CHAPTER 5.0 CUMULATIVE IMPACTS

5.1 Regulatory Setting

5.1.1 | Federal Regulations

The Council on Environmental Quality (CEQ)'s National Environmental Policy Act (NEPA) NEPA implementing regulations define cumulative effects as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts may result from individually minor but collectively significant actions taking place over a period of time.

A cumulative impact includes the total effect on a natural resource, ecosystem, or human community that is attributable to past, present, or reasonably foreseeable future activities/actions of federal, nonfederal, public, or private entities. Reasonably foreseeable actions are those that are likely to occur or probable, rather than those that are merely possible (40 CFR 1508.7). Cumulative impacts may also include the effects of natural processes and events, depending on the specific resource in question.

Cumulative impacts include the total of all impacts on a particular resource that have occurred, are occurring, and will likely occur as a result of any action or influence, including the direct and indirect effects of a federal activity. Accordingly, there may be different levels of cumulative impacts on different environmental resources.

5.1.2 | State Regulations

The California Environmental Quality Act (CEQA) defines cumulative impacts as "two or more individual effects which, when considered together are considerable," and suggests that cumulative impacts may "result from individually minor but collectively significant projects taking place over a period of time" (CEQA Guidelines Section 15355(b)). A project can have environmental effects that are individually limited but cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probably future projects (CEQA Guidelines Section 15065 (a)(3)). CEQA regulations were considered in the Draft EIS/EIR and the Final EIR but are not applicable to this Final EIS.

5.2 Methodology

The cumulative methodology for this Final Environmental Impact Statement (EIS) was based on a review of guidance from the Council on Environmental Quality[1] and the U.S. Environmental Protection Agency[2]. This methodology is based on the following procedural steps.

- Identify resources to be analyzed
- Define the geographic study area for each resource
- Describe existing conditions and historical context for each resource
- Identify direct and indirect impacts of the proposed project
- Identify other reasonably foreseeable actions that affect each resource
- Assess potential cumulative impacts
- Report results and assess the need for mitigation

DEFINITIONS

Direct Effect: a direct effect is caused by the action and occurs at the same time and place (40 CFR § 1508.8)

Indirect Effect: an indirect effect is caused by the action and occurs later in time or farther removed in proximity, but is still reasonably foreseeable (40 CFR § 1508.8)

Cumulative Impact: is the impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions (40 CFR § 1508.7)

Note that this chapter considers the potential cumulative effects of all of the build alternatives. In addition, each topic area includes new analysis of the potential for the six minor modifications to the Hybrid Alternative/Locally Preferred Alternative (LPA), which are described in Section 2.2.7.5, to result in any change to the cumulative impacts presented in the Draft EIS/Environmental Impact Report (EIR).

5.3 Historical Context and Past Projects

The Historic Resources Inventory and Evaluation Report prepared for the project summarizes the historical development of Geary Boulevard. The Geary corridor has seen substantial urban development along its entire length since becoming a major arterial roadway in 1861. Today, the Geary corridor is fully urbanized with no areas of critical biological habitat, wetlands, or other natural features.

Over the past several decades, the Geary corridor has experienced a steady series of alterations to the road's streetscape elements, including ongoing alterations to the sidewalks, streetlights, fire hydrants, and underlying water, sewer, electrical, and other infrastructure. These types of past streetscape improvement projects continue to be planned and implemented along the corridor, as further described in Section 5.4.

A significant past project that occurred along the Geary corridor was the widening of Geary in 1960 through the Fillmore District as part of a larger program of redevelopment efforts. The widening of Geary to an eight-lane expressway through this area followed the acquisition and demolition of numerous Fillmore District

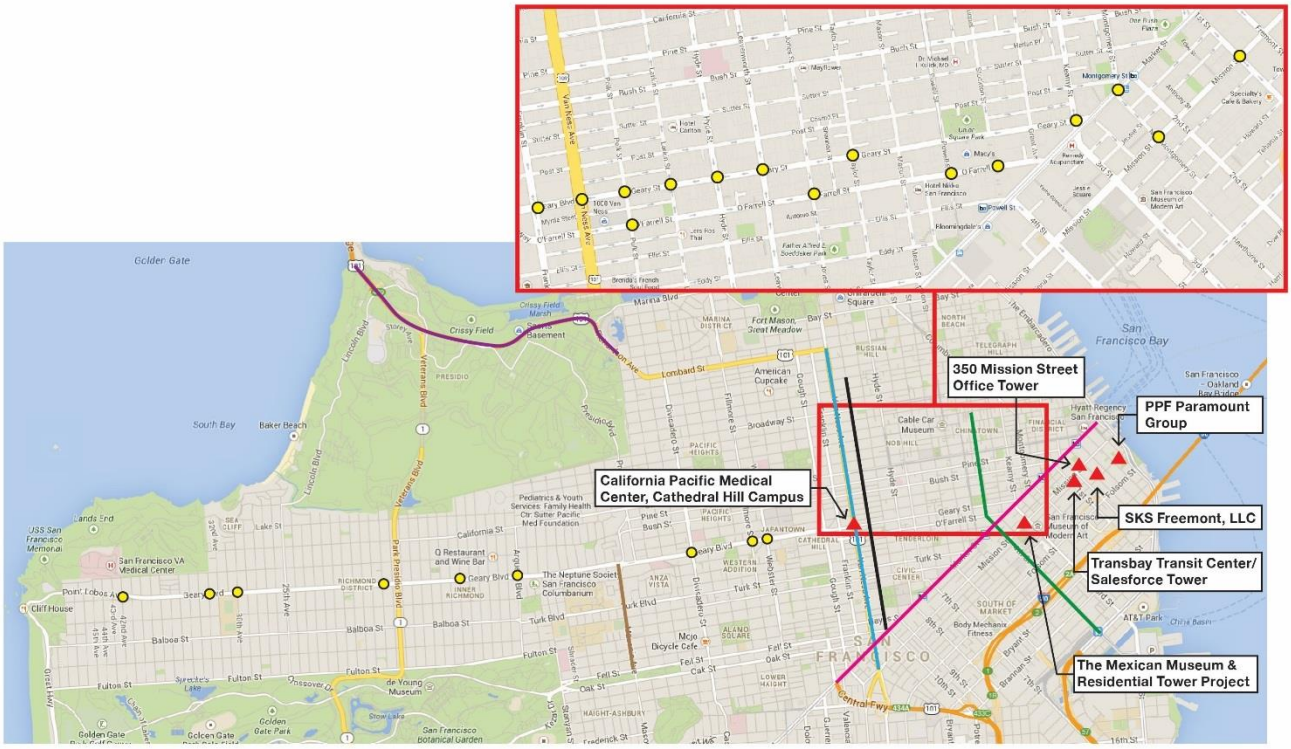
[1] Council on Environmental Quality. 1997. *Considering Cumulative Impacts Under the National Environmental Policy Act*.
[2] U.S. Environmental Protection Agency - Pacific Southwest Region 9 - *National Environmental Policy Act*.

homes and businesses, many of which were owned and/or occupied by African-Americans.[3,4]

5.4 Reasonably Foreseeable Projects

The build alternatives encompass a large section of a major San Francisco thoroughfare that crosses the City. The City anticipates a number of transportation improvement and development projects to be implemented within the vicinity of the Geary corridor. Although not exhaustive, the list of projects in Table 4.3-3 is representative of the foreseeable transportation, development, and infrastructure improvement projects within the general vicinity of the Geary corridor and thus considered in this cumulative analysis. Figure 5-1 shows the locations of several of these projects that would be constructed in the immediate vicinity of the Geary corridor. In addition to the above projects that would offer new or improved infrastructure, infrastructure maintenance activities were also taken into consideration. As described in Section 2.8.1.2, these include but are not limited to such periodic efforts typical of a complex urban environment like San Francisco, such as roadway resurfacing, and replacement/repair of water, combined sewer/storm drain, and similar infrastructure.

Figure 5-1 Locations of Reasonably Foreseeable Projects within General Vicinity of the Geary Corridor



5.5 Environmental Areas with Beneficial or No Adverse Cumulative Effects

The following environmental areas would not be subject to adverse cumulative effects, based on consideration of the nature of the No Build and build alternatives, the project setting, the impact analysis findings, and the characteristics of other reasonably foreseeable projects within the project vicinity.

5.5.1 | Transit

The transit conditions cumulative case analysis includes transit operations on the Geary corridor and immediately adjacent roadways. The San Francisco Municipal Transportation Agency (SFMTA) operates four Muni bus routes on the Geary corridor that provide connections to both local and regional transit services. Additionally, Golden Gate Transit serves the Geary corridor with passenger services to Marin, Sonoma, and Contra Costa counties. Several private shuttles, mostly institutionally based, operate private shuttle services within the Geary corridor as well.

As discussed in Section 3.3 (Transit Conditions), implementation of the build alternatives would improve bus speeds, passenger access, and overall system reliability while reducing travel times relative to what would occur with the No Build Alternative.

By 2035, population and employment trends are anticipated to increase by 20 percent and 40 percent, respectively. As a result, transit passenger demand citywide will likely increase due to densification of land uses.

Other planned projects within the vicinity of the Geary corridor were assessed in modeling scenarios. Such projects include four new traffic signals, Van Ness bus rapid transit (BRT), Central Subway, and the Presidio Parkway project, among others. The eventual operation of several of these other planned and programmed projects would also either directly expand public transportation opportunities or otherwise improve transit movement, resulting in improved access and mobility for transit riders.

Construction of the other transportation, development, and infrastructure projects could overlap with construction of any of the build alternatives. Some potential construction related effects include potential interruptions in traffic lane usage for buses, temporary bus station relocation, and crosswalk detours. However, given that other planned projects' limits generally do not overlap geographically with the build alternatives, except at spot locations, transit service would not be substantially interrupted such that construction of the various projects together would combine into a cumulative effect on transit conditions during construction.

As any of the build alternatives would result in improved transit access and mobility, no cumulative operational impacts would be anticipated.

