the census tract (CT) or block group level.
- Analyze impacts associated with the Build Alternative.
- Identify mitigation to avoid or minimize the impacts.
- Identify benefits of the Build Alternative.
- Determine disproportionately high adverse impacts (if any).

The study area identified for this analysis is within approximately a half mile of the Build Alternative alignment and other facilities associated with the light rail extension. Maricopa County has been selected as the unit of geographic analysis for comparison with the study area in accordance with FTA Circular 4703.1 because it includes Valley Metro’s transit service area, which is one of the geographic units the FTA circular recommends for comparison. This unit is not expected to artificially dilute the EJ populations that should be considered for comparison purposes. Data used to evaluate both minority and low-income populations within the Build Alternative corridor are based on 2009 to 2013 American Community Survey 5-year estimates and are aggregated at the CT level because this was the smallest geographic level at which data for both groups were available. Ten CTs fall within the study area and are evaluated in greater detail below.

3.1 DETERMINATION OF DISPROPORTIONATELY HIGH AND ADVERSE ENVIRONMENTAL EFFECTS

USDOT Order 5610.2(a) defines disproportionately high and adverse effects on minority and low-income populations as an adverse effect that:

- Is predominantly borne by a minority population and/or a low-income population, or
- Will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low-income population.

Identifying whether a project will have disproportionately high and adverse environmental effects on minority and low-income populations, and avoiding such effects, depends on a number of factors, including: (1) identifying and evaluating environmental, public health and interrelated social and economic effects; (2) proposing measures to avoid, minimize and/or mitigate the adverse effects and provide offsetting benefits and opportunities to enhance communities, neighborhoods and individuals affected; (3) the alternatives considered and (4) the public involvement process itself. Potential adverse impacts, as identified in the EA, were examined in these critical areas: (1) displacements and relocations, (2) transportation, (3) noise and vibration, (4) community facilities/parklands and (5) construction impacts.

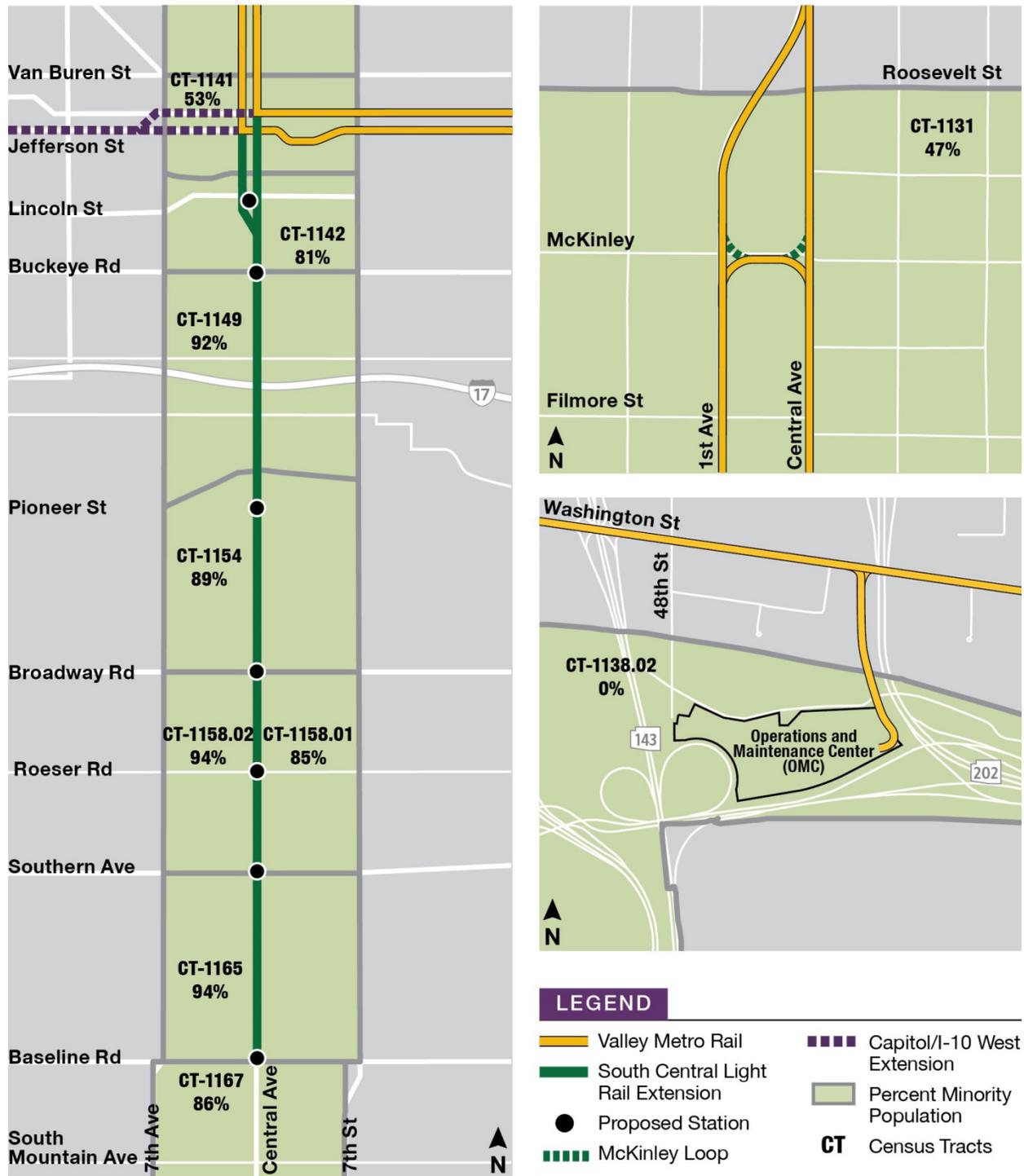
The evaluation summarizes the beneficial and adverse impacts for the No-Build and Build Alternatives, including efforts to solicit input from the public in considering the alternatives. In making determinations of whether a project would have “disproportionately high and adverse environmental effects” on minority and low-income populations, mitigation and enhancement measures that would be incorporated into the project and all offsetting benefits to the affected minority and low-income populations may be taken into account, as well as design, comparative impacts and the relevant number of similar existing system elements in non-minority and non-low-income areas. If adverse impacts of the project fall disproportionately on minority and low-income populations, additional mitigation measures beyond those already identified may be required. If strategies cannot be taken to adequately mitigate these impacts, then selection of an alternative with less adverse impacts may need to be considered.

