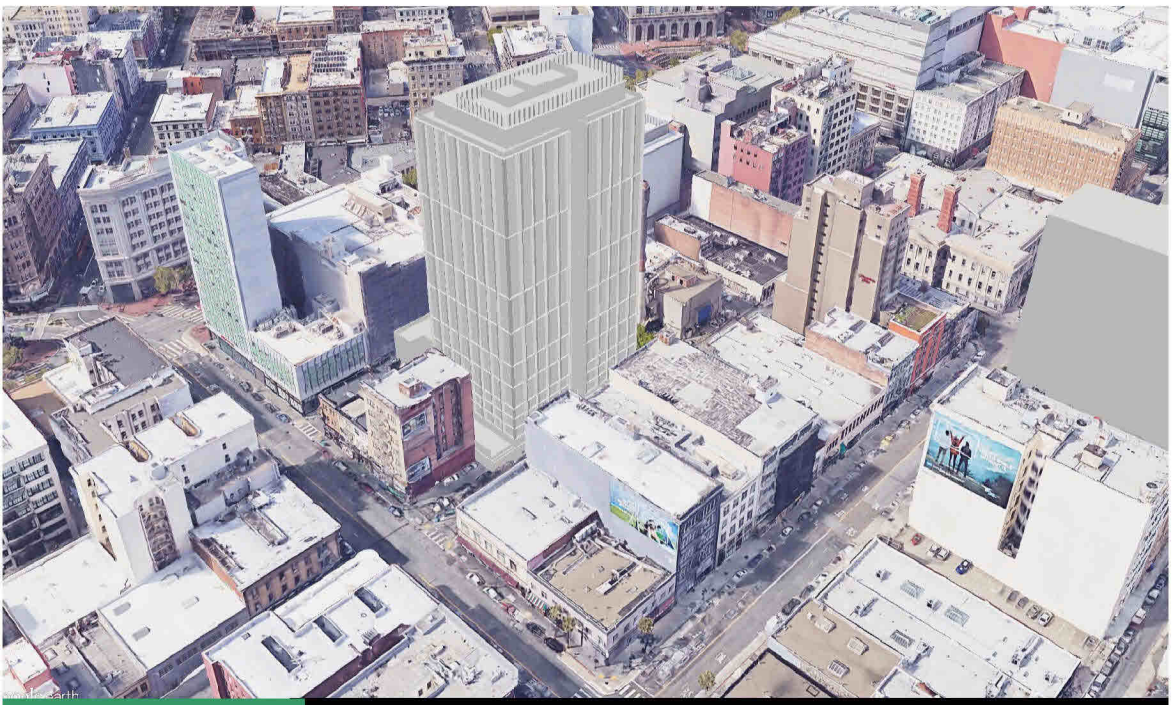

DRAFT ENVIRONMENTAL IMPACT REPORT

469 Stevenson Street Project

PLANNING DEPARTMENT
CASE NO. **2017-014833ENV**
STATE CLEARINGHOUSE NO. **2019100093**

Screencheck Draft Number **01**	Draft EIR Publication Date:	MONTH XX, 20XX
	Draft EIR Public Hearing Date:	MONTH XX, 20XX
	Draft EIR Public Comment Period:	MONTH XX, 20XX - MONTH XX, 20XX

Written comments should be sent to:
Jenny Delumo, EIR Coordinator | 1650 Mission Street, Suite 400 | San Francisco, CA 94103
or CPC.469Stevenson@sfgov.org

SAN FRANCISCO
PLANNING
DEPARTMENT

SAN FRANCISCO
PLANNING DEPARTMENT

1650 Mission St.
Suite 400
San Francisco,
CA 94103-2479

Reception:
415.558.6378

Fax:
415.558.6409

Planning
Information:
415.558.6377

DATE: [TBD]

TO: Distribution List for the 469 Stevenson Street Draft EIR

FROM: Lisa Gibson, Environmental Review Officer

SUBJECT: Environmental Impact Report for the 469 Stevenson Street Project (Planning Department File No. 2017-014833ENV)

This is the draft environmental impact report (EIR) for the 469 Stevenson Street Project. A public hearing will be held on the adequacy and accuracy of this document. After the public hearing, the San Francisco Planning Department will prepare and publish a document titled "Responses to Comments," which will contain a summary of all relevant comments on this draft EIR and our responses to those comments. It may also specify changes to this draft EIR. Those who testify at the hearing on the draft EIR and provide their contact information will automatically receive a copy of the Responses to Comments document, along with notice of the date reserved for a hearing on the certification of the final EIR at the San Francisco Planning Commission; others may receive a copy of the Responses to Comments and certification hearing notice by request or by visiting the planning department.

This draft EIR together with the Responses to Comments document will be considered by the San Francisco Planning Commission in an advertised public meeting and will be certified as a final EIR if deemed adequate. The final EIR will add no new information to the combination of the two documents except to reproduce the certification resolution. Therefore, if you receive a copy of the Responses to Comments document in addition to this copy of the draft EIR, you will technically have a copy of the final EIR.

Thank you for your interest in this project.

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Acronyms and Abbreviations

ABAG	Association of Bay Area Governments
ADA	Americans with Disabilities Act
ADRP	archeological data recovery plan
air district	Bay Area Air Quality Management District
AQI	Air Quality Index
ARPP	archeological resource preservation plan
ATP	archeological testing plan
BART	Bay Area Rapid Transit
Bgs	below ground surface
BMPs	best management practices
BTUs	British thermal units
building department	San Francisco Department of Building Inspection
C-3-G	Downtown-General
CalEEMod®	California Emissions Estimator Model
Caltrans	California Department of Transportation
California Register	California Register of Historical Resources
CEQA	California Environmental Quality Act
CO	carbon monoxide
dB	Decibel
dB(A)	A-weighted decibel
DPM	diesel particulate matter
EIR	environmental impact report
EMFAC	Emission Factor
ERO	Environmental Review Officer
FARR	Final Archeological Resources Report
FAR	floor area ratio
FTA	Federal Transit Administration
gpd	gallons per day
GHG	greenhouse gas
gsf	ground square feet
health department	San Francisco Department of Public Health
hp	horsepower
HVAC	heating, ventilation, and air conditioning
kWh	kilowatt-hours
lb/hr	pounds per hour
LOS	level of service
Maher Ordinance	San Francisco Health Code article 22A
MBTA	Migratory Bird Treaty Act
MERV-13	Minimum Efficiency Reporting Value 13
mgd	million gallons per day
MLD	Most Likely Descendant
MRZ	mineral resource zone
MTBE	methyl tertiary-butyl ether
MTC	Metropolitan Transportation Commission

Muni	Municipal Railway
ng/m3	nanograms per cubic meter
NO_2	nitrogen dioxide
NOP	Notice of Preparation
NO_X	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NWIC	Northwest Information Center
OEHHA	California Office of Environmental Health Hazard Assessment
OPR	Office of Planning and Research
PCB	polychlorinated biphenyl
PDA	Priority Development Area
PG&E	Pacific Gas and Electric Company
planning department	San Francisco Planning Department
PM	particulate matter
ppb	part per billion
ppm	part per million
PPV	peak particle velocity
RCNM	Roadway Construction Noise Model
ROG	reactive organic gases
RPD	San Francisco Recreation and Parks Department
SB	Senate Bill
sfh	square foot-hours
SFLOP	San Francisco Local Oversight Program
SFMTA	San Francisco Municipal Transportation Agency
SFPUC	San Francisco Public Utilities Commission
site assessment	phase 1 environmental site assessment
SO_2	sulfur dioxide
SoMa	South of Market
TAAS	Theoretical Annual Available Sunlight
TACs	toxic air contaminants
TAZ	traffic analysis zones
TCR	tribal cultural resource
TDM	transportation demand management
TDR	transferable development rights
TNCs	Transportation Network Companies
$\mu g/m^3$	micrograms per cubic meter
USGS	U.S Geological Survey
UST	underground storage tank
VDECS	Verified Diesel Emissions Control Strategy
VMT	vehicle-miles-traveled
VOCs	volatile organic compounds

SUMMARY

S.1 INTRODUCTION

This chapter provides an overview of the topics and issues addressed in the draft environmental impact report (EIR) prepared for the 469 Stevenson Street Project (proposed project). Following the synopsis of the proposed project, a summary table presents the environmental impacts of the proposed project identified in the EIR by topic and the mitigation measures identified to reduce or lessen significant impacts. Significant impacts identified in the initial study prepared for the proposed project are listed in a separate summary table, along with the mitigation measures that would reduce them to less-than-significant levels. Following these summary tables is a description of the alternatives to the proposed project that are addressed in this EIR and tables that compare the characteristics and environmental impacts of those alternatives with those of the proposed project as well as other project alternatives. The chapter concludes with a summary of environmental issues to be resolved and areas of known controversy.