5.5.1.1 | HYBRID ALTERNATIVE/LPA MODIFICATIONS: SUMMARY OF POTENTIAL CONTRIBUTIONS TO CUMULATIVE EFFECTS

Construction: Of the six modifications, only two could increase construction-related transit disruptions. The addition of BRT stops at Laguna Street would increase construction-related transit disruptions, such as temporary detours and bus stop relocations, for two to three weeks in and around the Geary Boulevard/Laguna Street vicinity. Similarly, the addition of 26 new pedestrian crossing bulbs would extend construction by four to six days at the intersections where they would be installed. The other modifications would not increase the level of construction activities needed to implement the Hybrid Alternative/LPA. Given the relatively brief duration of these incremental additions to overall construction activities, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative transit effects of the Hybrid Alternative/LPA; the Hybrid Alternative/LPA would still not contribute to any adverse cumulative effects on transit conditions during construction.

Operation: Taken together, retention of existing local and Express stops between Spruce and Cook streets in lieu of adding BRT stops, the addition of BRT stops at Laguna Street, and the retention of existing bus stops at Collins Street, and retention of the Webster Street bridge would diminish the transit travel time savings (i.e. lessen the benefit) of the Hybrid Alternative/LPA by less than one minute in each direction, as described in Section 3.3.4.1. Specifically, the 38 Geary local service travel time savings would be reduced by 16 seconds in the eastbound direction and 36 seconds in the westbound direction. BRT service travel time savings would be reduced by 12 seconds in the eastbound direction and 9 seconds in the westbound direction. Overall, the Hybrid Alternative/LPA would still reduce transit travel times and improve transit access and mobility compared with the No Build Alternative. Therefore, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative transit effects of the Hybrid Alternative/LPA; the Hybrid Alternative/LPA would still not contribute to any adverse cumulative effects on transit during operation.

5.5.2 | Pedestrian and Bicycle Transportation

The cumulative analysis area for pedestrian and bicycle conditions encompasses the entire Geary Transportation Study Area as shown in Figure 3.2-1.

Several portions of the Geary corridor see relatively high volumes of pedestrian activity, particularly in proximity to commercial areas and other activity centers. Many intersections within the Geary corridor have relatively long pedestrian crossing distances or include signals that do not have pedestrian countdown signals. Two existing pedestrian bridges (over Geary Boulevard at Webster and Steiner streets) do not comply with the Americans with Disabilities Act and are otherwise considered substandard. The Geary corridor does not have separated bicycle lanes; bicyclists must share mixed-use lanes with general traffic or use bike facilities on streets parallel to Geary.

During construction, any of the build alternatives would be implemented through a project construction plan (PCP) and would also be subject to minimization measures (including MIN-UT-1 and MIN-UT-4) and City coordination requirements that together would minimize overlapping construction schedules between the project

and other foreseeable planned projects within the Geary corridor. Because of the required implementation of the PCP, any adverse impacts associated with pedestrian and bicycle traffic would not be elevated to a cumulatively considerable level during construction.

Each of the build alternatives would improve multimodal travel by providing pedestrians with enhanced facilities, such as new crossings/new pedestrian crossing bulbs, new countdown signals, and a Class II bikeway connection across one block of Geary Boulevard (between Masonic and Presidio avenues). While Alternatives 2, 3, and 3-Consolidated would remove both the Webster and Steiner street pedestrian bridges, both locations would see substantially enhanced ground-level crossings, providing accessible crossings for people with disabilities that the pedestrian bridges do not afford.

Collectively, these build alternative improvements would enhance pedestrian conditions along the Geary corridor, as well as bicycle conditions between Masonic and Presidio Avenues and are thus projected to increase pedestrian use and modestly increase bicycle use relative to levels without the proposed improvements.

The pedestrian and bicycle improvements associated with the build alternatives would help offset projected increases in average walking distances to bus stops associated with the consolidation of bus service contemplated by the build alternatives.

Overall, since implementation of the build alternatives would result in benefits to bicycle and pedestrian travel, the project would not contribute to any cumulative effect related to pedestrian and bicycle transportation.

5.5.2.1 | HYBRID ALTERNATIVE/LPA MODIFICATIONS: SUMMARY OF POTENTIAL CONTRIBUTIONS TO CUMULATIVE EFFECTS

Construction: Of the six modifications, the addition of BRT stops at Laguna Street would increase construction-related disruptions to pedestrians and bicyclists, such as temporary sidewalk and bicycle lane closures and detours, for a period of two to three weeks in and around the Geary Boulevard/Laguna Street vicinity. The addition of 26 new pedestrian crossing bulbs would extend construction by four to six days at the intersections where they would be installed. The other modifications would not increase the level of construction activities needed to implement the Hybrid Alternative/LPA. Given the relatively brief duration of these incremental additions to overall construction activities, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative pedestrian and bicycle effects of the Hybrid Alternative/LPA; the Hybrid Alternative/LPA would still not contribute to any adverse cumulative effects on pedestrian or bicycle access during construction.

Operation: As demonstrated in Section 3.6.4.1, each of the six modifications would result in either beneficial changes or no substantive changes to the Hybrid Alternative/LPA's operational-period effects on pedestrian and bicycle circulation. Therefore, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative pedestrian and bicycle circulation effects of the Hybrid Alternative/LPA; the Hybrid Alternative/LPA would still not contribute to any adverse cumulative effects on pedestrian or bicycle circulation during operation.

5.5.3 | Parking and Loading

The parking and loading cumulative effects analysis area includes parking facilities within the Geary corridor and immediately adjacent roadways. The Geary corridor provides a diverse supply of on-street parking, including metered and unmetered general parking spaces, residential parking permit zones, commercial and passenger loading zones, and parking spaces for persons with disabilities. Corridorwide analysis is an appropriate geography for considering potential cumulative effects to parking and loading so as to best capture potential effects of other transportation and development projects.

While each build alternative would require the removal of some on-street parking spaces, Section 3.6.4 further notes that none of the build alternatives would result in any adverse effects related to changes in parking or loading with adherence to several improvement and avoidance measures. These measures would be applied throughout project final design to minimize the removal of parking spaces and therefore, any secondary effects that could result from parking space removal.

Neither NEPA nor the guidance of the Environmental Planning Division of the San Francisco Planning Department identifies the loss of parking spaces, in and of itself, as a significant effect on the environment. However, if a single project or group of projects were to singly or collectively result in such a decrease in parking availability that secondary effects like worsened traffic or worsened air quality emissions could occur, then loss of parking could indirectly result in a physical environmental effect and/or contribute considerably to a cumulative physical environmental effect.

Parking and Loading Demand: None of the build alternatives are expected to increase parking or loading demand, given the transit-related nature and existing urbanized context of the build alternatives. Any of the build alternatives would help complete the planned Citywide BRT[5] and SFMTA Rapid Network. Each would provide improved pedestrian amenities along the Geary corridor. Accordingly, these improvements would reduce parking demand along the corridor by encouraging use of other travel modes, offsetting changes in supply.

While other land development projects could increase parking demand, these developments are largely proposed in neighborhoods east of Gough Street, which are transit-rich areas that also features extensive off-street parking garages and facilities. Moreover, other transit development projects, like the Central Subway and Van Ness BRT would reduce vehicle miles traveled (VMT) and thus reduce demand for parking by providing higher quality transit service. No major development projects are anticipated for the Geary corridor west of Gough Street that would result in substantial losses of parking or increases in parking demand.

Parking and Loading Supply: As described in Section 3.6.4 of this document, implementation of any of the build alternatives would be expected to result in reductions of areawide parking supply, ranging from 2 percent to 4 percent of available on- and off-street spaces in the Geary corridor, including side streets to the north and south (see Figure 3.6-1 for the area-wide parking study area). Loading spaces would be reduced by less than 1 percent.

[5] See Section 1.4, Planning Context

Temporary conversion of parking lanes to mixed-flow travel lanes during construction would result in temporary removal of on-street parking in those areas. Parking areas within active construction zones would be relocated as close to the construction zone as is practical. While this may cause temporary inconveniences, temporary parking restrictions during construction would be short in duration and are a common aspect of the urban environment, thus would not contribute to cumulative parking impacts.

In terms of removing publicly available parking spaces, the build alternatives' anticipated reduction in parking spaces combined with other known projects, would not create a substantial parking deficit. On-corridor parking space loss would range from 13 percent under Alternative 3-Consolidated and 27 percent under Alternative 2; however, as Section 3.6 demonstrates, parking loss under any of the build alternatives would be a small percentage of the nearby supply, ranging from a decrease in areawide public parking supply of 2 percent to 4 percent. In the neighborhoods where on-street parking losses would be greatest (near Masonic Avenue and Fillmore Street), enough capacity exists in the surrounding areas to accommodate parking demand at peak times. The build alternatives would also have minimal change to loading supply, largely relocating/consolidating loading spaces to minimize any project-related changes.

The Masonic Avenue Streetscape Improvement Project removed 13 parking spaces along Masonic Avenue between Geary Boulevard and Anza Street. Removal of these 13 spaces is in addition to those anticipated to be removed as a result of any of the build alternatives (as discussed in Section 3.6). This removal would occur in an area with substantial off-street public parking serving the commercial uses at the corner of Masonic Avenue and Geary Boulevard.

Implementation of several other foreseeable projects, including the California Pacific Medical Center (CPMC), Van Ness Avenue BRT, the Polk Street Improvement Project, WalkFirst, etc., would potentially result in additional loss of parking within the study area. However, once all of the foreseeable projects within the general vicinity of the Geary corridor are completed, area residents and the public at large would have improved pedestrian networks and transit systems for daily commuting and commerce compared to existing conditions.

This document includes several measures that would either avoid any adverse parking/loading effects or would require that various improvement/best practice measures be followed to limit the potential for loss of parking spaces. Cumulative effects related to traffic are described below in this chapter; no adverse cumulative effects to air quality are anticipated based on modeling of future cumulative case traffic.