4.0 EVALUATION RESULTS

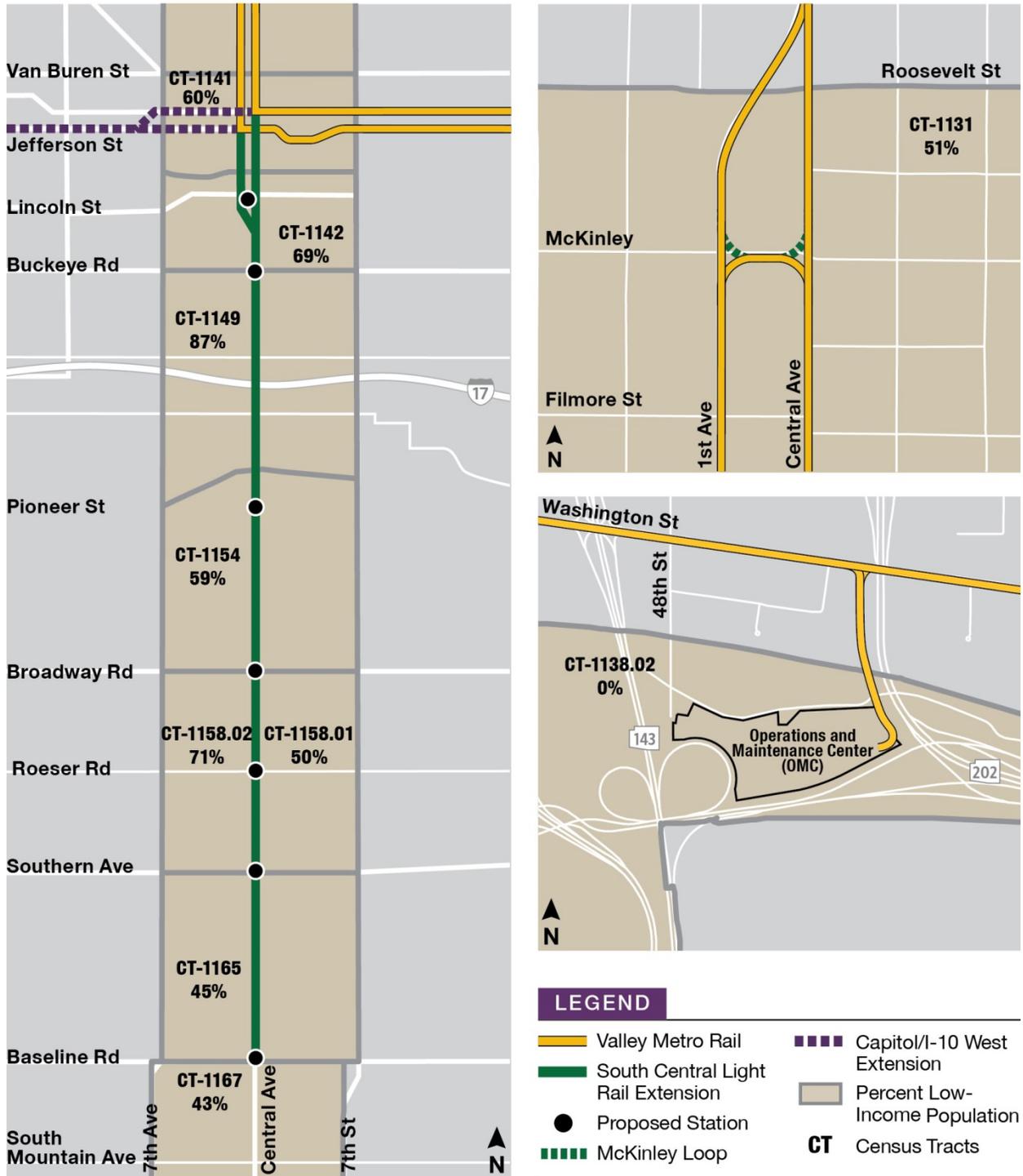
4.1 DO ANY AREAS ALONG THE BUILD ALTERNATIVE INCLUDE HIGH CONCENTRATIONS OF MINORITIES OR LOW-INCOME POPULATIONS?