The San Francisco Planning Department (planning department) is the lead agency responsible for preparing this EIR in compliance with the California Environmental Quality Act (CEQA). This is a focused EIR. It discloses the impacts of the proposed project on air quality, wind, and shadow to the public and decision-makers. All other potential environmental impacts of the proposed project, as analyzed under CEQA, are adequately addressed in the initial study for this project (Appendix A).

S.2 PROJECT SYNOPSIS

The project site is a through lot located at 469 Stevenson Street in the South of Market (SoMa) neighborhood of San Francisco. The project site is approximately 28,790 square feet (0.66-acre) and currently developed as a public surface parking lot with 176 parking spaces.

The project sponsor, BUILD, is proposing to demolish the existing surface parking lot and construct a new 27-story mixed-use residential building that is approximately 274 feet tall (with an additional 10 feet for rooftop mechanical equipment). The proposed project would total approximately 535,000[1] gross square feet (gsf) and include 495 dwelling units, approximately 4,000 square feet of commercial retail use on the ground floor, and approximately 25,000 square feet of private and common open space. The proposed 495 dwelling units consisting of 192 studios, 33 junior one-bedroom units, 116 one-bedroom units, 96 two-bedroom units, 50 three-bedroom units, and 8 five-bedroom units would be available to rent. The proposed project would use the Individually Requested State Density Bonus Program[2] and provide affordable housing units onsite.

[1] All numbers are rounded to the nearest thousand or hundred thousand.

[2] City of San Francisco Planning Department, Individually Requested State Density Bonus Program, Informational and Supplemental Application Packet. http://forms.sfplanning.org/IndividuallyRequestedState_SupplementalApplication.pdf. Accessed September 18, 2019.

The proposed project would provide three below grade parking levels with 178 parking spaces, 200 class 1[3] bicycle spaces, and two service delivery loading spaces. Additionally, one on-site loading space would be located on the street level. Twenty-seven class 2[4] bicycle parking spaces would be placed along the sidewalk on Jessie Street.

The proposed project would excavate 55,850 cubic yards of soil at the project site. The proposed project is anticipated to be constructed on a mat foundation and no pile driving or piers are proposed or required. Project construction would span approximately 36 months.

S.3 SUMMARY OF IMPACTS AND MITIGATION MEASURES

The planning department published a Notice of Preparation (NOP) of an EIR and initial study on October 2, 2019, announcing its intent to prepare and distribute a focused EIR (the NOP and initial study are presented in Appendix A of this EIR). The initial study found that the proposed project would have potentially significant impacts in the areas of air quality, wind, and shadow. It also found that the proposed project's impacts on other environmental topics (land use and planning, population and housing, cultural resources, tribal cultural resources, transportation and circulation, odors, greenhouse gas emissions, recreation, utilities and services systems, public services, biological resources, geology and soils, hydrology and water quality, hazards and hazardous materials, mineral resources, energy resources, agriculture and forestry resources, and wildfire) would either be less than significant or less than significant with mitigation or that the proposed project would have no impact. Thus, the topics analyzed in this EIR are air quality, wind, and shadow. All impacts of the proposed project and associated mitigation measures identified in this EIR are summarized in Table S-1. These impacts are listed in the same order as they appear in the text of Chapter 4, Environmental Setting and Impacts, of this EIR.

Since publication of the NOP and initial study, the project sponsor has made changes to the project description. These changes are described in Chapter 2, Project Description, and have been incorporated into the analysis of the proposed project's impacts in Chapter 4, Environmental Setting and Impacts, herein, to evaluate potential impacts to air quality, wind, and shadow. Chapter 4 also includes an analysis of the physical environmental impacts of the revised project description for those topics that were evaluated in the initial study. That analysis finds that the changes made to the project description would not result in any new or substantially more severe significant environmental impacts or necessitate implementation of additional or considerably different mitigation measures than those identified in the initial study. The effects of the revised project description would be substantially the same as those reported in the initial study. All mitigation measures identified in the initial study and summarized in Table S-2 would still be required for the revised project.

For the topics evaluated in the EIR, the levels of significance of impacts before and after implementation of applicable mitigation measures are identified as follows:

---

[3] Class 1 bicycle parking space(s) are spaces in secure, weather-protected facilities intended for use as long-term, overnight, and work-day bicycle storage by dwelling unit residents, non-residential occupants, and employees.

[4] Class 2 bicycle parking space(s) are bicycle racks located in a publicly-accessible, highly visible location intended for transient or short-term use by visitors, guests, and patrons to the building or use.

- **No Impact**. No adverse changes (or impacts) to the environment are expected.
- **Less than Significant**. An impact that would not involve an adverse physical change to the environment, would not exceed the defined significance criteria, or would be eliminated or reduced to a less-than-significant level through compliance with existing local, state, and federal laws and regulations.
- **Less than Significant with Mitigation**. An impact that would be reduced to a less-than-significant level through implementation of the identified mitigation measure.
- **Significant and Unavoidable with Mitigation**. An adverse physical environmental impact that would exceed the defined significance criteria but could be reduced through compliance with existing local, state, and federal laws and regulations and/or implementation of feasible mitigation measures. The impact cannot be reduced to a less-than-significant level.
- **Significant and Unavoidable**. An adverse physical environmental impact that exceeds the defined significance criteria and cannot be eliminated or reduced to a less-than-significant level through compliance with existing local, state, and federal laws and regulations. There are no feasible mitigation measures to reduce the impact.

S.3.1 Summary Tables

Table S-1 summarizes all environmental impacts and mitigation measures identified in the EIR for the proposed project. For a complete description of potential impacts and recommended mitigation measures, please refer to the topical sections in Chapter 4 of the EIR. Table S-2 summarizes the significant environmental impacts of the proposed project and mitigation measures for the topics evaluated in the initial study. Both tables are arranged in four columns: 1) impacts, 2) level of significance before mitigation (if applicable), 3) mitigation measures (if applicable), and 4) level of significance after mitigation (if applicable).

Table S-1: Summary of Impacts of the Proposed Project Identified In EIR

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Air Quality			
Impact AQ-1: During construction, the proposed project would generate fugitive dust and criteria air pollutants, but would not contribute substantially to an existing or projected air quality violation or result in a cumulatively considerable net increase in criteria air pollutants.	LTS	None required.	NA
Impact AQ-2: At project buildout, operation of the proposed project would not result in emissions of criteria air pollutants at levels that would violate an air quality standard or result in a cumulatively considerable net increase in criteria air pollutants.	LTS	None required.	NA
Impact AQ-3: Construction and operation of the proposed project would generate toxic air contaminants, including DPM, at levels that would expose sensitive receptors to substantial pollutant concentrations.	S	***M-AQ-3a: Off-road Construction Equipment Emissions Minimization.*** The project sponsor shall comply with all of the following: A. *Engine Requirements.* 1. All off-road equipment greater than 25 hp and operating for more than 20 total hours over the entire duration of construction activities shall have engines that meet or exceed either: (a) Tier 4 Interim or Tier 4 Final off-road emission standards, or (b) U.S. Environmental Protection Agency (USEPA) or air board Tier 2 off-road emission standards *and* have been retrofitted with an air board Level 3 Verified Diesel Emissions Control Strategy (VDECS). 2. Where access to alternative sources of power are available, portable diesel engines shall be prohibited. 3. Diesel engines, whether for off-road or on-road equipment, shall not be left idling for more than two minutes, at any location, except as provided in exceptions to the applicable state regulations regarding idling for off-road and on-road equipment (e.g., traffic	LTS

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		conditions, safe operating conditions). The project sponsor shall post legible and visible signs in English, Spanish, and Chinese, in designated queuing areas and at the construction site to remind operators of the two-minute idling limit. 4. Off-road 5. The project sponsor shall instruct construction workers and equipment operators on the maintenance and tuning of construction equipment and require that such workers and operators properly maintain and tune equipment in accordance with manufacturer specifications. B. *Waivers.* *1.* The Planning Department's Environmental Review Officer or designee (ERO) may waive the alternative source of power requirement of Subsection (A)(2) if an alternative source of power is limited or infeasible at the project site. If the ERO grants the waiver, the project sponsor must submit documentation that the equipment used for onsite power generation meets the requirements of Subsection (A)(1). 2. The ERO may waive the equipment requirements of Subsection (A)(1) if: a particular piece of off-road equipment with an air board Level 3 VDECS is technically not feasible; the equipment would not produce desired emissions reduction due to expected operating modes; installation of the equipment would create a safety hazard or impaired visibility for the operator; or, there is a compelling emergency need to use off-road equipment that is not retrofitted with an ARB Level 3 VDECS. If the ERO grants the waiver, the project sponsor must use the next cleanest piece of off-road equipment, according to Table below. Additionally, the project sponsor must demonstrate that use of the alternative equipment would not result in a cancer risk from project construction and operation that exceeds 7 per one million exposed. **Table AQ-1– Off-Road Equipment Compliance Step-down**	