Conclusion: Because the project is a transit project that would increase transit ridership and divert some auto trips to transit and pedestrian trips, thereby decreasing parking demand, none of the build alternatives would contribute to an increase in parking demand, though they would contribute to a small reduction in on-street parking supply. Other planned projects may increase parking demand east of Gough Street, and may decrease parking supply throughout the corridor. However, because the reduction in on-street spaces is small in context of the corridor supply and the amount of parking removal planned for other projects, the

build alternatives would not result in any adverse cumulative effects to parking or loading supply.

5.5.3.1 | HYBRID ALTERNATIVE/LPA MODIFICATIONS: SUMMARY OF POTENTIAL CONTRIBUTIONS TO CUMULATIVE EFFECTS

Construction: Of the six modifications, the addition of BRT stops at Laguna Street would increase construction-related temporary parking and loading zone removals for a period of two to three weeks. The addition of 26 new pedestrian crossing bulbs would extend construction by four to six days at the intersections where they would be installed. The other modifications would not increase the level of construction activities needed to implement the Hybrid Alternative/LPA. Given the relatively brief duration of these incremental additions to overall construction activities, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative parking and loading effects of the Hybrid Alternative/LPA; the Hybrid Alternative/LPA would still not contribute to any adverse cumulative effects on parking and loading supply during construction.

Operation: Taken together, the modifications to the Hybrid Alternative/LPA would result in a net decrease of 35 on-street parking spaces relative to what was described in the Draft EIS/EIR, bringing the total parking loss to 410 spaces. These changes in parking spaces are small in the context of total supply and would not cause parking space reductions associated with the Hybrid Alternative/LPA to fall outside of the range previously described in the Draft EIS/EIR (2 to 4 percent). Even with the six modifications incorporated, the Hybrid Alternative/LPA still would have the second-lowest parking loss of any of the build alternatives (Alternative 2 would have the highest amount of parking loss at 460 on-street parking spaces lost). Therefore, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative parking and loading effects of the Hybrid Alternative/LPA; the Hybrid Alternative/LPA would still not contribute to any adverse cumulative effects regarding parking and loading supply.

5.5.4 | Land Use

The area examined for cumulative analysis related to land use is the Geary corridor, including public right-of-way areas, adjacent lands fronting the Geary corridor, and along streets perpendicular to the Geary corridor.

Construction of the build alternatives would occur entirely within existing right-of-way areas (street, sidewalks, median). Portions of the roadway would be formally set aside for exclusive use by buses and transit patrons. These activities would not result in direct foreseeable changes to land uses adjacent to the Geary corridor beyond what has been planned in other City documents or permitted for construction.

For all build alternatives, construction equipment and materials would be temporarily staged within public right-of-way areas and/or adjacent properties when permitted by the City. Section 4.15 describes likely staging locations. The use of these areas for construction staging would be temporary and would not result in any change to existing or planned land uses. The majority of anticipated construction projects are development projects south of Market or otherwise outside the immediate Geary corridor. The proposed CPMC project is immediately along Geary Street; construction of the new medical facilities is underway as of 2018. However,

infrastructure projects/infrastructure maintenance activities would occur citywide, but largely within public right-of-way areas.

Existing and proposed land uses as well as land use plans along and near the Geary corridor support transit use and its expansion. Any of the build alternatives would substantially enhance access to major activity centers along the Geary corridor, such as major employment centers (downtown and Civic Center), health care facilities (Kaiser Permanente campuses; the future CPMC medical facilities), cultural destinations (Japantown), and entertainment and shopping districts (Union Square, Fillmore Street, Clement Street, and others).

None of the build alternatives would result in any direct construction outside public right-of-way areas. However, Alternatives 3 and 3-Consolidated would remove the Fillmore Street underpass and raise Geary Boulevard to street level. This aspect of those alternatives has the potential for long-term beneficial land use effects through the removal of a perceived barrier.

In all, the build alternatives, along with other past, current, and reasonably foreseeable projects would result in cumulative land use changes along the Geary corridor, but these changes would be consistent with adopted plans for growth in key areas such as the downtown and Transbay areas and would thus be considered beneficial. No adverse cumulative impact would be anticipated.

5.5.4.1 | HYBRID ALTERNATIVE/LPA MODIFICATIONS: SUMMARY OF POTENTIAL CONTRIBUTIONS TO CUMULATIVE EFFECTS

Construction: Like other project components, all modifications would be constructed entirely within the existing transportation right-of-way, limiting their potential to substantially affect land uses. Short-term land-use effects during construction would be similar in nature to other short-term construction effects described in this section (potentially increased by four to six days at intersections where additional pedestrian crossing bulbs would be added, and two to three weeks at Geary Boulevard and Laguna Street) and similarly typical of an urban environment. Thus, the modifications would not result in long-term adverse changes to or conflicts with land use plans, or any new physical division within a community. Thus, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative land use effects of the Hybrid Alternative/LPA; the Hybrid Alternative/LPA would still not substantially interrupt land uses such that construction of the various projects together would combine into a cumulative effect on land uses during construction.

Operation: During operation, as described in Section 4.1.4.1, the six modifications would help enhance access to various land uses along the Geary corridor, reduce physical divisions in the community, and would remain consistent with existing and proposed land use plans. Therefore, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative land use effects of the Hybrid Alternative/LPA; the Hybrid Alternative/LPA would still not contribute to any adverse cumulative land use effects.

5.5.5 | Community Impacts

The area for analysis of cumulative effects related to community impacts encompasses a half-mile radius along the Geary corridor. The study area is

comprised of a number of "traffic analysis zones" (TAZs) and 2010 US Census data Block Groups, as discussed in Section 4.2 (Community Impacts). Potential cumulative community effects could occur primarily as a result of traffic congestion and loss of parking within the general vicinity of the Geary corridor.

This document sets forth numerous avoidance and minimization measures that would render project-related effects to land use, growth, visual resources, air quality, and noise/vibration to a level that would not be considered adverse.

During construction, businesses and community facilities alike may experience adverse effects resulting from periodic sidewalk closures, detours, conversion of parking lanes to travel lanes, and removal of loading zones. Parking constraints, increased traffic, and a construction-dominated pedestrian environment may cause temporary inconveniences to local businesses and residents. The extent of construction would vary by alternative. Alternatives 3 and 3-Consolidated would entail extensive roadway modifications and diversions in the Fillmore and Masonic areas. However, the effects would be temporary, and measures would be implemented to minimize such construction-related effects (refer to Section 4.2, Community Impacts). Further, adherence to city policies requiring coordination of infrastructure repair/maintenance so as to minimize street disruptions would also minimize construction related effects to communities.

Based on the location, schedule, and scope of the other foreseeable projects listed in Table 4.3-3, the roadway segments that would likely experience cumulative effects from construction activities are those in the vicinity of the Geary corridor that would occur concurrently with the construction of any of the build alternatives. These effects could be minimized through close coordination between projects occurring simultaneously to develop construction schedules and phasing that avoid activities that could elevate construction-related adverse community effects (e.g., detouring and parking and access restrictions) to area residents, visitors, and travelers. For example, public roadway-related work under the CPMC Cathedral Hill Campus (at Geary Street and Van Ness Avenue) should be completed before or shortly after commencement of Geary corridor construction activity within the same vicinity.

Implementation of any of the build alternatives would result in the loss of on-street parking, which could result in adverse effects to nearby commercial and residential properties. The parking supply analysis within Chapter 3 concluded that the loss of parking spaces along the Geary corridor would not create a substantial parking deficit that could not be accommodated by remaining capacity in the surrounding area. As noted above in Section 5.5.3, implementation of several other foreseeable projects, including the CPMC, Van Ness Avenue BRT, the Polk Street Improvement Project, WalkFirst, etc., would potentially result in additional loss of parking within the study area. However, once all of the foreseeable projects within the general vicinity of the Geary corridor are completed, area residents and the public at large would have improved pedestrian networks and transit systems for daily commuting and commerce compared to existing conditions. Any of the build alternatives would help complete the planned Citywide BRT and SFMTA Rapid Network. Each would provide improved pedestrian amenities along the Geary corridor. These improvements would reduce parking demand along the corridor, offsetting changes in supply.

With the development and implementation of a project construction plan that minimizes overlapping construction schedules between the project and other foreseeable planned projects within the Geary corridor, adverse impacts associated with circulation, parking, air quality, noise, and visual resources would not be elevated to a cumulatively adverse level from the standpoint of a community impact assessment. Furthermore, construction-related effects of any of the build alternatives would be avoided, minimized, and/or mitigated by adherence to a transportation management plan (TMP), as required by the Federal Highway Administration Work Zone Safety and Mobility Rule (23 CFR 630.1012), that includes traffic rerouting, a detour plan, and public outreach. The TMP would be developed during the design phase, with participation from local agencies, business associations, residents, and other stakeholders in the area. Early and well-publicized announcements and outreach will help to minimize confusion, inconvenience, and traffic congestion during construction phases. Therefore, with the implementation of minimization measures, none of the build alternatives would have adverse cumulatively considerable impacts to the community.

5.5.5.1 | HYBRID ALTERNATIVE/LPA MODIFICATIONS: SUMMARY OF POTENTIAL CONTRIBUTIONS TO CUMULATIVE EFFECTS

Construction: Of the six modifications, the addition of BRT stops at Laguna Street would increase construction-related temporary parking and loading zone removals for a period of two to three weeks. The addition of 26 new pedestrian crossing bulbs would extend construction by four to six days at the intersections where they would be installed. The other modifications would not increase the level of construction activities needed to implement the Hybrid Alternative/LPA. The Hybrid Alternative/LPA would still be subject to the measures described in Section 4.2.5 to minimize community effects during construction. None of the modifications would require any temporary or permanent displacement of residences, community facilities, parks, or businesses. Therefore, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative community effects of the Hybrid Alternative/LPA; the Hybrid Alternative/LPA would still not contribute to any adverse cumulative community effects during construction.