Yes. The Build Alternative study area features a high concentration of both minority and low-income populations. In general, minority and low-income populations are found throughout the study area and are not concentrated in specific locations (Figures 1 and 2).

**FIGURE 1: STUDY AREA PERCENTAGE
 MINORITY POPULATION COMPARISON**



**FIGURE 2: STUDY AREA PERCENTAGE
 LOW-INCOME POPULATION COMPARISON**



Of the 10 CTs in the study area, 9 CTs feature concentrations of minority populations that exceed the 42 percent average for Maricopa County. The percentage minority population in the study area CTs ranges from 47 to 94 percent, with 8 of 10 above 50 percent (Figure 1 and Table 1). Similarly, 9 of 10 of the study area's CTs contain concentrations of low-income populations that exceed the 26 percent average for Maricopa County. The percentage of the total population with incomes at or below 150 percent of the U.S. Department of Health and Human Services poverty level in these CTs ranges from 43 to 87 percent, with 7 of the CTs over 50 percent (Figure 2 and Table 1). One CT has no residential population, so no minority or low-income populations are present.

No efforts were taken to identify pocket populations of low-income and minority households because most of the CTs feature concentrations of minority populations and all of the CTs include high concentrations of low-income populations. Therefore, for analysis purposes, the entire CT, and not any specific location within the CT, was considered to consist of low-income and minority households.

Table 1 summarizes the evaluation results for minority and low-income populations in the Build Alternative study area.

TABLE 1: MINORITY AND LOW-INCOME POPULATIONS

Census Tract/Area	Minority Population	Total Population	Percentage Minority Population	Low-Income Population ^a	Total Population for which Low-Income Status is Defined ^b	Percentage Low-Income Population ^a
Study Area Census Tracts						
CT-1131	1,155	2,478	47	1,267	2,478	51
CT-1141	990	1,851	53	1,110	1,851	60
CT-1142	1,192	1,465	81	1,011	1,465	69
CT-1149	2,500	2,706	92	2,361	2,706	87
CT-1154	2,126	2,402	89	1,416	2,402	59
CT-1158.01	3,588	4,225	85	2,102	4,225	50
CT-1158.02	3,147	3,363	94	2,414	3,363	71
CT-1165	4,674	4,988	94	2,221	4,988	45
CT-1167	6,285	7,322	86	3,136	7,322	43
Operations and Maintenance Center Expansion Census Tract						
CT-1138.02 ^c	0	0	0	0	0	0
County Averages						
Maricopa County	1,624,496	3,889,161	42	1,003,145	3,839,007	26

Source: American Community Survey (2013)

^a Low-income is defined as a person whose median household income is at or below 150 percent of the poverty level as determined by the U.S. Department of Health and Human Services.

^b Defined as the population for whom poverty status is determined by the U.S. Census Bureau. Excludes persons living in college dormitories and institutional group quarters.

^c No residential population is in Census Tract 1138.02.

4.2 WILL MINORITY AND/OR LOW-INCOME POPULATIONS EXPERIENCE ADVERSE IMPACTS AND DISPROPORTIONATELY HIGH AND ADVERSE IMPACTS COMPARED WITH OTHERS?

As stated earlier, the evaluation of adverse impacts considered the following: (1) displacements and relocations, (2) transportation, (3) noise and vibration, (4) community facilities/parklands and (5) construction impacts. The results of this evaluation are summarized in the sections below.

4.2.1 Business and Residential Displacements and Relocations

4.2.1.1 No-Build Alternative

The No-Build Alternative would require no property acquisitions or household relocations to accommodate the planned roadway and transit improvements.