<table>
<tr><th>Impact</th><th>Level of Significance before Mitigation</th><th>Mitigation Measures</th><th>Level of Significance after Mitigation</th></tr>
<tr><td></td><td></td><td>
Schedule
<table>
<tr><th>Compliance Alternative</th><th>Engine Emission Standard</th><th>Emissions Control</th></tr>
<tr><td>1</td><td>Tier 2</td><td>ARB Level 2 VDECS</td></tr>
<tr><td>2</td><td>Tier 2</td><td>ARB Level 1 VDECS</td></tr>
<tr><td>3</td><td>Tier 2</td><td>Alternative Fuel*</td></tr>
</table>
How to use the table: If the ERO determines that the equipment requirements cannot be met, then the project sponsor would need to meet Compliance Alternative 1. If the ERO determines that the project sponsor cannot supply off-road equipment meeting Compliance Alternative 1, then the project sponsor must meet Compliance Alternative 2. If the ERO determines that the project sponsor cannot supply off-road equipment meeting Compliance Alternative 2, then the project sponsor must meet Compliance Alternative 3.
** Alternative fuels are not a VDECS.

C. Construction Emissions Minimization Plan. Before starting on-site construction activities, the project sponsor shall submit a Construction Emissions Minimization Plan (Plan) to the ERO for review and approval. The Plan shall state, in reasonable detail, how the project sponsor will meet the requirements of Section A.
1. The Plan shall include estimates of the construction timeline by phase, with a description of each piece of off-road equipment required for every construction phase. The description may include, but is not limited to: equipment type, equipment manufacturer, equipment identification number, engine model year, engine certification (Tier rating), horsepower, engine serial number, and expected fuel use and hours of operation. For VDECS installed, the description may include: technology type, serial number, make, model, manufacturer, Air board verification number level, and installation date and hour meter reading on installation date. For off-road equipment using alternative fuels, the description shall also specify the type of alternative fuel being used.
2. The project sponsor shall ensure that all applicable requirements of the Plan have been incorporated into the contract specifications. The
</td><td></td></tr>
</table>

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		Plan shall include a certification statement that the project sponsor agrees to comply fully with the Plan. 3. The project sponsor shall make the Plan available to the public for review on-site during working hours. The project sponsor shall post at the construction site a legible and visible sign summarizing the Plan. The sign shall also state that the public may ask to inspect the Plan for the project at any time during working hours and shall explain how to request to inspect the Plan. The project sponsor shall post at least one copy of the sign in a visible location on each side of the construction site facing a public right-of-way. D. *Monitoring*. After start of construction activities, the project sponsor shall submit quarterly reports to the ERO documenting compliance with the Plan. After completion of construction activities and prior to receiving a final certificate of occupancy, the project sponsor shall submit to the ERO a final report summarizing construction activities, including the start and end dates and duration of each construction phase, and the specific information required in the Plan. ***Mitigation Measure M-AQ-3b: Diesel Backup Generator Specifications.*** A. The project sponsor shall ensure that the proposed diesel backup generator meets or exceeds California Air Resources Board Tier 4 off-road emission standards. Additionally, once operational, the diesel backup generator shall be maintained in good working order for the life of the equipment and any future replacement of the diesel backup generator shall be required to be consistent with these emissions specifications. The operator of the facility at which the generator is located shall be required to maintain records of the testing schedule for the diesel backup generator for the life of that diesel backup generator and to provide this information for review to the planning department within three months of requesting such information.	
Impact AQ-4: The proposed project would not conflict with implementation of the 2017 Bay Area Clean Air Plan.	LTS	None required.	NA
Impact C-AQ-1: The proposed project, in combination with reasonably foreseeable projects, would expose sensitive receptors	S	***Mitigation Measures M-AQ-3a and M-AQ-3b***	LTS

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
to substantial pollutant concentrations.			
Wind			
Impact WD-1: The proposed project would not create wind hazards in publicly accessible areas of substantial pedestrian use.	LTS	None required.	NA
Impact C-WD-1: The proposed project at full buildout, when combined with reasonably foreseeable projects, would not create wind hazards in publicly accessible areas of substantial pedestrian use.	LTS	None required.	NA
Shadow			
Impact SD-1: The proposed project would create new shadow that substantially and adversely affects the use and enjoyment of Mint Plaza.	SU	No feasible mitigation.	SU
Impact C-SD-1: The proposed project, in combination with past, present, and reasonably foreseeable projects in the project vicinity, would create new shadow in a manner that substantially and adversely affects the use and enjoyment of Mint Plaza.	SU	No feasible mitigation.	SU

Legend

NI No impact
LTS Less than significant or negligible impact; no mitigation required
S Significant
SU Significant and unavoidable adverse impact, no feasible mitigation
SUM Significant and unavoidable adverse impact, after mitigation
NA Not applicable

Table S-2: Summary of Significant Impacts of the Proposed Project Identified in the Initial Study (EIR Appendix A)

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Cultural Resources			
Impact CR-3: The proposed project could result in a substantial adverse change in the significance of an archeological resource.	S	*Mitigation Measure M-CR-3: Archeological Testing* Based on a reasonable presumption that archeological resources may be present within the project site, the following measures shall be undertaken to avoid any potentially significant adverse effect from the proposed project on buried or submerged historical resources and on human remains and associated or unassociated funerary objects. The project sponsor shall retain the services of an archaeological consultant from the rotational Department Qualified Archaeological Consultants List (QACL) maintained by the planning department archaeologist. After the first project approval action or as directed by the Environmental Review Officer (ERO), the project sponsor shall contact the department archeologist to obtain the names and contact information for the next three archeological consultants on the QACL. The archeological consultant shall undertake an archeological testing program as specified herein. In addition, the consultant shall be available to conduct an archeological monitoring and/or data recovery program if required pursuant to this measure. The archeological consultant's work shall be conducted in accordance with this measure at the direction of the ERO. All plans and reports prepared by the consultant as specified herein shall be submitted first and directly to the ERO for review and comment and shall be considered draft reports subject to revision until final approval by the ERO. Archeological monitoring and/or data recovery programs required by this measure could suspend construction of the project for up to a maximum of four weeks. At the direction of the ERO, the suspension of construction can be extended beyond four weeks only if such a suspension is the only feasible means to reduce to a less than significant level potential effects on a significant archeological resource as defined in CEQA Guidelines section. 15064.5 (a) and (c). *Consultation with Descendant Communities*: On discovery of an archeological site[1] with descendant Native Americans, the Overseas Chinese, or other potentially interested descendant group an appropriate representative[2] of the descendant group and the ERO shall be contacted. The representative of the descendant group shall be given the opportunity to monitor archeological field investigations of the site and to offer recommendations to the ERO regarding appropriate archeological treatment of the site, of recovered data from the site, and, if applicable, any interpretative treatment of the associated archeological site. A copy of the Final Archaeological Resources Report shall be provided to the representative of the descendant group. *Archeological Testing Program*. The archeological consultant shall prepare and submit to the ERO for review and approval an *archeological testing plan* (ATP). The *archeological testing*	LTS