Operation: As demonstrated in Section 4.2.4.1, during operation, the six modifications would help enhance multimodal accessibility along the Geary corridor and community access to transit, generating beneficial community effects. As described in Section 3.5.4.1, the modifications to the Hybrid Alternative/LPA would not contribute to cumulative traffic congestion effects. The modifications would require the removal of an additional 35 on-street parking spaces. However, even with the loss of these additional spaces, the total number of on-street spaces lost would constitute a small portion of the corridor's total parking supply (about 2 percent of the corridor's total of 1,680 on-street parking spaces) and, as noted previously, the change in the amount of available parking (both on-street and off-street) would not result in any cumulatively considerable effect. Moreover, even with the six modifications, the Hybrid Alternative/LPA would remain the build alternative with the second-lowest proposed parking loss. Therefore, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative community effects of the Hybrid Alternative/LPA; the Hybrid Alternative/LPA would still not contribute to any adverse cumulative community effects during operation.

5.5.6 | Growth

The area examined for cumulative growth effects is the entire City. As set forth in Section 4.1 and 4.2 of this document, the City has adopted a number of land use plans that call for increased residential density in selected areas, including Civic Center, Downtown, and the Transbay area. As development consistent with these previously adopted plans is actually built over time, population and employment growth are anticipated. Growth-related effects of those plans and projects have been examined in other project-specific environmental analyses.

The build alternatives were introduced in recognition of this anticipated growth in the eastern part of San Francisco, as such, growth is projected to further increase already high demands on public transportation in the Geary corridor. In other words, any of the build alternatives would serve a growing population and employment base in and around the Geary corridor.

Transportation projects can indirectly affect growth by reducing travel time and enhancing the attractiveness of surrounding land for development through changes in accessibility.[6] None of the build alternatives would substantially change existing development patterns, population, housing, or employment densities beyond what is projected for the study area, the City and County, and the greater Bay Area region. As such, outside of areas where planned development is anticipated, the potential for the build alternatives to induce population growth would not present an adverse cumulative effect on growth. The Geary corridor is already served by several transit lines and is in proximity to several others. While the enhanced transit service afforded by any of the build alternatives would offer improvements in transit speed and quality over existing and future No Build conditions, the potential for these enhancements to induce substantial population growth in and of themselves is considered negligible given the already fully urbanized nature of the Geary corridor.

Moreover, construction of any of the build alternatives, in combination with other planned infrastructure and development projects, would be unlikely to result in any substantial population growth. The Geary corridor is within a major metropolitan area that is well-served by regional transportation. A substantial sector of the employment base of the Bay Area is in the construction trades and therefore, construction of any of the build alternatives and related projects would be unlikely to result in any short-term population growth.

In all, the build alternatives, along with other past, current, and reasonably foreseeable projects would result in indirect and cumulative growth-related effects along and around the Geary corridor. However, such growth would be consistent with adopted plans and would thus be considered beneficial. Therefore, implementation of the any of the build alternatives would not be anticipated to directly or indirectly induce population growth at a level in excess of what is projected for the Bay Area and San Francisco. Accordingly, none of the build alternatives would contribute to any cumulative impacts with regard to population growth.

[6] American Association of State Highway and Transportation Officials. 2013. Center for Environmental Excellence: Indirect Effects/Cumulative Impacts Analysis.

5.5.6.1 | HYBRID ALTERNATIVE/LPA MODIFICATIONS: SUMMARY OF POTENTIAL CONTRIBUTIONS TO CUMULATIVE EFFECTS

Construction: The modifications would extend construction by four to six days at locations where new pedestrian crossing bulbs would be installed, and by two to three weeks at Geary Boulevard and Laguna Street. This incremental increase in construction activities would not substantially influence population or job growth. Therefore, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative growth effects of the Hybrid Alternative/LPA; the Hybrid Alternative/LPA would still not contribute to any adverse cumulative growth effects during construction.

Operation: As demonstrated in Section 4.3.4.1, during operation, the six modifications would be consistent with planned development and planned land uses and would not change existing development patterns, population, housing, or employment densities. Therefore, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative growth effects of the Hybrid Alternative/LPA; the Hybrid Alternative/LPA would still not contribute to any adverse cumulative growth effects during operation.

5.5.7 | Visual/Aesthetics

The area examined for cumulative effects analysis related to visual resources and aesthetics is the immediate Geary corridor.

Reasonably foreseeable transportation projects near the Geary corridor will continue the trend of emphasizing the multi-modal nature of the City's transportation system among various users (drivers, transit riders, bicyclists, and pedestrians). Collectively, these projects will result in cumulative changes in the street aesthetics in which human scale elements (pedestrian crossing bulbs, bicycle lanes, etc.) are emphasized. On the other hand, reasonably foreseeable development projects will continue the trend of higher density/higher intensity development in the eastern portion of the corridor, particularly in the vicinity of Civic Center, Downtown, and the new Transbay Transit Center. Infrastructure projects would have only very temporary construction period visual effects as most infrastructure is located below ground level.

Construction of the build alternatives would occur entirely within existing right-of-way areas (streets, sidewalks, and medians). Construction activities for any of the build alternatives, along with other anticipated development projects, would involve the use of a variety of equipment, stockpiling of materials, and other visual signs of construction. While evidence of construction activity may be noticeable to area residents, transit riders, and other viewer groups, such visual disruptions would be short term and would be considered a common feature of any dynamic urban environment.

Some construction may occur at night, requiring the use of artificial lighting at the worksite. Any temporary degradation of the visual environment would end with the completion of construction. Construction best practices would be implemented to minimize any effects.

Construction of other planned projects, such as the CPMC Cathedral Hill campus and elements of the Muni Forward program, will occur in areas along the Geary corridor, as described in Table 4.3-3. The construction activities for such projects could potentially disrupt the visual environment temporarily; however, it is highly unlikely that these and other planned projects would occur simultaneously and in the same location as construction activity associated with any of the build alternatives. As such, visual disruptions and degradation associated with construction activities of any of the build alternatives would not be a cumulatively considerable effect.

Visual changes resulting from implementation of any of the build alternatives would contribute to and be part of the trend of cumulative aesthetic changes that are occurring with the transportation system of the City. All build alternatives incorporate new landscaping and tree planting, along with a visually consistent street design that comports with the *Better Streets Plan*. Given the long-term positive effect the project would have related to visual resources, the contribution to cumulative visual and aesthetic changes would be considered beneficial.

5.5.7.1 | HYBRID ALTERNATIVE/LPA MODIFICATIONS: SUMMARY OF POTENTIAL CONTRIBUTIONS TO CUMULATIVE EFFECTS

Construction: The six modifications to the Hybrid Alternative/LPA would extend construction by four to six days at locations where new pedestrian crossing bulbs would be installed, and by two to three weeks at Geary Boulevard and Laguna Street. This brief extension of construction activities would not substantially increase the severity of temporary visual effects. As such, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative visual effects of the Hybrid Alternative/LPA; the Hybrid Alternative/LPA would still not contribute to any adverse cumulative visual disruptions and degradation during construction.

Operation: As documented in Section 4.4.4.1, during operation, the six modifications to the Hybrid Alternative/LPA would generally add to human-scale visual features and further enhance streetscape visual quality, along with the cumulative projects. Therefore, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative visual effects of the Hybrid Alternative/LPA; the Hybrid Alternative/LPA would still not contribute to any adverse cumulative visual effects during operation.

5.5.8 | Cultural Resources

The area for analysis of cumulative effects to cultural resources includes the Geary corridor and immediately adjacent land uses.

As noted in Section 4.5, none of the build alternatives would result in any adverse effect to any known archaeological resource or to any of the eligible historic architectural resources along or within the Geary corridor.

The build alternatives, along with selected other anticipated infrastructure and development projects, would require excavation at various points of the Geary corridor. Some of these areas could include locations where there is increased potential of encountering unknown archaeological resources during excavation. As these projects are unlikely to occur in exactly the same place at the same time, there would be negligible potential for cumulative effects upon unknown/unrecorded archaeological resources.

In terms of historic resources, any of the proposed build alternatives, along with selected development and infrastructure projects, would result in continued change to the Geary corridor to reflect a more contemporary appearance. The preponderance of historic architectural resources in the Geary corridor is located east of Van Ness Avenue, where each of the build alternatives has relatively minimal construction (side-running bus lanes, many previously existing) and thus lesser potential to result in any substantial change to the overall historic character of the area. In contrast, anticipated development projects in the Downtown and Transbay Transit Center areas will continue to alter historic character, particularly in the south of Market area. The extent to which these other projects adversely affect historic character of any particular historic resource are documented in other environmental documents. To the extent there is any adverse cumulative effect on historic resources in the Downtown area, any contribution from the build alternatives would be less than considerable, insofar that the build alternatives' effects on overall historic character would be at minimal levels in the vicinity of the known historic resources along the Geary corridor.

5.5.8.1 | HYBRID ALTERNATIVE/LPA MODIFICATIONS: SUMMARY OF POTENTIAL CONTRIBUTIONS TO CUMULATIVE EFFECTS

Construction: Of the six modifications, the Webster Street bridge, pedestrian crossing and safety improvements, and Laguna Street BRT stops are located near historic architectural resources (components of the Auxiliary Water Supply System [AWSS], St. Francis Square Cooperative, and Japan Center), while the other modifications are not. Of the modifications located near resources, retention of the Webster Street bridge would eliminate demolition in proximity to historic structures such as the AWSS components and Japan Center. Construction of pedestrian enhancements and Laguna Street BRT stops would occur entirely within the existing transportation right-of-way, outside of historic property boundaries. Analysis of the proposed additional construction at Laguna Street has confirmed that no direct or indirect impacts would occur to either of the two historic properties in the vicinity, St. Francis Square Cooperative and AWSS components, as discussed further in Section 4.5.4.1.