4.2.1.2 Build Alternative

The Build Alternative would require ROW acquisition for trackwork, stations, park-and-rides and traffic mitigation of 126 parcels (approximately 330,434 sq. ft.), 119 of which are partial acquisitions. Unlike full impacts, partial impacts allow the property owner to maintain ownership and use of their property after acquisition. The Build Alternative would also require the acquisition of six to seven parcels (approximately 35,911 sq. ft.) for the construction of TPSSs and signal houses. Of these parcels, one would require a full acquisition and business relocation, while the remaining parcels would be partial acquisitions. The Build Alternative would not result in the displacement of residential properties. With respect to displacements and relocations, the Build Alternative would not result in a disproportionately high and adverse environmental impact to environmental justice populations.

4.2.1.3 Mitigation

Because federal funds would be used for project construction, the project is subject to provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended by the Uniform Relocation Act Amendments of 1987. Title IV of the Surface Transportation and Uniform Relocation Assistance Act of 1987 mandates that relocation services and payments be made available to eligible residents and businesses. The Uniform Relocation Act and its amendments provide protection and assistance to residents and businesses displaced by the acquisition or demolition of real property during the construction of federally funded projects.

An offer of just compensation, which would not be less than the approved appraisal, would be made to each property owner. Equivalent, safe and sanitary replacement housing, which is within the displaced person's financial means, would be made available before the person is displaced. Expenses for moving personal property from acquired homes and businesses to the relocation site, escrow fees, surveys, appraisals and other closing costs on a new home would also be eligible for payment within certain limits.

A displaced person cannot be required to move from his or her dwelling unless and until at least one comparable, safe and sanitary replacement dwelling within the displaced

person's financial means is made available to that person. When such a dwelling cannot be provided, the law provides for Housing of Last Resort (Last Resort Housing). Last Resort Housing is a provision to make replacement housing available under certain circumstances, for example, when there is a lack of certain types of dwelling or the displaced person cannot readily be relocated using the regular program relocation benefits.

Note that the South Central Light Rail Extension corridor is highly urbanized and within the Phoenix metropolitan area, which has a large population with a rich variety of business and residential opportunities. Adequate reasonable, safe and sanitary development sites are anticipated to be available to accommodate businesses and residents that may be displaced as a result of the project. If, after ROW negotiations, any businesses would require full acquisition and relocation, vacant property is available within the study area to relocate them so they would not need to develop new clientele in a new service area. In general, the build lines of existing structures are set back at sufficient distances from the street such that most ROW acquisitions would not directly affect these structures. Implementation of the project is also anticipated to positively affect the development potential of properties along the proposed route, particularly near proposed station locations. With respect to business displacement and acquisition, the Build Alternative would not result in a disproportionately high and adverse environmental impact on EJ populations.

4.2.2 Transportation

4.2.2.1 No-Build Alternative

The No-Build Alternative would have the possibility of an adverse effect on 20 intersections in the study area. In this case, a degradation in the level of service (LOS) of an intersection is considered a possible adverse effect, even if the LOS is still at an acceptable level. The No-Build Alternative would have no adverse effects to on-street or off-street parking, on-street loading zones, pedestrian and bicycle facilities, transit service or truck routes.

4.2.2.2 Build Alternative

The Build Alternative would maintain or improve the LOS at every intersection along Central Avenue and at almost every intersection in the study area. However, the Build Alternative would have an adverse effect on five intersections in the study area. The LOS of these intersections would degrade from LOS D or higher to LOS E or lower without any mitigation measures. These intersections include:

- 7th and Washington Streets
- 7th Street and I-17
- 7th Avenue and I-17
- 7th and Southern Avenues
- 7th Avenue and Baseline Road

The Build Alternative would necessitate the removal of five on-street parking spaces on north-to-south streets and the addition of 16 spaces on east-to-west streets. As such, a net gain of 13 on-street parking spaces would result from the Build Alternative. Approximately 80 off-street parking spaces are anticipated to be removed at seven separate locations as a result of the project. Ample off-street parking exists at these locations and along the entire project alignment to offset the loss of 80 parking spaces. The study area is characterized by predominantly transit-dependent and single-car households, resulting in the underutilization of off-street parking. Lastly, approximately 405 to 415 parking spaces would be added in two separate park-and-rides in the study area.

One loading zone exists on the eastern side of 1st Avenue between Jefferson and Madison Streets that would be displaced as a result of the Build Alternative. This loading zone would be replaced by converting one of the proposed parking spaces on the western side of Central Avenue between Madison and Jefferson Streets. The removal of the parking space would be negligible because off-street parking is provided on the northeastern corner of Madison and Jefferson Streets.