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		program shall be conducted in accordance with the approved ATP. The ATP shall identify the property types of the expected archeological resource(s) that potentially could be adversely affected by the proposed project, the testing method to be used, and the locations recommended for testing. The purpose of the *archeological testing program* will be to determine to the extent possible the presence or absence of archeological resources and to identify and to evaluate whether any archeological resource encountered on the site constitutes a historical resource under CEQA. At the completion of the *archeological testing program*, the archeological consultant shall submit a written report of the findings to the ERO. If based on the *archeological testing program* the archeological consultant finds that significant archeological resources may be present, the ERO in consultation with the archeological consultant shall determine if additional measures are warranted. Additional measures that may be undertaken include additional *archeological testing*, *archeological monitoring*, and/or *an archeological data recovery program*. No archeological data recovery shall be undertaken without the prior approval of the ERO or the planning department archeologist. If the ERO determines that a significant archeological resource is present and that the resource could be adversely affected by the proposed project, at the discretion of the project sponsor either: A. The proposed project shall be re-designed so as to avoid any adverse effect on the significant archeological resource; or B. A data recovery program shall be implemented, unless the ERO determines that the archeological resource is of greater interpretive than research significance and that interpretive use of the resource is feasible. *Archeological Monitoring Program*. If the ERO in consultation with the archeological consultant determines that an archeological monitoring program shall be implemented, the archeological monitoring program shall minimally include the following provisions: • The archeological consultant, project sponsor, and ERO shall meet and consult on the scope of the AMP reasonably prior to any project-related soils disturbing activities commencing. The ERO in consultation with the archeological consultant shall determine what project activities shall be archeologically monitored. The project shall not require pile driving. In most cases, any soils- disturbing activities, such as demolition, foundation removal, excavation, grading, utilities installation, foundation work, site remediation, etc., shall require *archeological monitoring* because of the risk these activities pose to potential archaeological resources and to their depositional context; • The archeological consultant shall undertake a worker training program for soil-disturbing workers that will include an overview of expected resource(s), how to	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		identify the evidence of the expected resource(s), and the appropriate protocol in the event of apparent discovery of an archeological resource; • The archeological monitor(s) shall be present on the project site according to a schedule agreed upon by the archeological consultant and the ERO until the ERO has, in consultation with the project archeological consultant, determined that project construction activities could have no effect on significant archeological deposits; • The archeological monitor shall record and be authorized to collect soil samples and artifactual/ecofactual material as warranted for analysis; • If an intact archeological deposit is encountered, all soils-disturbing activities in the vicinity of the deposit shall cease. The project shall not require pile driving. The archeological monitor shall be empowered to temporarily redirect demolition/excavation installation/construction activities and equipment until the deposit is evaluated. The archeological consultant shall immediately notify the ERO of the encountered archeological deposit. The archeological consultant shall make a reasonable effort to assess the identity, integrity, and significance of the encountered archeological deposit, and present the findings of this assessment to the ERO. Whether or not significant archeological resources are encountered, the archeological consultant shall submit a written report of the findings of the monitoring program to the ERO. *Archeological Data Recovery Program*. The *archeological data recovery program* shall be conducted in accordance with an *archeological data recovery plan* (ADRP). The archeological consultant, project sponsor, and ERO shall meet and consult on the scope of the ADRP prior to preparation of a draft ADRP. The archeological consultant shall submit a draft ADRP to the ERO. The ADRP shall identify how the proposed *data recovery program* will preserve the significant information the archeological resource is expected to contain. That is, the ADRP will identify what scientific/historical research questions are applicable to the expected resource, what *data classes* the resource is expected to possess, and how the expected *data classes* would address the applicable research questions. Data recovery, in general, should be limited to the portions of the historical property that could be adversely affected by the proposed project. Destructive data recovery methods shall not be applied to portions of the archeological resources if nondestructive methods are practical. The scope of the ADRP shall include the following elements: • *Field Methods and Procedures*. Descriptions of proposed field strategies, procedures,	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		and operations. • *Cataloguing and Laboratory Analysis*. Description of selected cataloguing system and artifact analysis procedures. • *Discard and Deaccession Policy*. Description of and rationale for field and post-field discard and deaccession policies. • *Interpretive Program*. Consideration of an onsite/offsite public interpretive program during the course of the *archeological data recovery program*. • *Security Measures*. Recommended security measures to protect the archeological resource from vandalism, looting, and non-intentionally damaging activities. • *Final Report*. Description of proposed report format and distribution of results. • *Curation*. Description of the procedures and recommendations for the curation of any recovered data having potential research value, identification of appropriate curation facilities, and a summary of the accession policies of the curation facilities. *Human Remains, Associated or Unassociated Funerary Objects*. The treatment of human remains and of associated or unassociated funerary objects discovered during any soils disturbing activity shall comply with applicable State and federal laws. This shall include immediate notification of the ERO and the Medical Examiner of the City and County of San Francisco and, in the event of the Medical Examiner's determination that the human remains are Native American remains, notification of the California State Native American Heritage Commission, who shall appoint a Most Likely Descendant (MLD). The MLD will complete his or her inspection of the remains and make recommendations or preferences for treatment within 48 hours of being granted access to the site (Public Resources Code section 5097.98). The ERO also shall be notified immediately upon the discovery of human remains (Public Resources Code section 5097.98). The ERO also shall be notified immediately upon the discovery of human remains. The project sponsor and ERO shall make all reasonable efforts to develop a Burial Agreement ("Agreement") with the MLD, as expeditiously as possible, for the treatment and disposition, with appropriate dignity, of human remains and associated or unassociated funerary objects (as detailed in CEQA Guidelines section 15064.5(d)). The Agreement shall take into consideration the appropriate excavation, removal, recordation, scientific analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects. If the MLD agrees to scientific analyses of the remains and/or associated or unassociated funerary objects, the archaeological consultant shall retain possession of the remains and associated or unassociated funerary objects until completion of any such analyses, after which the remains and associated or unassociated funerary objects	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		shall be reinterred or curated as specified in the Agreement. Nothing in existing State regulations or in this mitigation measure compels the project sponsor and the ERO to accept treatment recommendations of an MLD. However, if the ERO, project sponsor and MLD are unable to reach an Agreement on scientific treatment of the remains and associated or unassociated funerary objects, the ERO, with cooperation of the project sponsor, shall ensure that the remains and/or mortuary materials are stored securely and respectfully until they can be reinterred on the property, with appropriate dignity, in a location not subject to further or future subsurface disturbance. Treatment of historic-period human remains and of associated or unassociated funerary objects discovered during any soil-disturbing activity, additionally, shall follow protocols laid out in the project's archaeological treatment documents, and in any related agreement established between the project sponsor, Medical Examiner and the ERO. *Final Archeological Resources Report*. The archeological consultant shall submit a Draft Final Archeological Resources Report (FARR) to the ERO that evaluates the historical significance of any discovered archeological resource and describes the archeological and historical research methods employed in the archeological testing/monitoring/data recovery program(s) undertaken. The Draft FARR shall include a curation and deaccession plan for all recovered cultural materials. The Draft FARR shall also include an Interpretation Plan for public interpretation of all significant archeological features. Copies of the Draft FARR shall be sent to the ERO for review and approval. Once approved by the ERO, the consultant shall also prepare a public distribution version of the FARR. Copies of the FARR shall be distributed as follows: California Archaeological Site Survey Northwest Information Center (NWIC) shall receive one (1) copy and the ERO shall receive a copy of the transmittal of the FARR to the NWIC. The environmental planning division of the planning department shall receive one bound and one unlocked, searchable PDF copy on CD of the FARR along with copies of any formal site recordation forms (CA DPR 523 series) and/or documentation for nomination to the National Register of Historic Places/California Register of Historical Resources. In instances of public interest in or the high interpretive value of the resource, the ERO may require a different or additional final report content, format, and distribution than that presented above.	
Impact CR-4: The project could disturb human remains, including those interred outside of formal cemeteries.	S	Mitigation Measure M-CR-3	LTS

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact C-CR-1: The proposed project, in combination with reasonably foreseeable projects in the vicinity, could result in a cumulatively considerable contribution to a significant cumulative impact related to cultural resources.	S	Mitigation Measure M-CR-3	LTS
Tribal Cultural Resources			
Impact TCR-1: Project-related activities could cause a substantial adverse change in the significance of a tribal cultural resource, as defined in Public Resources Code section 21074.	S	***Mitigation Measure M-TCR-1: Tribal Cultural Resources Interpretive Program*** During ground-disturbing activities that encounter archeological resources, if the ERO determines that a significant archeological resource is present, and if in consultation with the affiliated Native American tribal representatives, the ERO determines that the resource constitutes a tribal cultural resource (TCR) and that the resource could be adversely affected by the proposed project, the proposed project shall be redesigned so as to avoid any adverse effect on the significant tribal cultural resource, if feasible. If the ERO determines that preservation-in-place of the TCR is both feasible and effective, then the archeological consultant shall prepare an archeological resource preservation plan (ARPP). Implementation of the approved ARPP by the archeological consultant shall be required when feasible. If the ERO, in consultation with the affiliated Native American tribal representatives and the project sponsor, determines that preservation-in-place of the tribal cultural resources is not a sufficient or feasible option, the project sponsor shall implement an interpretive program of the TCR in consultation with affiliated tribal representatives. An interpretive plan produced in consultation with the ERO and affiliated tribal representatives, at a minimum, and approved by the ERO, would be required to guide the interpretive program. The plan shall identify, as appropriate, proposed locations for installations or displays, the proposed content and materials of those displays or installation, the producers or artists of the displays or installation, and a long-term maintenance program. The interpretive program may include artist installations, preferably by local Native American artists, oral histories with local Native Americans, artifacts displays and interpretation, and educational panels or other informational displays.	LTS
Impact C-TCR-1: The proposed project, in combination with reasonably foreseeable future	S	Mitigation Measure M-TCR-1	LTS