As described in Section 4.5, an addendum Archaeological Sensitivity Assessment completed in June 2017 determined that all of the modifications to the Hybrid Alternative/LPA would be located in areas with low sensitivity for unrecorded archaeological resources because they either have a vertical impact less than 3 feet or are determined to be in locations previously disturbed by post-1960s utilities and other urban infrastructure. Moreover, excavation for other cumulative projects is unlikely to coincide both spatially and temporally with excavation for the Hybrid Alternative/LPA, and any coincidence would be coordinated through the TMP. Therefore, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative cultural effects of the Hybrid Alternative/LPA; the Hybrid Alternative/LPA would still not contribute to any adverse cumulative effects to cultural resources during construction.

Operation: As described in Section 4.5.4.1, as project operation would not entail ground-disturbing activities, no adverse effects to archaeological and paleontological resources would occur and thus no contribution to any cumulative effect to these resources could occur. None of the six modifications that are located near historic architectural resources (i.e., Webster Street bridge, pedestrian improvements, and

Laguna Street BRT stops) would change the character or setting of any historic property or its relationship to the existing transportation corridor. Therefore, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative cultural effects of the Hybrid Alternative/LPA; the Hybrid Alternative/LPA would still not contribute to any adverse cumulative effects on cultural resources during operation.

5.5.9 | Utilities

The utilities cumulative effects area for analysis includes the Geary corridor and immediately adjacent roadways, including public right-of-way areas.

Given that the cumulative effects study area is predominantly urbanized with little impervious surface area, the build alternatives combined with reasonably foreseeable projects would have little effect on stormwater flows and infrastructure. Implementation of any of the build alternatives would relocate several catch basins, but additional catch basins would be constructed and connected to the existing system as part of each build alternative. Construction would be phased to minimize utility disruption and maintain infrastructure capacity. Overall, impervious surfaces within the Geary corridor would decrease as a result of the new dual medians (associated with all alternatives except Alternative 2) owing to landscaping and infiltration design, which would be considered beneficial in terms of cumulative effects to stormwater runoff.

The build alternatives would have little to no effect on electricity, potable water, or wastewater usage or demand. As such, none of the build alternatives would contribute to cumulative effects on these resources and facilities.

5.5.9.1 | HYBRID ALTERNATIVE/LPA MODIFICATIONS: SUMMARY OF POTENTIAL CONTRIBUTIONS TO CUMULATIVE EFFECTS

Construction: As shown in Section 4.6.4.1, none of the six modifications would require any additional utility relocations or substantively change the methods in which utility work would be performed. Therefore, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative utilities effects of the Hybrid Alternative/LPA; the Hybrid Alternative/LPA would still not contribute to any adverse cumulative effects to utilities during construction.

Operation: As shown in Section 4.6.4.1, the six modifications would not substantively change utility demand or operations. Therefore, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative utilities effects of the Hybrid Alternative/LPA; the Hybrid Alternative/LPA would still not contribute to any adverse cumulative effects to utilities during operation. See Section 5.5.15 for a discussion of potential cumulative effects related to energy consumption.

5.5.10 | Geology/Soils/Seismic/Topography

The area for analysis of cumulative effects related to geology and soils includes the Geary corridor and immediately adjacent land uses. Cumulative geology and soils effects could occur if a significant number of people and/or a significant amount of

property would be exposed to any one or more geologic/soils hazards – including landslides, seismic shaking, ground failure, and many others.

It is unlikely that any of the build alternatives in combination with projected land development, transportation, and infrastructure projects would result in a cumulatively significant effect related to geology/soils hazards or mineral resources. This is due to the enactment of a number of federal, state, and local regulations, as well as several adopted goals, policies, and standard mitigations associated with local general plans that individually and collectively aim to reduce geology and soils related effects on all land development and transportation projects. As such, the design of individual project features (both the build alternatives and other anticipated development projects) would meet seismic standards, and thus would not substantially increase the risk of geologic hazards. Additionally, all of the build alternatives' structures are limited to streetscape features that would bear relatively light loads; soils in the Geary corridor appear to be suitable for proposed improvements identified in each of the alternatives. Overall, therefore, the risk of geologic hazards is low and would not be cumulatively considerable.

Future transportation projects are generally planned in already-existing transportation corridors and land use projects in already-urbanized areas; as such, neither type of project would be likely to result in limitation of access to important mineral resources. Additionally, all of the build alternatives would be implemented along the existing urbanized Geary corridor, where no mineral resource sites are located. Therefore, there would be no cumulatively significant effect relative to soils or mineral resources associated with any of the build alternatives.

5.5.10.1 | HYBRID ALTERNATIVE/LPA MODIFICATIONS: SUMMARY OF POTENTIAL CONTRIBUTIONS TO CUMULATIVE EFFECTS

Construction: Site-specific conditions are the primary driver of impacts with regard to geology and soils. As shown in Section 4.7.4.1, the six modifications would occur under the same geologic conditions as described in the Draft EIS/EIR, and would not substantially change the nature of the anticipated construction activities. Therefore, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative geology and soil effects of the Hybrid Alternative/LPA; the Hybrid Alternative/LPA would still not contribute to any adverse cumulative effects related to geology and soils during construction.

Operation: Retention of the Webster Street bridge and existing bus stops between Spruce and Cook streets and at Collins Street would not result in any increased geologic or seismic risk compared to existing conditions. The Webster Street bridge was seismically retrofitted in 1996 and its retention would not introduce a new or more severe risk. All other modifications would be limited to streetscape features such as sidewalks and curbs; therefore, the risk of geologic hazards is low and similar to existing conditions. Therefore, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative geology and soil effects of the Hybrid Alternative/LPA; the Hybrid Alternative/LPA would still not contribute to any adverse cumulative effects related to geology and soils during operation.

5.5.11 | Hazards and Hazardous Materials

The hazards and hazardous materials cumulative analysis area includes the Geary corridor and immediately adjacent roadways. As set forth in Section 4.8 (Hazards and Hazardous Materials), the Initial Site Assessment assessed hazardous release sites within a one-eighth-mile radius.

Potential risks associated with hazardous materials mostly relate to ground-disturbing activities from construction. Due to the long history of heavy vehicular activity along Geary corridor, the soil in the medians and adjacent areas may likely be contaminated with aerially deposited lead from the exhaust of cars burning leaded gasoline. Additionally, due to the age of existing structures nearby, lead-based paint may have been used on streetscape features. Three recognized environmental conditions sites were identified within the Geary corridor that may have resulted in contaminated soil and/or groundwater in these relative areas.

Implementation of any of the build alternatives would include construction activities that would potentially risk exposure to aerially deposited lead in the soil, naturally-occurring asbestos, and other environmental concerns. Such activities include pavement resurfacing, median removal, construction of pedestrian crossing bulbs, and curb ramp construction. These and related activities would require some degree of excavation (see Table 4.15-2 of this Final EIS).

The risk of encountering a recorded hazardous waste site during construction of any of the build alternatives would be location-specific. The proposed project and all cumulative projects would be required to comply with Article 22A of the San Francisco Health Code (Maher Ordinance), which would avoid impacts associated with excavation in areas with soil and groundwater contamination. Minimization measures are in place to minimize potential construction effects and to comply with federal, state, and local policies, as discussed in Section 4.15.12. As such, no adverse cumulative effects related to hazards and hazardous materials would occur during construction.

During operation, additional bus service would operate along the corridor, but would not pose a risk of encountering substantial levels of contaminants, as discussed in Section 4.8.4.3.2. Other cumulative projects in the area are not expected to generate long-term additional heavy vehicle traffic, which regardless would not result in contamination of aerially deposited lead as vehicles no longer burn leaded gasoline. Therefore, no adverse cumulative effects related to hazards and hazardous materials would occur during operations.

5.5.11.1 | HYBRID ALTERNATIVE/LPA MODIFICATIONS: SUMMARY OF POTENTIAL CONTRIBUTIONS TO CUMULATIVE EFFECTS

Construction: As described in Section 4.8.4.1, additional pedestrian crossing bulbs would each require excavation to about 1.5 feet below ground surface, a depth too shallow to substantially increase the risk of encountering contaminated soils or groundwater. Moreover, these additional excavations would be spread across the entire Geary corridor and thus would not result in any particular location seeing excessive excavation activity. Construction activities and excavation required for the Laguna Street BRT stops and relocation of the westbound bus lane transition would be similar to the ground disturbance which would occur throughout the corridor and would be subject to the same minimization measures identified in Section 4.8.5

to reduce potential for adverse effects related to hazardous materials. The other modifications would not require increased excavation. The incremental increase in construction activities and excavation associated with the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative hazard effects of the Hybrid Alternative/LPA; the Hybrid Alternative/LPA would still not contribute to any adverse cumulative effects related to hazards and hazardous materials during construction.

Operation: As discussed in Section 4.8.4.1, since risks of exposure to hazards and hazardous materials are primarily related to construction and other ground-disturbing activities, none of the six modifications would increase such a risk during operation. Therefore, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative hazard effects of the Hybrid Alternative/LPA; the Hybrid Alternative/LPA would still contribute to any adverse cumulative effects related to hazards and hazardous materials during operation.

5.5.12 | Hydrology and Water Quality

The area for analysis of cumulative effects to hydrology and water quality includes the Geary corridor and other immediately adjacent roadways.

The Geary corridor is a highly developed, urbanized setting largely covered with impervious surfaces. As noted in Section 4.9, construction of any of the project alternatives could result in water quality degradation when soils are exposed; however, compliance with applicable City standards and permit conditions would minimize such effects.

Implementation of any of the build alternatives would decrease the amount of impervious surface through the incorporation of pervious paving and infiltration planters at new stations along the Geary corridor, thus reducing potential water quality effects associated with polluted stormwater runoff – the quality of which would be further improved with the incorporation of rain gardens and biotreatment swales in new landscaped medians along new center-running bus lanes (for Alternatives 3 and 3-Consolidated, and the Hybrid Alternative/LPA only). Other planned infrastructure and development projects have the potential to pollute stormwater runoff; however, all other projects nearby are subject to same Storm Water Pollution Prevention Program (SWPPP) permit requirements, requirements of the San Francisco Public Utilities Commission, and best management practices to mitigate stormwater effects during construction, which would minimize adverse effects to hydrology and water quality in the Geary corridor and would not likely have the potential to change groundwater levels substantially.