As part of the Build Alternative, all existing pedestrian facilities would be maintained or upgraded in the study area, including sidewalks, crosswalks, ramps, signals, push buttons and other improvements. All bicycle facilities would also be maintained or upgraded. Bike lanes would be added where they are currently missing so that a continuous bike lane would run on each side of the street from Downtown Phoenix to Baseline Road. Bike boxes and shared bike lanes would be added to specific parts of the corridor to improve bicycle safety and traffic flows. New signs and signals would be added at intersections where necessary.

The Build Alternative would necessitate the following changes to the region's transit network:

- Elimination of the Central South Mountain East and West RAPID routes because of duplicative service with the new light rail extension (replaced by light rail service on Central Avenue).
- Addition of Route 77B to supplement the existing Route 77 service. Both Routes 77 and 77B would operate to and from the South Central Light Rail Extension end-of-line station at Baseline Road/Central Avenue to existing park-and-ride facilities at 27th Avenue and Baseline Road and at 24th Street and Western Canal.
- Decrease in headways for Route 0 (Central Avenue) from 10 minutes/20 minutes (peak/off-peak) to 20 minutes/30 minutes (peak/off-peak).

4.2.2.3 Mitigation

The following mitigation measures have been identified to reduce transportation impacts to acceptable levels. The five intersections that would suffer degraded LOS would be mitigated in the following ways:

- 7th and Washington Streets: Optimize signal timing using future traffic counts.
- 7th Street and I-17: Add a northbound right-turn lane in addition to the existing through shared right lane, restripe the eastbound through right as exclusive right and optimize signal timing.

- 7th Avenue and I-17: Add a northbound right-turn lane, southbound right-turn lane and optimize signal timing. The southbound right-turn lane is the only transportation mitigation measure that would require a ROW take (see Section 3.1.3.5 of the EA for more information regarding this ROW take).
- 7th and Southern Avenues: Add a westbound right-turn lane, southbound right-turn lane and optimize signal timing.
- 7th Avenue and Baseline Road: Optimize signal timing using future traffic counts.

The lost loading zone on 1st Avenue would be replaced by converting one of the proposed parking spaces on the western side of Central Avenue between Madison and Jefferson Streets. The removal of the parking space would be negligible because off-street parking is located on the northeastern corner of Madison and Jefferson Streets.

4.2.3 Noise and Vibration

The noise and vibration impact analyses for the Build Alternative are based on FTA's *Transit Noise and Vibration Impact Assessment* guidance manual. Potential noise impacts were assessed for the operation and construction of the Build Alternative. The key conclusions of the noise impact assessment are summarized below.

4.2.3.1 No-Build Alternative

The No-Build Alternative may result in increased traffic volumes in the study area as projected growth occurs and as the planned transportation projects discussed in Chapter 2.0 of the EA are implemented by 2035. Traffic volumes would need to double by 2035 for noise levels to increase by 3 decibels, the point at which a change is typically discernible to the human ear. This is not likely to occur. Therefore, no adverse noise and vibration impacts would result from the No-Build Alternative.

4.2.3.2 Build Alternative

The Build Alternative would result in moderate noise impacts at certain locations along the project alignment including four residences. Noise impacts at two of these residences would only occur if the candidate TPSS site located at Central Avenue and Raymond Street were selected. While seven potential TPSS sites have been proposed for environmental clearance, only five would be needed for the Build Alternative. Final TPSS locations would be determined in the more refined design stages of the project when the energy loading requirements can be determined.

Potential vibration impacts are also likely to occur at 11 locations, including two multifamily residential buildings, along the project alignment. Chapter 3.0 of the EA provides additional information about the impacts and locations of the affected sensitive uses relative to the project alignment.

4.2.3.3 Mitigation

Mitigation measures have been identified to reduce all noise and vibration impacts to acceptable levels. Therefore, with respect to noise and vibration, the Build Alternative would not result in a disproportionately high and adverse environmental impact on EJ

populations. The noise and vibration impacts and mitigation measures are summarized in Table 3.

Additional noise and vibration impacts would occur during construction of the Build Alternative. These construction impacts and identified mitigation measures are summarized in Section 4.2.5 below.