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
projects, could result in a cumulatively considerable contribution to a cumulative tribal cultural resources impact.			
Noise			
Impact NO-1: Construction of the proposed project would result in a temporary or periodic increase in ambient noise levels.	S	*Mitigation Measure M-NO-1: Construction Noise* The project sponsor shall develop site-specific noise attenuation measures under the supervision of a qualified acoustical consultant. At the end of the design phase of this project and prior to commencing construction, the project sponsor shall submit a noise attenuation plan to the San Francisco Planning Department and Department of Building Inspection to ensure maximum feasible noise attenuation will be achieved. The noise attenuation plan shall reduce construction noise to the degree feasible with a goal of reducing construction noise levels at adjacent noise sensitive receptors (e.g., residential, hotel, hospital, convalescent home, school, and church uses) so that noise levels do not exceed 90 dBA and 10 dBA above ambient daytime noise levels. The project sponsor shall include noise attenuation measures in specifications provided to the general contractor and any sub-contractors. Noise attenuation measures shall, at minimum, include the following: • Require the general contractor to ensure that equipment and trucks used for project construction utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically attenuating shields or shrouds), wherever feasible. • Require the general contractor to perform all work in a manner that minimizes noise to the extent feasible; use equipment with effective mufflers; undertake the noisiest activities during times of least disturbance to surrounding residents and occupants. • Require the general contractor to use impact tools (e.g., jack hammers, pavement breakers, and rock drills) that are hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. Where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used, along with external noise jackets on the tools, which could reduce noise levels by as much as 10 dBA. • Require the general contractor to erect temporary plywood noise barriers (at least 0.5-inch-thick) around stationary noise sources and/or the construction site, particularly where a noise source or the site adjoins noise-sensitive uses. The barriers shall be high enough to block the line of sight from the dominant	LTS

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		construction noise source to the closest noise-sensitive receptors. Depending on factors such as barrier height, barrier extent, and distance between the barrier and the noise-producing equipment or activity, such barriers may reduce construction noise by 3–15 dBA at the locations of nearby noise-sensitive receptors. • Require the general contractor to use noise control blankets on a building structure as the building is erected to reduce noise emission from the site. • Require the general contractor to line or cover hoppers, storage bins, and chutes with sound-deadening material (e.g., apply wood or rubber liners to metal bin impact surfaces). • Unless safety provisions require otherwise, require the general contractor to adjust audible backup alarms downward in sound level while still maintaining an adequate signal-to-noise ratio for alarm effectiveness. Consider signal persons, strobe lights, or alternative safety equipment and/or processes as allowed to reduce reliance on high-amplitude sonic alarms/beeps. • Require the general contractor to place stationary noise sources, such as generators and air compressors, on the power station side of the project site, as far away from nearby noise-sensitive receptors as possible. To further reduce noise, the contractor shall locate stationary equipment in pit areas or excavated areas, if feasible. • Require the general contractor to place non-noise-producing mobile equipment, such as trailers, in the direct sound pathways between suspected major noise-producing sources and noise-sensitive receptors. • Under the supervision of a qualified acoustical consultant, the project sponsor shall monitor the effectiveness of noise attenuation measures by taking noise measurements as needed. • Prior to the issuance of a building permit, along with the submission of construction documents, the project sponsor shall submit to the planning department and building department a list of measures that shall be implemented and that shall respond to and track complaints pertaining to construction noise. These measures shall include: 1. post signs onsite pertaining to permitted construction days and hours. 2. a procedure and phone numbers for notifying the building department and the San Francisco Police Department (during regular construction hours and off-hours). This telephone number shall be maintained until the proposed project is ready for occupancy. 3. a sign posted onsite describing noise complaint procedures and a complaint	

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		hotline number that shall be answered at all times during construction. 4. designation of an onsite construction complaint and enforcement manager for the project who shall document, investigate, evaluate, and attempt to resolve all project-related noise complaints. 5. notification of neighboring residents and non-residential building managers within 300 feet of the project construction area at least 30 days in advance of extreme noise generating activities (defined as activities generating anticipated noise levels of 90 dBA or greater) about the estimated duration of the activity.	
Impact NO-2: The proposed project would generate noise levels in excess of standards established in the local general plan or noise ordinance and could result in a substantial permanent increase in ambient noise levels in the project vicinity.	S	***Mitigation Measure M-NO-2: HVAC and Mechanical Equipment Exterior Noise*** A minimum of 20.5 dB(A) noise reduction is required from the rooftop equipment to achieve the requirements of the San Francisco Police Code. The project sponsor shall implement the following mitigation measure to reduce noise levels from the source equipment and achieve compliance with the police code: • Enclose as much of the proposed project's rooftop equipment as possible within a mechanical room with small louvered openings to the exterior. The mechanical room and louvered openings can be treated with acoustic absorption and sound attenuators to reduce noise at the property planes. • If the equipment remains open to the roof, select rooftop equipment with a maximum sound pressure level of 54.4 dB(A) at 50 feet from the equipment. • Attach sound attenuators to the outside air and exhaust air openings/fans of the rooftop equipment to minimize environmental noise. During the design phase, once the project sponsor has selected the specific HVAC and mechanical equipment for the proposed project, a qualified acoustical consultant shall conduct a property plane noise analysis. The property plane analysis report shall evaluate whether the proposed HVAC and mechanical equipment complies with the noise limits in the San Francisco Police Code. The report shall be submitted to the San Francisco Planning Department for review and approval prior to issuance of a building permit or building permit addendum that would permit the HVAC and mechanical equipment.	LTS
Impact C-NO-1: Construction of the proposed project, in combination with reasonably foreseeable projects, would result in a significant cumulative impact	S	Mitigation Measure M-NO-1	LTS

Impact	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
related to noise and the project's contribution would be cumulatively considerable.			

Legend

NI No impact
LTS Less than significant or negligible impact; no mitigation required
S Significant
SU Significant and unavoidable adverse impact, no feasible mitigation
SUM Significant and unavoidable adverse impact, after mitigation

[1]The term "archeological site" is intended here to minimally include any archeological deposit, feature, burial, or evidence of burial.
[2]An "appropriate representative" of the descendant group is defined here to mean, in the case of Native Americans, any individual listed in the current Native American Contact List for the City and County of San Francisco maintained by the California Native American Heritage Commission and in the case of the Overseas Chinese, the Chinese Historical Society of America. An appropriate representative of other descendant groups should be determined in consultation with the Department archeologist.

S.4 SUMMARY OF ALTERNATIVES

In addition to the proposed project, this draft EIR analyzes the environmental impacts of three alternatives that were determined to represent a reasonable range of alternatives to the proposed project, as follows:

- **Alternative A**: **No Project Alternative**. The No Project Alternative is based on what would reasonably be expected to occur on the project site if the proposed project is not approved, in accordance with CEQA Guidelines section 15126.6(e). The No Project Alternative assumes that physical conditions on the project site would remain the same.
- **Alternative B**: **Reduced Density Alternative**. The purpose of the Reduced Density Alternative is to consider a project that would lessen the significant and unavoidable shadow impact on Mint Plaza that would occur from construction of the proposed project. The Reduced Density Alternative would redevelop the project site with a new mixed-use residential project, similar to the proposed project, but would construct a shorter and less dense building than under the proposed project and would include fewer basement levels.
- **Alternative C**: **No Residential Parking, Tower Only**. The purpose of the No Residential Parking, Tower Only Alternative is to propose a project that would lessen the significant air quality, noise, archeological and tribal cultural resources impacts of the proposed project associated with the grading and excavation needed to build the three below-grade levels for parking and loading spaces. This alternative would redevelop the project site with a new mixed-use residential project, similar to the proposed project, but would include only one basement level (as opposed to the three basement levels included in the proposed project). This alternative would result in a taller building, but with 28 less units than under the proposed project by slightly changing the design to eliminate the podium height massing along the four corners and relocate that square footage to the top of the building creating a streamlined single tower.