Alternatives 3 and 3-Consolidated would result in the decommissioning of the existing pump station beneath the Fillmore Street underpass. This would allow the groundwater elevation in this area to rise. Underground structures located within two blocks of the pump station at depths greater than 14 feet below ground surface, such as building basements and utility trenches could be adversely affected. This document identified a measure to avoid the adverse effect (continuing operation of the pump station to maintain existing groundwater levels). An alternative minimization measure could be implemented in lieu of continuing operation of the pump station. Through avoidance or minimization, there would be no adverse

cumulative effect as no other anticipated projects in this area would have the potential to change groundwater levels substantially.

Overall, none of the build alternatives would contribute to any cumulative effect related to hydrology and water quality.

5.5.12.1 | HYBRID ALTERNATIVE/LPA MODIFICATIONS: SUMMARY OF POTENTIAL CONTRIBUTIONS TO CUMULATIVE EFFECTS

Construction: Modifications to add BRT stops at Laguna Street would result in incremental additional construction activities which would have the potential to affect water quality when soils are exposed. Construction of additional pedestrian improvements would involve localized excavations of about 1.5 feet in depth – too shallow to affect groundwater. Adherence to the SWPPP, best management practices, and minimization measures identified in Section 4.9.5 would limit the potential for substantial additional quantities of construction-period runoff at Laguna Street or locations of new pedestrian crossing bulbs. Therefore, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative hydrology and water quality effects of the Hybrid Alternative/LPA; the Hybrid Alternative/LPA would still not contribute to any adverse cumulative effects related to hydrology and water quality during construction.

Operation: As demonstrated in Section 4.9.4.1, none of the six modifications to the Hybrid Alternative/LPA would increase the proposed amount of impervious surfaces in the Geary corridor, as they would all occur on existing paved areas. Therefore, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative hydrology and water quality effects of the Hybrid Alternative/LPA; the Hybrid Alternative/LPA would still not contribute to any adverse cumulative effects to hydrology and water quality during operation.

5.5.13 | Air Quality/Greenhouse Gas Emissions

The area examined for cumulative air quality and greenhouse gas (GHG) effects is the entire San Francisco Bay Area Air Basin (Air Basin).

Regarding GHG emissions, the State Office of Planning and Research issued guidance that the effects of GHG emissions are cumulative and should be analyzed accordingly. Therefore, the analysis of the impact of the build alternatives on climate change focuses on the project alternatives' contribution to cumulatively significant GHG emissions. However, the GHG analysis included in this document concluded that build alternatives would result in a long-term benefit associated with reducing GHG emissions (relative to the No Build Alternative). Therefore, the build alternatives not result in any adverse cumulative effect.

Criteria Pollutants

Regional air pollution is by its very nature largely a cumulative impact. Emissions from past, present and future projects contribute to the region's adverse air quality on a cumulative basis. No single project by itself would be sufficient in size to result in nonattainment of regional ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulative adverse air quality impacts. In accordance with Bay Area Air Quality Management District (BAAQMD) guidance, the project-level thresholds for criteria pollutants and ozone precursors are based on

levels by which new sources are not anticipated to contribute to an air quality violation or result in a cumulatively considerable net increase in criteria air pollutants.

As discussed in Section 4.10 (Air Quality and Greenhouse Gases), the build alternatives would result in a long-term benefit associated with reducing operational emissions. In addition, none of the build alternatives would exceed the project-level thresholds for construction emissions, would not contribute to the generation of a localized carbon monoxide or particulate matter hot-spot, and would not generate adverse odors. Based on BAAQMD guidance, none of the build alternatives would contribute to a cumulatively considerable impact related to criteria pollutants and odors.

Health Risk

To evaluate cumulative health risk potential, the Citywide air pollution model within San Francisco's Community Risk Reduction Plan was queried to determine existing health risks and particulate matter (PM) mass concentration at construction locations. The model takes into account emissions from various sources including on-road mobile sources, permitted stationary sources, diesel locomotives, ships and harbor crafts, major construction projects in 2010 and 2015, and transit vehicles. BAAQMD defines air pollution hotspots as areas with a cancer risk burden that is greater than 100 per one million population exposed, areas where non-cancer risk is above 10 Hazard Index, or areas where annual $PM_{2.5}$ from all local sources exceeds 0.8 $\mu g/m^3$. The zone of influence is defined as a 1,000-foot radius from fence line of Geary corridor.

According to the Citywide air pollution model, a carcinogenic hotspot cover approximately 5.7 percent of the 1,000-foot buffer along the alignment, mostly near downtown San Francisco. Annual $PM_{2.5}$ hotspots cover 0.23 percent of the total area within 1,000 feet of the alignment. The maximum existing excess cancer risk, acute and chronic health indices, and annual $PM_{2.5}$ concentrations for locations within 1,000 feet of the alignment are provided in Table 5-1.

Table 5-1 Existing Maximum Health Risks

HEALTH RISK TYPE	LOCATION	EXCESS CANCER RISK (PER MILLION)	AVERAGE ANNUAL PM2.5 CONCENTRATION (MG/M³)
Cancer Risk	Main St. and Harrison St.	559	10.079
Annual $PM_{2.5}$ Concentration	Buchanan St. and Geary Blvd.	136	10.688

Source: City of San Francisco, Air Pollution Model, 2014

Regarding cumulative health risks related to construction activity, BAAQMD guidance states that construction activities do not require analysis of long-term health risks because of their temporary and variable nature. Due to the variable nature of construction activity, the generation of TAC emissions in most cases would be temporary, especially considering the short amount of time construction activity would be near sensitive receptors. Furthermore, models and methodologies for conducting health risk assessments are usually associated with longer-term exposure periods of nine, 40, and 70 years. The build alternatives would be constructed over approximately two to three years.

However, dispersion modeling was completed to assess construction-related health risks. Alternatives 3 and 3-Consolidated would generate the greatest localized risk (bringing Fillmore Street to grade) by contributing 0.25 μg/m³ to annual average $PM_{2.5}$ concentrations and result in an excess cancer risk of 0.83 per one million population (during construction). The cumulative risk at this location is approximately 10.42 μg/m³ and 124.68 cancer risk in 1 million people exposed, based on the Citywide air pollution model.

The acceptable level of project-level excess cancer risk is less than 10 per one million persons exposed, and an annual average $PM_{2.5}$ concentration of less than 0.3 μg/m³. Therefore, the maximum construction-related health risk would not exceed the project-level thresholds. Based on the project-level thresholds and the low percentage of total health risk, construction activities of the build alternatives would not contribute considerably to existing health risks.

Regarding cumulative health risks related to operational activity, the risk was assessed in the portion of the Geary corridor where the build alternatives would generate the highest increase in bus emissions (Geary Boulevard between Masonic Avenue and Collins Street). A series of transit vehicles were modeled using line-volume sources to determine the health impact relative to the roadway. The analysis indicated that Alternative 2 would result in a higher risk than the other build alternatives. As shown in Table 4.10-7 of the Air Quality section, Alternative 2 would result in an excess cancer risk of two per 1 million populations and contribute 0.005 μg/m³ to annual average $PM_{2.5}$ concentrations. However, these risks would be less than the project-level significance thresholds.

Under the maximum operational scenario, the build alternatives would contribute at maximum 1.7 percent to the cumulative cancer risk and less than 0.1 percent to the cumulative annual $PM_{2.5}$ concentrations. Based on the project-level thresholds and the low percentage of total health risk, operational activities would not contribute considerably to existing health risks.

5.5.13.1 | HYBRID ALTERNATIVE/LPA MODIFICATIONS: SUMMARY OF POTENTIAL CONTRIBUTIONS TO CUMULATIVE EFFECTS

Construction: Modifications to add BRT stops at Laguna Street and construct additional pedestrian improvements would result in incremental increases in localized criteria pollutant emissions at these locations, similar in nature and duration to emissions anticipated to occur with construction of the other 51 BRT stops and 65 pedestrian crossing bulbs. The other modifications would not increase the level of construction activities needed to implement the Hybrid Alternative/LPA and would, therefore, reduce or not change localized construction-period emissions of criteria pollutants. The net effect of the modifications would not substantially change construction-period emissions. As such, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative air quality effects of the Hybrid Alternative/LPA; the Hybrid Alternative/LPA would still not contribute to any adverse cumulative air quality effects during construction.

Operation: As demonstrated in Section 4.10.4.1, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding the Hybrid Alternative/LPA's air quality benefits and GHG emissions reductions; the Hybrid Alternative/LPA would therefore still not contribute to any adverse cumulative air quality effects during operation.

5.5.14 | Noise and Vibration

The area for analysis of cumulative effects related to noise and vibration includes the Geary corridor and other immediately adjacent roadways.

The build alternatives, along with selected other anticipated transportation, infrastructure, and development projects, would result in temporary increases in ambient noise levels. Noise levels would fluctuate depending on the construction phase, equipment type and duration of use, distance between the noise source and receptor, and presence or absence of noise attenuation barriers. The increase in noise resulting from the build alternatives would occur during construction, the duration of which depends on alternative, but would not exceed one year in any given multi-block construction area (see Section 4.15 for more detail on construction duration and phasing). As the effects of noise and vibration are highly location specific, cumulatively considerable effects would occur only if such noise and vibrations were being produced from the same localized area.

Construction of other anticipated projects would occur along and near the Geary corridor. However, it is unlikely that substantial noise and vibration would occur at the same place and at the same time as construction activity resulting from the implementation of any of the build alternatives. As such, there would be no adverse cumulative noise and vibration effects during construction.