TABLE 3: NOISE AND VIBRATION MITIGATION MEASURES

Location of Impact	Impact Type	Mitigation Measure
7–13 E Raymond St	Noise	Install a low-impact frog for the special trackwork. Low-impact frogs can reduce noise levels by creating a smoother transition through the gap in the rails at the special trackwork. Examples of low-impact frogs include moveable point frogs, spring-rail frogs, monoblock frogs or flange-bearing frogs (refer to Appendix G of the <i>Noise and Vibration Technical Report</i> for more information).
7246–7248 S Central Ave	Noise	Install a low-impact frog for the special trackwork. To mitigate noise from the TPSS unit, the TPSS unit should be strategically located within the site, with the major noise source, the cooling fans, being as far from the residences as possible. If the TPSS unit is located within the parcel as far as feasible and oriented with the cooling fans facing away from the sensitive receivers, the predicted noise level could be reduced to below the applicable threshold. The cooling fans on the TPSS unit should be facing east or south and located more than 50 feet from the nearest residence to reduce the predicted noise levels to below the impact threshold (when combined with the low-impact frog). If there is not much flexibility on where to locate the unit within the parcel, a sound enclosure should be built around the TPSS unit to reduce noise levels at sensitive receivers; the sound enclosure would need to reduce noise by 3.4 dB, which is attainable with a proper design of the enclosure (appropriately considers the cooling fan height above ground). ^a
Hotel Palomar Phoenix	Vibration	Install an isolated slab track along the affected segment. The design consists of a concrete slab supported by a continuous elastomeric support mat that greatly reduces vibration.
Barrister Place (potential multiuse redevelopment with residential component)	Vibration	Install an isolated slab track along the affected segment.
1001–1009 Central Ave	Vibration	Install a rail boot along the affected segment. A rail boot is a resilient material, usually rubber, that goes between the rail and the receiver and is usually embedded in the concrete.
3716 S Central Ave	Vibration	Install a low-impact frog for the special trackwork.
S Central Ave and W Cody Dr, Rows 1, 2	Vibration	Install a low-impact frog for the special trackwork.
7246–7248 S Central Ave	Vibration	Install a low-impact frog for the special trackwork.

TABLE 3: NOISE AND VIBRATION MITIGATION MEASURES

Location of Impact	Impact Type	Mitigation Measure
Arizona Summit Law School	Vibration	Install a rail boot along the affected segment.
Maricopa County Justice Courts	Vibration	Install a rail boot along the affected segment.
Salvation Army Adult Rehab Center	Vibration	Install a low-impact frog for the special trackwork and a rail boot along the affected segment.
Revealed Word Church	Vibration	Install a rail boot along the affected segment.
Phoenix Collegiate Academy	Vibration	Install a low-impact frog for the special trackwork.

Notes: dB = decibel, TPSS = traction power substation

^a Only applicable if this TPSS site is selected.

4.2.4 Communities, Community Character/Cohesion, Facilities and Parks

4.2.4.1 No-Build Alternative

The No-Build Alternative would have no impacts on communities, community character/cohesion, facilities or parks.

4.2.4.2 Build Alternative

Similar to the No-Build Alternative, the operation of the Build Alternative would not disrupt the characteristics listed above because the Build Alternative would be located almost entirely within existing public street ROW with the exception of land acquisitions at major intersections, station locations, TPSS sites and signal buildings and for modifications of the existing curb. Therefore, the Build Alternative would cause no permanent barriers to the movement of people, goods and services in the area and no disruption of the community. Furthermore, access to community services and facilities would be maintained during construction, therefore, it is anticipated that no continuity or community cohesion concerns would result from the Build Alternative. The Build Alternative would not acquire any land from community facilities or parks. The Build Alternative is designed to enhance access to community destinations, facilities and services and would not create any physical barriers that restrict access or divide the surrounding community. As a result, no adverse or disproportionate effects would be borne by EJ areas or populations. For further information on temporary disruptions that may occur during construction, refer to Chapter 3.0 of the EA.

Positive effects from the Build Alternative would include increased mobility and access to the area, business and job growth stimulation and a reduction in overall vehicle miles traveled.

4.2.4.3 Mitigation

No mitigation measures are required.

4.2.5 Construction

4.2.5.1 No-Build Alternative

The No-Build Alternative may result in impacts on air quality, noise and traffic resulting from the construction of planned roadway projects. The impacts would be temporary and would last for the project's construction period.

4.2.5.2 Build Alternative

Construction of the Build Alternative would likely result in impacts in the areas of air quality, noise and traffic. However, all adverse impacts would be temporary, would end at the conclusion of construction and would be borne equally by all populations.

4.2.5.3 Mitigation

A summary of impacts and mitigation measures available to minimize these types of adverse impacts is provided in Table 4. Additional measures are detailed in Chapter 3.0 of the EA. With implementation of the proposed mitigation measures, the impacts would not be adverse. Any impacts would be borne equally by all populations, and the mitigation would be applied throughout the Build Alternative as needed and would not be concentrated in any particular area.