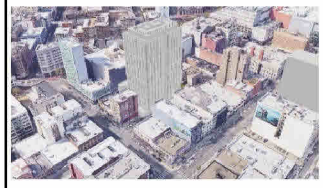
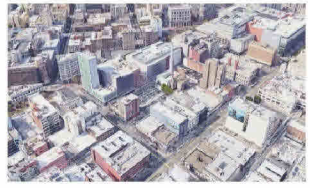
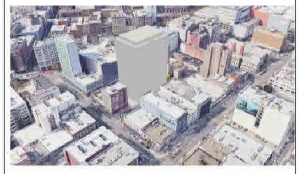
Pursuant to CEQA Guidelines Section 15126.6(e)(2), if the no project alternative is the environmentally superior alternative, then an EIR is required to identify another environmentally superior alternative from among the alternatives evaluated. The proposed project would result in significant impacts in the areas of cultural resources, tribal cultural resources, noise, and air quality which would be mitigated to a less-than-significant level with implementation of the identified mitigation measures. Additionally, the proposed project would result in a significant and unavoidable project-level shadow impact and a significant and unavoidable cumulative shadow impact.

The Reduced Density Alternative is identified as the environmentally superior alternative. The Reduced Density Alternative would require implementation of the same mitigation measures as the proposed project to reduce impacts related to cultural resources, tribal cultural resources, noise, and air quality. However, the potential for impacts would be similar to or reduced compared with those of the proposed project because of the reduced amount of excavation and earth movement, shorter construction duration, and fewer residential units constructed. The Reduced Density Alternative would be 114 feet shorter than the proposed project and would therefore cast less new net shadow on UN Plaza and Mint Plaza. The Reduced Density Alternative would not result in a significant and

unavoidable project-level or cumulative shadow impact. The Reduced Density Alternative could also feasibly attain most of the project sponsor objectives.

Table S-3 presents a comparison of the characteristics of the proposed project to the project alternatives. Table S-4, presents a comparison of the potential significant environmental impacts of the proposed project, the No Project Alternative, the Reduced Density Alternative, and the No Residential Parking, Tower Only Alternative.

Table S-3: Comparison of Proposed Project and Alternatives

Project Component	Proposed Project	Alternative A: No Project Alternative	Alternative B: Reduced Density Alternative	Alternative C: No Residential Parking, Tower Only Alternative
				
Building Heights	274 feet (with an additional 10 feet for rooftop mechanical equipment)	--	160 feet (with an additional 10 feet for rooftop mechanical equipment)	284 feet (with an additional 10 feet for rooftop mechanical equipment)
No. of Stories	27 stories 3 below grade levels	--	17 stories 2 below grade level	28 stories 1 below grade level
Total No. Units	495	--	346	467
Studio	192	--	42	0
Junior one-bedroom	33	--	0	0
1 Bedroom	116	--	204	349
2 Bedroom	96	--	64	60
3 Bedroom	50	--	36	58
5 Bedroom	8	--	0	0
Square Footage by Use	475,000 sf residential; 4,000 sf commercial retail	28,790 sf surface parking lot	259339,11000 sf residential; 6,357400 sf commercial retail	456343,813000 sf residential; 3,651700 sf of commercial retail
Total gross square feet (gsf)	535,000 gsf	28,790 gsf	338,629259,110 gsf	479537,957000 gsf
Open Space	11,000 sf common residential open space; 14,000 sf private	--	1624,423700 sf common residential open space; ~~no~~ 252 sf	1620,756600 sf common residential open space; 5,937

Comment [VL1]: I went back to the architect on all of the numbers to confirm them and they realized that there was indeed a slight mix up. These are the final numbers that we should use.

Project Component	Proposed Project	Alternative A: No Project Alternative	Alternative B: Reduced Density Alternative	Alternative C: No Residential Parking, Tower Only Alternative
	residential open space:		private residential open space	~~580~~ sf of private residential open space
On-Site Vehicular Parking & Loading	1 off-street loading and 2 service vehicle parking; 178 residential vehicular parking spaces; 3 car-share spaces 56,000 sf	176 public vehicular parking spaces; 28,790 sf	2 off-street loading and 2 service vehicle parking; 150 residential vehicular parking spaces; 2 car-share spaces; 57,000 sf	1 off-street loading and 2 service vehicle parking; 2 accessible parking; No car-share parking
Bicycle Parking	200 class 1 27 class 2	None	192 class 1 23 class 2	193 class 1 25 class 2
Entitlements	Conditional Use Authorization; Individually Requested State Density Bonus	None	Conditional Use Authorization	Conditional Use Authorization; Individually Requested State Density Bonus
Excavation Depth	55 feet below grade; 55,850 cubic yards	None	35 feet; 37,600 cubic yards	10 feet; 10,740 cubic yards

Notes:
All numbers rounded to the nearest thousand or hundred thousand.
Common residential open space = solariums, podium terraces/balconies, common areas.

Table S-4: Comparison of Significant Impacts of the Proposed Project to Impacts of the Alternatives

Impact Statement	Proposed Project	Alternative A: No Project Alternative	Alternative B: Reduced Density Alternative	Alternative C: No Residential Parking, Tower Only Alternative
Cultural Resources				
Impact CR-3: The proposed project could result in a substantial adverse change in the significance of an archeological resource.	LSM	NI	LSM =/<	LSM =/<
Impact CR-4: The project could disturb human remains, including those interred outside of formal cemeteries.	LSM	NI	LSM =/<	LSM =/<
Impact C-CR-1: The proposed project, in combination with reasonably foreseeable projects in the vicinity, could result in a cumulatively considerable contribution to a significant cumulative impact related to cultural resources.	LSM	NI	LSM =/<	LSM =/<
Tribal Cultural Resources				
Impact TCR-1: Project-related activities could cause a substantial adverse change in the significance of a tribal cultural resource, as defined in Public Resources Code section 21074.	LSM	NI	LSM =/<	LSM =/<
Impact C-TCR-1: The proposed project, in combination with reasonably foreseeable future projects, could result in a cumulatively considerable contribution to a cumulative tribal cultural resources impacts.	LSM	NI	LSM =/<	LSM =/<
Noise				
Impact NO-1: Construction of the proposed project would result in a temporary or periodic increase in ambient noise levels.	LSM	NI	LSM <	LSM <
Impact NO-2: The proposed project would generate noise levels in excess of standards established in the local general plan or noise ordinance and could result in a substantial permanent increase in ambient noise levels in the project vicinity.	LSM	NI	LSM <	LSM <
Impact C-NO-1: Construction of the proposed project, in combination with reasonably foreseeable projects, would result in a significant cumulative impact related to noise and the project's contribution would be cumulatively considerable.	LSM	NI	LSM <	LSM <
Air Quality				

Impact Statement	Proposed Project	Alternative A: No Project Alternative	Alternative B: Reduced Density Alternative	Alternative C: No Residential Parking, Tower Only Alternative
Impact AQ-3: Construction and operation of the proposed project would generate toxic air contaminants, including DPM, at levels that would expose sensitive receptors to substantial pollutant concentrations.	LSM	NI	LSM <	LSM <
Impact C-AQ-1: The proposed project, in combination with reasonably foreseeable projects, would result in significant health risk impacts to sensitive receptors.	LSM	NI	LSM <	LSM <
Shadow				
Impact SD-1: The proposed project would create new shadow that substantially and adversely affects the use and enjoyment of publicly accessible open spaces.	SU	NI	LS <	SU >
Impact C-SD-1: The proposed project, in combination with reasonably foreseeable projects, would not create new shadow in a manner that substantially and adversely affects the use and enjoyment of publicly accessible open spaces.	SU	NI	LS <	SU >

Notes:
NI (no impact); LS (less than significant); LSM (less than significant with mitigation); SU (significant and unavoidable, no feasible mitigation measures available)= (equal to); < (less than); > (greater than)

S.5 AREAS OF KNOWN CONTROVERSY AND ISSUES TO BE RESOLVED

The planning department prepared an initial study checklist and published a NOP for an EIR on October 2, 2019, thereby announcing its intent to prepare and distribute a focused EIR (the NOP and Initial Study checklist are presented as Appendix A to this EIR). Publication of the NOP and initial study checklist initiated a 30-day public review and comment period that began on October 3, 2019 and ended on November 1, 2019. Individuals and agencies that received these notices included owners of properties within 300 feet of the project site, potentially interested parties, and responsible agencies, including regional and state agencies. Five written communications were received during the public review period. Four of the five comments requested additional information, such as the project sponsor's email address and requests for a hard copy of the initial study document. The planning department provided such requested information to the respective commenters. The fifth comment received noted a concern with circulation to and from the project site and inquired if the proposed project would implement limitations on the use of vehicles during the morning and afternoon rush hours. Information regarding project site circulation is provided in Section E.5, Transportation and Circulation, of the initial study (refer to Appendix A). As disclosed in the initial study, impacts related to transportation and circulation would be less than significant and would not require limitations on the use of vehicles during the morning and afternoon rush hours. Potential areas of controversy for the proposed project include the potential effects of the project related to air quality, wind, shadow, and transportation and circulation.