Operational noise levels are not anticipated to differ significantly from existing conditions. As shown in Table 4.11-7, activity associated with any of the build alternatives would increase existing noise levels by less than 1 dBA at each of the analyzed receptors. Increased traffic volumes in 2020 and 2035, resulting from ambient growth and related projects, would increase background noise levels, and lessen the build alternative's contribution to ambient noise levels. The build alternatives' contribution to a cumulative noise increase would be 1 dBA or less at each of the analyzed receptors. Studies have shown that the smallest perceptible change in sound level for a person with normal hearing sensitivity is approximately 3 dBA. The contribution to ambient noise levels would not be audible, and the build alternatives would not contribute to a cumulatively considerable noise impact.

5.5.14.1 | HYBRID ALTERNATIVE/LPA MODIFICATIONS: SUMMARY OF POTENTIAL CONTRIBUTIONS TO CUMULATIVE EFFECTS

Construction: Modifications to add BRT stops at Laguna Street and construct additional pedestrian improvements would result in temporary, intermittent increases in localized construction noise at these locations, similar to that which would occur for construction of other BRT stops and pedestrian crossing bulbs. Because the location of these modifications would be within the public right of way, their potential to increase the severity of any previously identified construction-period noise effects would be limited. The other modifications would not increase the level of construction activities needed to implement the Hybrid Alternative/LPA and would not increase the level of localized construction-period noise. Therefore, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative noise and vibration effects of the Hybrid Alternative/LPA; the Hybrid Alternative/LPA would still not contribute to any adverse cumulative noise effects during construction.

Operation: Retention of the existing local and Express stops between Spruce and Cook streets would mean that BRT buses would pass by this location at higher speeds rather than make a stop, which may marginally increase operational noise at this location relative to what was described in the Draft EIS/EIR, but such increases would be below the level of human perception. Moreover, operational noise from buses would be generally similar to both existing conditions as well as to other locations along the corridor where existing local and express stops would be retained. Retention of the existing local and express stops at Collins Street would mean that, instead of all buses passing by Collins Street at higher speeds, local and express buses would stop, resulting in marginally reduced operational noise at this location. Similarly, the addition of BRT stops at Laguna Street would mean BRT buses would now stop at this location rather than pass by at higher speeds, somewhat reducing noise levels. Moreover, the bus stops at Laguna Street would be located on transit islands further away from sensitive receptors. As shown in Section 4.11.4.1, the other modifications would not substantially affect bus operations or noise. The six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative noise and vibration effects of the Hybrid Alternative/LPA; the Hybrid Alternative/LPA would still not contribute to any adverse cumulative noise effects during operation.

5.5.15 | Energy

The energy cumulative analysis considers energy consumption within San Francisco as a whole.

Implementation of the build alternatives would involve consumption of some nonrenewable resources. Construction of the any of the build alternatives would require use of fossil fuels, labor, and construction materials, with Alternatives 3 and 3-Consolidated requiring more (owing to more intensive construction programs, particularly in the Fillmore area). These expenditures would be mostly irrecoverable; however, they are not in short supply and their use would not have an adverse effect upon continued availability of these resources.

Operational energy consumption involves energy use by vehicles within the Geary corridor – both automobiles and the BRT bus fleet. While each of the build alternatives would reduce automobile VMT, generally, the build alternatives would have little to no effect on automobile energy supply and consumption. Alternative 2 is projected to result in a minimal increase in energy use in 2020 and a small decrease by 2035. Alternative 2's projected increase in energy use (year 2020) would not be an adverse effect because fuels are not in short supply and the relatively small percentage of increased energy use would not substantially affect total supply. Transportation energy use of Alternatives 3 and 3-Consolidated, and the Hybrid Alternative/LPA is projected to drop slightly relative to the No Build Alternative both in 2020 and 2035. The reductions in energy use would be considered small but beneficial effects. These reductions are attributable to the projected increases in bus VMT associated with these build alternatives, which in turn take into account network operating characteristics of the alternatives.

Other planned transportation and infrastructure projects within the vicinity of the Geary corridor would require energy consumption for construction and operational activities. Construction-period expenditures of fossil fuels, labor, and construction materials for reasonably foreseeable projects, in combination with any of the build alternatives, would not combine to create new demands for these resources that would limit their continued availability. As demonstrated in Section 4.12.4.2, these other planned and programmed projects would ultimately result in long-term reductions in energy consumption, particularly resulting from conversion to a more fuel-efficient bus fleet by 2035. Accordingly, the build alternatives would not result in any cumulative energy effect.

5.5.15.1 | HYBRID ALTERNATIVE/LPA MODIFICATIONS: SUMMARY OF POTENTIAL CONTRIBUTIONS TO CUMULATIVE EFFECTS

Construction: As described in Section 4.12.4.1, the addition of more pedestrian crossing and safety improvements and Laguna Street BRT stops would marginally increase construction-period energy consumption. The other modifications would not increase the level of construction activities. Therefore, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative energy effects of the Hybrid Alternative/LPA; the Hybrid Alternative/LPA would still not contribute to any adverse cumulative energy effects during construction. Moreover, the associated construction materials are not in short supply and their use, in combination with planned and reasonably foreseeable projects, would not have an adverse effect on continued availability of these resources.

Operation: As shown in Section 4.12.4.1, during operation, none of the modifications would substantially affect bus operations or VMT and, thus, operational energy use, relative to what was described in the Draft EIS/EIR. Therefore, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative energy effects of the Hybrid Alternative/LPA; the Hybrid Alternative/LPA would still not contribute to any adverse cumulative energy effects during operation.

5.5.16 | Biological Resources

The area for analysis of cumulative effects to biological resources includes the Geary corridor and lands within a quarter mile.

The full length of the Geary corridor and surrounding lands are fully urbanized, with relatively limited capacity to host sensitive plant or animal species. Trees, such as those in the Geary corridor median, the Park Presidio greenways, and those lining adjacent streets are the primary biological resources of the Geary corridor. Some build alternatives would remove median trees, but would also incorporate new landscaping and tree replacement, offsetting any potential long-term effects (project-level as well as cumulative) regarding trees or the migratory bird species that can nest in trees. Other reasonably foreseeable projects that are resulting in tree removal would similarly replace trees that need to be removed for construction. Therefore, the build alternatives would not result in any cumulative effect upon biological resources.

5.5.16.1 | HYBRID ALTERNATIVE/LPA MODIFICATIONS: SUMMARY OF POTENTIAL CONTRIBUTIONS TO CUMULATIVE EFFECTS

Construction: The modifications would result in the preservation of thirteen trees that had been previously proposed for removal in the Draft EIS/EIR, reducing the total number of trees that would be removed for the Hybrid Alternative/LPA from 195 to 182. Given that the modifications to the Hybrid Alternative/LPA would reduce the overall number of trees removed, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative biological effects of the Hybrid Alternative/LPA; The Hybrid Alternative/LPA would still not contribute to any adverse cumulative effects to biological resources. No other biological resources exist in the Geary corridor.

Operation: As shown in Section 4.13.4.1, during operation, none of the proposed modifications would have additional effects to biological resources. Moreover, none of the modifications would introduce any new biological resources beyond the replacement trees previously noted in the Draft EIS/EIR. Therefore, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative biological effects of the Hybrid Alternative/LPA; The Hybrid Alternative/LPA would still not contribute to any adverse cumulative effects to biological resources during operation.

5.5.17 | Environmental Justice

The area for analysis of cumulative effects related to environmental justice encompasses a half-mile radius along the Geary corridor.

No adverse or disproportionate effects have been identified in several environmental topic areas. As such, there would be no potential for any cumulatively considerable disproportionate adverse effect to minority or low-income populations associated with land use, growth, cultural resources, utilities, geology and soils, and energy.

The remaining environmental topic areas identified as having potential environmental justice effects (almost entirely within the construction period) include community impacts, visual resources, hazards and hazardous materials, hydrology and water quality, air quality and GHGs, noise and vibration, and transportation and transit. During construction, there would be temporary access disruptions, risks due to usage, transport, release, or exposure of hazardous materials, air pollutant emissions, visual effects and noise and vibration effects due to construction equipment. However, all of these adverse effects would be temporary and would be dispersed throughout all portions of the Geary corridor.

The prospect for cumulative effects would be Geary project construction occurring at the same time as construction of other projects' improvements. The implementation of construction period traffic management plans (such as would be required for the build alternatives per Section 4.15.5.), as well as adherence to existing San Francisco regulations for working in right-of-way areas would help minimize the potential for multiple construction projects to result in cumulative effects anywhere along the Geary corridor, including within environmental justice communities.

Once operational, the project would benefit the Geary corridor, including residents, business owners, and transit-users, by providing the BRT systems and associated amenities. Therefore, no adverse cumulative environmental justice effects are anticipated during construction or operation of the project.

5.5.17.1 | HYBRID ALTERNATIVE/LPA MODIFICATIONS: SUMMARY OF POTENTIAL CONTRIBUTIONS TO CUMULATIVE EFFECTS

Construction and Operation: As described in Sections 5.5.1 through 5.5.16 above, no adverse cumulative effects would occur for most environmental topic areas during construction or operation. As described in Section 5.6.1 below, the only environmental topic area subject to adverse cumulative effects is automobile traffic. For the Hybrid Alternative/LPA, inclusive of its six modifications, 25 percent of level-of-service (LOS)-affected intersections in both 2020 and 2035 (the cumulative forecast year) would be located in environmental justice communities, while 75 percent of LOS-affected intersections would be located in non-environmental justice communities. Environmental justice communities are located throughout the entire length of the Geary corridor. Therefore, the modifications to the Hybrid Alternative/LPA would still not contribute to any cumulative effects to environmental justice communities during construction or operation.

5.6 Environmental Area Subject to Cumulative Effects

The analysis herein is based on consideration of the nature of the build alternatives, the project setting, the impact analysis findings presented in Chapters 3 and 4, and the characteristics of other reasonably foreseeable projects within the project vicinity. The incremental impact of the build alternatives, when added to other past, present, and reasonably foreseeable future actions, have the potential to result in cumulative effects for automobile traffic.