TABLE 4: CONSTRUCTION-RELATED IMPACTS/MITIGATION MEASURES

Mitigation Measures, by Type of Potential Impact
<i>Transportation (Traffic, Pedestrians and Bicycles)</i>
<ul style="list-style-type: none"> • The Build Alternative would result in temporary disruptions to automobile, truck, bus, pedestrian, and bicycle traffic along the light rail route. A traffic control plan would be developed in concert with the City of Phoenix and those property and business owners most affected and would conform to local, State and federal policies to minimize traffic impacts and maintain access to residences, businesses, community facilities and services and local streets. The traffic control plan would include measures in accordance with City of Phoenix, Valley Metro master specifications and MAG standards. During project development, Valley Metro and its design staff would coordinate transit operations for any temporary reroutes and bus stop relocations that may be required during construction. • Impacts to residential and business access would occur. Community outreach notification and access management planning would be required during the project development phases and during construction to minimize impacts. • Temporary closures of sidewalks and crosswalks are possible. Detours would be established to safely guide pedestrians until the sidewalks and crosswalks are restored in accordance with Americans with Disabilities Act accessibility guidelines. • Temporary closure of bike lanes may be required and detour routes provided. Proper wayfinding signs and pavement markings would be used to safely guide cyclists through detours and temporary routes. • Include methods to minimize adverse impacts on bus travel. Methods to minimize impacts could include installing alternative temporary bus stop locations where needed, avoiding construction during peak transit travel times and implementing community outreach to notify transit providers and passengers of upcoming changes to bus stop locations or detours. • The Standard Specifications and/or Special Provisions for the Contractor would require the Contractor to coordinate its activities with the fire and police departments so these emergency services would be aware of how construction could affect them. <p>Valley Metro would implement measures to maintain light rail service and connectivity to transit services including, not limited to:</p> <ul style="list-style-type: none"> • Temporarily remove each light rail transit track from service and operate light rail transit as a single track during short periods (most likely over a weekend or overnight) while installing the trackwork. A bus bridge would be provided between affected light rail stations. • Temporarily close light rail transit tracks in both directions during the installation and transfer passengers by bus to continue their trips. A bus bridge would be provided between affected light rail stations.
<i>Noise</i>
<p>The Contractor would comply with the noise control ordinance for the City of Phoenix. Listed below are some typical approaches to reducing noise levels associated with the construction phase of major projects:</p> <ul style="list-style-type: none"> • If nighttime construction is required, the Contractor would apply for a variance permit from the City of Phoenix as required by the noise ordinance. • Use specialty equipment with enclosed engines and/or high-performance mufflers. • Locate equipment and staging areas as far from noise-sensitive receptors as possible. • Limit unnecessary idling of equipment. • Install temporary noise barriers. This approach can be particularly effective for stationary noise sources such as compressors and generators. • Reroute construction-related truck traffic away from local residential streets.

TABLE 4: CONSTRUCTION-RELATED IMPACTS/MITIGATION MEASURES

Mitigation Measures, by Type of Potential Impact
<i>Air Quality</i>
<ul style="list-style-type: none"> • The Contractor shall comply with all local air quality and dust control rules, regulations and ordinances that apply to any construction work on the Build Alternative. • Specific best management practices that may be implemented include, but may not be limited to: <ul style="list-style-type: none"> ○ Minimize area of land disturbance. ○ Use watering trucks to minimize dust. ○ Cover trucks when hauling dirt or transferring materials. ○ Stabilize surface of dirt piles if not removed immediately. ○ Use windbreaks to prevent any accidental dust pollution. ○ Limit vehicular paths and stabilize these temporary roads. ○ Pave all unpaved construction roads and parking areas to road grade for a length no less than 50 feet where such roads and parking areas exit the construction site to prevent dirt from washing onto paved roadways. ○ Use dust suppressants on traveled paths that are not paved. ○ Minimize dirt track-out by washing or cleaning trucks before leaving the construction site. ○ Reduce use, trips and unnecessary idling of heavy equipment. ○ Employ periodic, unscheduled inspections to limit unnecessary idling and to ensure that construction equipment is properly maintained and tuned. ○ Prohibit tampering with engines and require adherence to manufacturers' recommendations. ○ Whenever possible, use alternative fuels such as natural gas and electric. ○ Prepare an inventory of all equipment prior to construction and identify the suitability of add-on emission control devices for each piece of equipment before groundbreaking. ○ Identify where implementation of mitigation measures is rejected based on economic infeasibility. ○ Identify sensitive receptors in the Build Alternative area, such as daycare centers, senior housing and hospitals, and specify how impacts to them would be minimized. • Best management practices for postconstruction that may be implemented include, but may not be limited to: <ul style="list-style-type: none"> ○ Revegetate any disturbed land not used. ○ Remove unused material. ○ Remove dirt piles. ○ Revegetate all vehicular paths created during construction to avoid future off-road vehicular activities.