1.0 INTRODUCTION

This environmental impact report (EIR) analyzes the potential environmental effects associated with the 469 Stevenson Street Project (proposed project). This chapter describes the type, purpose, and function of the EIR, and describes the environmental review process for the project.

1.1 PROJECT SUMMARY

The project site is a through lot located at 469 Stevenson Street in the South of Market (SoMa) neighborhood of San Francisco (Assessor's Block 3704, Lot 45). The project site is approximately 28,790 square feet (0.66-acre) and currently developed as a public surface parking lot with 176 parking spaces.

The project sponsor, BUILD, is proposing to demolish the existing surface parking lot and construct a new 27-story mixed-use building that is approximately 274 feet tall (with an additional 10 feet for rooftop mechanical equipment). The proposed project would total approximately 535,000[5] gross square feet (gsf) and include 495 dwelling units, approximately 4,000 square feet of commercial retail use on the ground floor, and approximately 25,000 square feet of private and common open space.[6] The proposed 495 dwelling units consisting of 192 studios, 33 junior one-bedroom units, 116 one-bedroom units, 96 two-bedroom units, 50 three-bedroom units, and 8 five-bedroom units would be available to rent. The proposed project would use the Individually Requested State Density Bonus Program[7] and provide affordable housing units onsite.

The proposed project would provide three below grade parking levels with 178 vehicular parking spaces, 200 class 1[8] bicycle spaces, and two service delivery loading spaces. Additionally, one on-site freight loading space would be located on the ground floor. Twenty-seven class 2[9] bicycle parking spaces would be placed along Jessie Street.

The proposed project would excavate 55,850 cubic yards of soil at the project site. The proposed project is anticipated to be constructed on a mat foundation and no pile driving or piers are proposed or required. Project construction would span approximately 36 months. Further details regarding the proposed project components that form the basis for the EIR analysis are discussed in depth in Chapter 2, Project Description.

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[5] All numbers are rounded to the nearest thousand or hundred thousand.

[6] Since publication of the NOP and initial study on October 2, 2019, the project sponsor has made changes to the project description. These changes are described in section 2.7 of Chapter 2, Project Description, and have been incorporated into the analysis of potential impacts to air quality, wind, and shadow in Chapter 4, Environmental Setting and Impacts. Chapter 4 also includes an analysis of the revised project for the resource topics addressed in the initial study.

[7] City of San Francisco Planning Department, Individually Requested State Density Bonus Program, Informational and Supplemental Application Packet. http://forms.sfplanning.org/IndividuallyRequestedState_SupplementalApplication.pdf. Accessed September 18, 2019.

[8] Class 1 bicycle parking space(s) are spaces in secure, weather-protected facilities intended for use as long-term, overnight, and work-day bicycle storage by dwelling unit residents, non-residential occupants, and employees.

[9] Class 2 bicycle parking space(s) are bicycle racks located in a publicly-accessible, highly visible location intended for transient or short-term use by visitors, guests, and patrons to the building or use.

1.2 PURPOSE OF THIS EIR

An EIR is an informational document used by a lead agency when considering approval of a project. The purpose of an EIR is to provide public agencies and members of the public with detailed information regarding the environmental effects of implementing a proposed project. An EIR should analyze a project's environmental consequences, identify ways to reduce or avoid the project's potential environmental effects, and identify alternatives to the project that can avoid or reduce impacts. An EIR provides information to be used in the planning and decision-making process. It is not the purpose of an EIR to recommend approval or denial of a project.

This EIR analyzes the physical environmental effects associated with implementation of the proposed project. It has been prepared by the San Francisco Planning Department of the City and County of San Francisco (City), the lead agency for the proposed project, in compliance with the provisions of the California Environmental Quality Act (CEQA) and the CEQA Guidelines (California Code of Regulations Title 14, sections 15000 et seq. and California Public Resources Code sections 21000 et seq., respectively), as well as San Francisco Administrative Code chapter 31. The lead agency is the public agency that has principal responsibility for carrying out or approving a project.

As described by CEQA and the CEQA Guidelines, public agencies are charged with a duty to avoid or substantially lessen significant environmental effects, where feasible. In undertaking this duty, a public agency has an obligation to balance a project's significant effects on the environment with its benefits, including economic, social, technological, legal, and other non-environmental characteristics.

As defined in CEQA Guidelines section 15382, a "significant effect on the environment" is:

> "…a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant."

CEQA requires an EIR to be prepared before a discretionary decision is made to approve a project that may cause a significant effect on the environment that cannot be mitigated. The EIR is a public information document for use by governmental agencies and the public to identify and evaluate potential environmental impacts of a project, identify mitigation measures to lessen or eliminate significant adverse impacts, and examine feasible alternatives to the project. The information contained in this EIR, along with other information available through the public review processes, will be reviewed and considered by the decision makers prior to a decision to approve, disapprove, or modify the proposed project or adopt an alternative to the proposed project.

1.3 TYPE OF EIR

This document is a project-level EIR, pursuant to CEQA Guidelines section 15161. A project-level EIR focuses on changes in the environment that would result from construction and operation of a specific development project.

Furthermore, this EIR is also a focused EIR, pursuant to CEQA Guidelines section 15063(c)(3). An initial study was prepared for the proposed project in accordance with sections 15062 and 15082 and issued for public review on October 2, 2019. The initial study identified the topics for which the proposed project would result in less-than-significant impacts or impacts that could be reduced to less than significant with implementation of the mitigation measures identified in the initial study, and therefore do not require further analysis in this EIR. Thus, this EIR focuses the environmental analysis on those topics identified in the initial study with the potential to have significant environmental impacts.

Before the City can approve the project, it must certify that this EIR has been completed in compliance with CEQA, the CEQA Guidelines, and chapter 31 of the San Francisco Administrative Code, and that the information in the EIR reflects the City's independent judgment. CEQA requires decision-makers to balance the benefits of a project against its unavoidable environmental consequences. If environmental impacts are identified as significant and unavoidable, the City may still approve the project if it finds that social, economic, or other benefits outweigh the unavoidable impacts. The City would then be required to state in writing the specific reasons for approving the project, based on information in the EIR and other information sources in the administrative record. This reasoning is called a "statement of overriding considerations" (Public Resources Code section 21081; CEQA Guidelines section 15093).

1.4 ENVIRONMENTAL REVIEW PROCESS

1.4.1 Notice of Preparation of an EIR and Initial Study

In accordance with sections 15063 and 15082 of the CEQA Guidelines, the planning department published and distributed a notice of preparation (NOP) of an EIR and an initial study for the proposed project. The initial study was prepared to determine whether any aspect of the project, either individually or cumulatively, would cause a significant effect on the environment. The initial study narrowed the focus (or scope) of the environmental analysis by identifying which impacts would be less than significant (with or without mitigation) and therefore were adequately analyzed in the initial study, and which impacts require further study in the EIR. The initial study included the following findings:

- Impacts from the project related to aesthetics and parking are not applicable to the proposed project.[10]

[10] Senate Bill 743 was signed into law on September 27, 2013; became effective on January 1, 2014; and amends CEQA by adding Public Resources Code section 21099 regarding analysis of aesthetics, parking, and transportation impacts for urban infill projects. Section 21099(d) provides that "aesthetics and parking impacts of a residential, mixed-use residential, or employment center project on an infill site located within a transit priority area shall not be considered significant impacts on the environment." Thus, aesthetics and parking are no longer to be considered in determining whether a project has the potential to result in significant environmental effects for projects that meet the following three criteria: (1) is located in a transit priority area; (2) is located on an infill site; and (3) is residential, mixed-use residential, or an employment center. The proposed project meets each of these three criteria: It is located near major transit routes and on an infill site that has been previously developed and surrounded by areas of either recently completed or planned urban development. Further, the proposed project is a mixed-use residential project. Therefore, this EIR does not consider aesthetics and the adequacy of parking in determining the significance of project impacts under CEQA.

- Impacts from the project related to land use and planning, population and housing, cultural resources, tribal cultural resources, transportation and circulation, odors, greenhouse gas (GHG) emissions, recreation, utilities and services systems, public services, biological resources, geology and soils, hydrology and water quality, hazards and hazardous materials, mineral resources, energy resources, agriculture and forestry resources, and wildfire would either be less than significant or less than significant with mitigation, or would have no impact.
- Impacts from the project related to air quality (all topics except odors), wind, and shadow would be potentially significant and require further evaluation in the EIR.