5.6.1 | Automobile Traffic

The study area for cumulative analysis covers the entirety of the Geary Transportation Study Area (study area), as shown in Figure 3-2.1. The study area includes the entirety of Geary Street/Boulevard, plus certain parallel and/or nearby routes. The study area includes 78 intersections on and off the Geary corridor.

5.6.1.1 | PROJECT OPERATIONAL EFFECTS ON AUTOMOBILE TRAFFIC

The cumulative analysis was based on a review of impacts at study area intersections for model year 2035. This horizon year assumes full operation of any of the build alternatives, but also includes the increment of traffic associated with projected future development and population growth in and around the study area, as well as foreseeable changes to the transportation network, such as those associated with planned transportation improvements. In other words, the project-level analysis presented in Section 3.4 of this Final EIS for year 2035 is equivalent to a cumulative case analysis.

Implementation of the project alternatives, when added to other past, present, and reasonably foreseeable actions, would result in an adverse cumulative effect if they would result in a substantial degradation of intersection level of service (LOS) relative to No Build horizon year conditions. It should be noted that the analysis of the No Build Alternative indicates that adverse traffic effects would result at 21 corridor/study area intersections. In contrast, the build alternatives would each result in substantially fewer adversely affected intersections.

Table 5-2 below summarizes where such effects would occur for the build alternatives and the feasibility of mitigation.

Table 5-2 Summary of Study Intersection Impacts and Mitigation Measures, 2035 Cumulative Horizon Year

INTERSECTION	IMPACT, BY BUILD ALTERNATIVE				AVOIDANCE, MINIMIZATION OR MITIGATION MEASURES
	ALT 2 (LOS/DELAY)	ALT 3 (LOS/DELAY)	ALT 3-CONSOLIDATED (LOS/DELAY)	HYBRID ALT (LOS/DELAY)	
Parker Street & Geary Boulevard	No D/46	No D/38	No D/53	**Yes[1] E/63**	None feasible
Baker Street & Geary Boulevard	No D/47	No D/47	**Yes[1] E/61**	No D/55	None feasible
Divisadero Street & Geary Boulevard	**Yes[1] F/>80**	No E/67	No D/53	No E/69	None feasible
Fillmore Street & Geary Boulevard	No D/40	**Yes[1] E/78**	No D/45	No D/54	None feasible
Laguna Street & Geary Boulevard	**Yes F/>80**	**Yes[1] F/>80**	No D/37	**Yes[1] E/76**	None feasible
Gough Street & Geary Boulevard	**Yes F/>80**	**Yes[1] F/>80**	**Yes[1] F/>80**	**Yes F/>80**	None feasible
Franklin Street & O'Farrell Street	No D/43	**Yes[1] F/>80**	**Yes[1] F/>80**	No D/44	None feasible
Van Ness Avenue & Geary Boulevard	**Yes[1] E/71**	No E/79	No E/77	**Yes[1]** E/67	None feasible
Clement Street & Park Presidio Boulevard	No C/35	No D/51	**Yes[1] E/57**	No D/54	Remove 3 parking spaces from *either* south or north side of Clement St. or both (6 spaces) Provide short (75') right-turn pockets
California & Arguello Boulevard	No D/46	**Yes[1] E/61**	No D/48	**Yes[1] E/66**	Restricting EB and WB left-turns could alleviate effects but would cause substantial diversions; therefore considered infeasible
Turk Street & Parker Avenue	No D/37	**Yes[1] E/61**	**Yes[1] E/73**	No D/37	Restrict EB or EB and WB left-turns
California Street & Presidio Avenue	No D/39	**Yes[1] E/68**	**Yes[1] E/64**	**Yes[1] E/68**	Increasing cycle length and optimizing signal cycle length could reduce traffic effects but would substantially worsen conditions for pedestrians; therefore considered infeasible
Fulton Street & Stanyan Street	**Yes[1] F/>80**	**Yes[1] F/>80**	**Yes[1] F/>80**	**Yes[1] F/>80**	None feasible
Fulton Street & Park Presidio Boulevard	No F/>80	**Yes[1] F/>80**	No F/>80	No F/>80	None feasible
Anza Street & Park Presidio Boulevard	No E/56	No D/48	**Yes[1] E/57**	**Yes[1] E/67**	Reconfiguring westbound approach to add additional through travel lane could reduce effects but would remove parking and worsen pedestrian conditions – therefore considered infeasible
Geary Street & Polk Street	No E/70	No E/72	**Yes[1] E/73**	No E/59	None feasible

1. Intersections were also determined to be adverse effects of build alternatives in Near Term (2020) scenario.
2. The No Build Alternative would result in adverse effects at 21 intersections in all; see Final EIS Section 3.4.5.

Source: Fehr & Peers, 2014

The No Build Alternative would result in a total of 21 study intersections with adverse effects in 2035. It would be infeasible to mitigate effects at all of these 21 intersections through the addition of travel lanes, new turning lanes, or similar street-widening means because there would be insufficient street right-of-way width to accommodate new lanes without removing pedestrian facilities and/or parking or otherwise incorporating additional right-of-way. Narrowing sidewalks or large-scale reductions in on-street parking lanes that serve as a barrier between pedestrians and moving traffic to make room for new lanes would be contrary to the purpose and need goals of improving pedestrian access while maintaining general vehicular access and circulation.

Implementation of Alternative 2 would contribute to cumulative effects at five study intersections. No feasible avoidance, minimization or mitigation measures could avoid or lessen cumulative effects at these intersections.

Alternative 3 would contribute to cumulative effects at nine study intersections. Potentially feasible avoidance or minimization measures could avoid or lessen these cumulative effects at one of the affected intersections (Turk Street and Parker Avenue); however, this mitigation would entail restricting left turns in one or both directions of Turk Street. Of the nine affected intersections, one would result in unique cumulative effects under Alternative 3: Fulton Street/Park Presidio Boulevard; no other build alternative would result in cumulative effects at this intersection.

Alternative 3-Consolidated would contribute to cumulative effects at 9 study area intersections. Of these nine, potentially feasible avoidance or minimization measures have been identified for two intersections. No feasible measures exist for the remaining seven intersections and thus the adverse effects would remain.

The Hybrid Alternative/LPA would contribute to cumulative effects at eight study area intersections. Because mitigation options considered for these eight intersections would require additional travel lanes, worsening of pedestrian conditions, and/or removal of parking and thereby eliminating the buffer between pedestrians and moving traffic that on-street parking provides, mitigation was deemed infeasible at all intersections and thus the adverse effects would remain.

5.6.1.2 | PROJECT CONSTRUCTION EFFECTS ON AUTOMOBILE TRAFFIC

Several of the projects listed in Table 4.3-3 as well as described in Section 2.8.1.2 may be constructed at the same time as improvements associated with any of the build alternatives. Traffic congestion, travel delays, and access restrictions attributable to construction activities of projects in and/or near the Geary corridor could be expected during the construction of any of the build alternatives. A PCP would be established that would provide detailed information on construction activities, including potential detours and closures in specific locations at various times. Any of the build alternatives would generally maintain two mixed-flow travel lanes west of Van Ness Avenue throughout the construction period. The PCP would also take into account potential effects of any other transportation and/or development projects that may be in active construction. Construction of multiple projects within close proximity to each other would escalate short-term traffic effects. The severity of such effects could be lessened through adherence to the PCP; other projects implementing similar control plans, and timely public announcements of construction activities. These and related other measures

included in Section 4.15 would lessen construction-related effects on automobile traffic such that the build alternatives' contribution to any such effect would not be cumulatively considerable.

5.6.1.3 | HYBRID ALTERNATIVE/LPA MODIFICATIONS: SUMMARY OF POTENTIAL CONTRIBUTIONS TO CUMULATIVE EFFECTS

As discussed in the Sections 5.6.1.1 and 5.6.1.2, the Hybrid Alternative/LPA would contribute considerably to adverse cumulative traffic effects during operations, but not during construction. Therefore, for construction, the analysis below assesses whether the modifications to the Hybrid Alternative/LPA would cause new project contributions to adverse cumulative effects. For operations, the analysis below assesses whether the modifications would cause new contributions to adverse cumulative effects, and whether the modifications would cause the contributions to adverse cumulative effects identified in the Draft EIS/EIR to become more severe.

Construction: As discussed in Section 5.6.1.2, none of the build alternatives would result in considerable contributions to adverse cumulative construction effects. Of the six modifications, the addition of BRT stops at Laguna Street would increase construction-related traffic disruptions for two to three weeks. The addition of 26 new pedestrian bulbs would extend construction by four to six days at the intersections where they would be installed. The other modifications would not increase the level of construction activities needed to implement the Hybrid Alternative/LPA. Given the relatively brief duration of these incremental additions to overall construction activities, the six modifications would not alter the conclusions in the Draft EIS/EIR regarding cumulative construction period traffic effects of the Hybrid Alternative/LPA. The Hybrid Alternative/LPA still would not substantially contribute to any adverse cumulative effects on automobile traffic circulation during construction beyond what was identified in the Draft EIS/EIR.

Operation: As discussed in Section 5.6.1.1, the Hybrid Alternative/LPA would contribute to adverse cumulative effects at eight study area intersections during operations, and no feasible mitigation measures are available. The modifications would not substantially change the magnitude of the Hybrid Alternative/LPA's contributions to these adverse cumulative effects. The retained pedestrian bridge and staggered crosswalk at Webster Street would require a minor signal timing adjustment; however, this adjustment would not result in a change in LOS at any nearby intersections compared to what was described in the Draft EIS/EIR. None of the other six modifications would alter signal timing in a manner that would increase the severity of traffic delay, nor would they reduce travel lane capacities. Thus, taken together, none of the modifications would change any of the LOS conclusions for 2035 described in the Draft EIS/EIR. The Hybrid Alternative/LPA would still contribute to adverse cumulative effects at the eight intersections identified in Section 5.6.1.1, but the modifications would not make those contributions more severe, nor would they cause any new contributions to adverse cumulative effects at other intersections.