For the initial Valley Metro Light Rail line and the Central Mesa Light Rail Transit Extension Project, Valley Metro implemented specific programs to minimize construction impacts, which it intends to continue for construction of the Build Alternative. Examples of these programs include:

- Business outreach – Valley Metro and its member cities offered a variety of business outreach programs that included:
 - A-frame signs or banners to let customers know businesses are open.
 - METRO (now Valley Metro) Max discount card program. Businesses listings are free on the Valley Metro website.
 - Postcard marketing program for businesses to advertise to customers.

- Maps to inform customers of the best routes to reach businesses.
- Community Advisory Board Program – Composed of citizens, property owners and business owners directly affected by light rail transit construction. The group met monthly to evaluate construction Contractors with regard to: (1) traffic management, (2) Contractor response, (3) property restoration and (4) public outreach.
- Construction Outreach Support – During construction, a Valley Metro public involvement coordinator was on call 24 hours a day, 7 days a week. The coordinator provided day-to-day contact with businesses and residents, answered construction questions and helped solve construction-related problems.

Although the proposed standard construction practices would lessen the severity of impacts, some adverse impacts would still exist during construction, but would be temporary. The impacts would be borne equally by all populations along the proposed route, and the standard construction practices would be applied throughout the construction activity area as needed and would not be concentrated at any particular area.

4.3 PROJECT BENEFITS

The Build Alternative would provide improved transit access to south Phoenix and Downtown Phoenix. In addition, the Build Alternative would provide more convenient and reliable transit access to regional destinations through its connection with the existing Valley Metro light rail system that now serves portions of west Mesa, Tempe and Phoenix. This reliable transit service would improve the mobility of the low-income and minority populations in the project corridor. The Valley Metro light rail line serves many of the major regional employment centers, higher education institutions, health care services and other significant activity centers in the region. With a high volume of regular pedestrian traffic and linkages to regional transit networks, the Build Alternative would capitalize on the rapid urban development currently occurring in Downtown Phoenix, foster future growth and urban intensification in south Phoenix and greatly improve urban circulation throughout the city.

The Build Alternative is anticipated to have positive effects on both commercial and residential development, including high density affordable housing, near its alignment and stops. As a result, some of the growth that would have occurred elsewhere in the city or region would be drawn to the Build Alternative corridor. This growth can lead to more local opportunities for employment for low-income and minority populations residing in the Build Alternative area. For additional information on potential benefits of the Build Alternative, refer to the *Economic Development Technical Memorandum*.

4.4 PUBLIC ENGAGEMENT

The public involvement program has been designed and executed to reach the affected population, including EJ populations in the area. Public meetings included means to ensure access and understanding for non-English speakers with interpreters available and bilingual reading materials provided. Handouts and reading materials were made available in both English and Spanish, and Valley Metro is ready to provide materials in other languages upon request. All public meetings have been held in transit-accessible locations.

All public meetings were widely publicized through:

- Individual outreach to key business stakeholders, residents, government officials and other stakeholders
- Group outreach to community groups, government agencies, chambers of commerce, churches, schools and neighborhood/homeowner groups
- Media outreach through press releases and paid advertisements in local print media, including the *Arizona Republic* and the Spanish-language publication *La Voz*
- Information posted on the City of Phoenix and Valley Metro websites, with project and public meeting details
- Bilingual door hanger meeting notices distributed to stakeholders within a quarter-mile of the study area

Throughout the Alternatives Analysis and Environmental Analysis, Valley Metro has conducted numerous public outreach efforts, including hosting general public meetings; coordinating staff and agency meetings; presenting at Board, Committee and City Council meetings; attending stakeholder meetings and coordinating a Community Working Group. All of the meetings provided opportunities for minority and low-income populations to take part in the decision-making process. For more information on specific meetings and topics, refer to Chapter 4.0 of the EA.

As the Build Alternative moves forward through the environmental process and into design and construction, Valley Metro will continue to work with the community through meetings at public venues accessible to all members of the community including minority and low-income households and businesses, and populations with limited English proficiency.

4.5 DETERMINATION OF WHETHER ENVIRONMENTAL JUSTICE POPULATIONS WOULD BE SUBJECTED TO DISPROPORTIONATELY HIGH AND ADVERSE IMPACTS

As discussed in Section 4.1, minority and low-income residents are present throughout the half mile area around the Build Alternative. The impacts evaluation and mitigation measures for adverse impacts presented in Section 4.2 indicate that potential impacts associated with the Build Alternative would result in no long-term adverse effects with implementation of mitigation measures specified in the EA. The proposed mitigation measures would also minimize short-term impacts associated with the Build Alternative's construction. The adverse impacts would be borne equally by all populations, and the mitigation would be applied throughout the Build Alternative as needed and would not be concentrated in any particular area.

In view of the mitigation measures identified, considerable benefits and local support for the Build Alternative, there would be no disproportionately high and adverse impacts to low-income or minority populations.

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