The NOP and initial study were circulated for a 30-day public review period starting on October 3, 2019 and ending on November 1, 2019. Five written communications were received during the public review period requesting additional information on the proposed project and information regarding circulation to and from the project site. Information regarding project site circulation is provided in Section E.5, Transportation and Circulation, of the initial study (refer to Appendix A).

1.4.2 Draft EIR Public Review and Opportunities for Public Participation

The CEQA Guidelines and San Francisco Administrative Code chapter 31 encourage public participation in the planning and environmental review processes. The City will provide opportunities for the public to present comments and concerns regarding this EIR and its CEQA process. These opportunities include: (1) a 45-day public review and comment period, starting on XXX and ending on XXXX; (2) a noticed public hearing before the San Francisco Planning Commission (planning commission) on the draft EIR on XXXXX; and (3) a noticed public hearing before the planning commission on the certification of the final EIR in year 2020.

The public is invited to submit written comments on the adequacy and accuracy of the draft EIR. The comments should address the sufficiency of the document with respect to identifying and analyzing possible significant environmental impacts and determining how they may be avoided or mitigated. CEQA Guidelines section 15096(d) requests that responsible agencies review the proposed project activities that are in their areas of expertise, required to be carried out or approved by the agencies, and subject to an exercise of powers by the agencies. The agencies are also requested to provide comments that are supported by either oral or written documentation.

All written comments or questions about the draft EIR should be addressed to:

San Francisco Planning Department
Attention: Jenny Delumo, EIR Coordinator
1650 Mission Street, Suite 400, San Francisco, CA 94103
CPC.469Stevenson@sfgov.org

Written comments must be received by 5:00 p.m. on XXXX. Comments may also be submitted in person during the public hearing before the planning commission, which has been scheduled for XXX, at City Hall, Dr. Carlton B. Goodlett Place, Room 400, San Francisco, California. Please call (415) 558-6422 the week of the hearing for a recorded message with a more specific time.

The draft EIR is available for public review and comment on the planning department's "Environmental Review Documents" web page (https://sfplanning.org/environmental-review-documents). Copies of the draft EIR are also available at the Planning Department (1650 Mission Street, Suite 400). Referenced materials in this EIR are available for review on the San Francisco Property Information Map, which can be accessed at https://sfplanninggis.org/pim/. Individual files can be viewed by clicking on the "Planning Applications" link, clicking the "More Details" link under the project's environmental record number 2017-014833ENV and then clicking on the "Related Documents" link. (call 415-575-9146 for questions related to review of materials). Referenced materials are also available for review by appointment at the planning department's office on the fourth floor of 1650 Mission Street. (Call 415-575-9146 or email CPC.469Stevenson@sfgov.org to review the materials).

Comments are most helpful when they address the environmental analysis itself or suggest specific alternatives and/or additional measures to mitigate the significant environmental impacts of the proposed project. Members of the public are not required to provide personal identifying information when they communicate with the planning department or planning commission. All written or oral communications, including submitted personal contact information, may be made available to the public for inspection and copying upon request and may appear on the planning department's website or in other public documents.

1.4.3 Final EIR and EIR Certification

Following the close of the public review and comment period for this draft EIR, the City will prepare and publish a document titled "Responses to Comments." The responses to comments document will contain all written comments on this draft EIR and oral comments recorded at the public hearing on the draft EIR and written responses to those comments, along with copies of the letters or emails received, a transcript of the public hearing on the draft EIR, and any necessary revisions to the draft EIR. The draft EIR and the responses to comment document will constitute the final EIR. Not less than 10 days prior to the planning commission hearing to consider certification of the final EIR, the final EIR will be made available to the public and any board(s), commission(s) or department(s) that will carry out or approve the proposed project.

The planning commission, in an advertised public meeting, will consider the documents and, if found adequate, accurate, and objective, certify the final EIR, provided it (1) was completed in compliance with CEQA; and (2) reflects the lead agency's independent judgment and analysis. CEQA requires agencies to neither approve a project nor implement a project unless the project's significant environmental impacts have been reduced to a less-than-significant level, thereby essentially eliminating, avoiding, or substantially lessening the potentially significant impacts of the proposed project, except when certain findings are made. If an agency approves a project that would result in the occurrence of significant adverse impacts that cannot feasibly be mitigated to less-than-significant levels (that is, significant and unavoidable impacts), the agency must state the reasons for its action in writing; demonstrate that mitigation is infeasible, based on the EIR or other information in the record; and adopt a Statement of Overriding Considerations.

1.4.4 Mitigation Monitoring and Reporting Program

At the time of project approval, CEQA Guidelines require lead agencies to adopt a mitigation monitoring and reporting program (MMRP), a condition of project approval, to mitigate or avoid

significant impacts on the environment (CEQA Guidelines section 21081.6; CEQA Guidelines section 15097). This EIR identifies and presents the mitigation measures that would form the basis of a mitigation monitoring and reporting program. Any mitigation and improvement measures adopted by the lead agency and the City as conditions for approval of the project would be included in the MMRP.

1.5 ORGANIZATION OF THE DRAFT EIR

The EIR has been organized as follows:

- **Summary**. This chapter summarizes the EIR by providing a concise overview of the proposed project, the environmental impacts that would result from the proposed project, mitigation measures identified to reduce or eliminate the impacts, project alternatives and their comparative environmental effects, and areas of controversy and issues to be resolved.
- **Chapter 1, Introduction**. This chapter includes a discussion of the purpose of the EIR, a discussion of the environmental review process, a summary of the comments received on the scope of the EIR, and a brief outline of the document's organization.
- **Chapter 2, Project Description**. This chapter provides a detailed description of the proposed project, including the project's background and objectives, a summary of the changes to the project since publication of the initial study, the project location, the existing project site's land use characteristics, project components and characteristics, the construction schedule and anticipated activities, project approvals, a list of reasonably foreseeable cumulative projects, and the intended uses of the EIR.
- **Chapter 3, Applicable Plans**. This chapter provides a summary of the applicable plans of the City as well as regional and state agencies and identifies any potential project conflicts with those plans.
- **Chapter 4, Environmental Setting and Impacts**. This chapter provides a detailed analysis of the environmental impacts of the proposed project on the three resource topics that were identified in the initial study for further analysis. Each environmental topic contains a description of the environmental setting (or existing conditions), regulatory framework, and project-level and cumulative impacts. Each impact discussion includes the significance criteria used to determine the nature or magnitude of environmental impacts, significance conclusions, and feasible mitigation to avoid, minimize, or mitigate significant or potentially significant environmental impacts. The environmental topics included in this EIR are:
    - air quality
    - wind
    - shadow

  This chapter also contains a section that analyzes the environmental impacts of the revised project on the resource topics that were addressed in the initial study and provides the evidentiary basis that modifications to the project description since publication of the initial study would not change the impact conclusions for those topics addressed in the initial study.

- **Chapter 5, Other CEQA Issues**. Pursuant to Section 15126.2 of the CEQA Guidelines, this chapter summarizes any growth-inducing impacts that could result from the proposed project, irreversible changes to the environment, and significant and unavoidable environmental impacts. This chapter also presents any areas of controversy left to be resolved.
- **Chapter 6, Alternatives**. This chapter analyzes alternatives to the proposed project, including the required No Project Alternative, and compares their environmental effects to those of the proposed project. It also identifies the environmentally superior alternative. Alternatives evaluated in this chapter include the following:
    - Alternative A: No Project Alternative
    - Alternative B: Reduced Density Alternative
    - Alternative C: No Residential Parking, Tower Only Alternative
- **Chapter 7, Report Preparers**. This chapter presents a list of persons involved in preparation of this EIR.
- **Appendices**. The following appendices are included in this EIR:
    - Appendix A, NOP of an EIR and Initial Study
    - Appendix B, Air Quality Technical ~~Appendix~~Report
    - Appendix C, Wind Study for 469 Stevenson Street Project
    - Appendix D, Shadow Analysis Report for the Proposed 469 Stevenson Street Project
    - Appendix E, Revised Transportation Analysis Memorandum
    - Appendix F, Revised Noise Analysis Memorandum
    - Appendix G, Revised Energy Calculations Memorandum
    - Appendix H, Greenhouse Gas Compliance Checklist

Comment [MM2]: Revise to match what called them in table of contents.

2.0 PROJECT DESCRIPTION

This chapter provides an overview of the proposed project, including changes to the proposed project since publication of the initial study (Appendix A), the project sponsors' objectives, a description of the project location and existing conditions at the site, a description of the proposed project's characteristics, proposed construction schedule and anticipated activities, a list of reasonably foreseeable cumulative projects, and the required project approvals.

2.1 PROJECT OVERVIEW

The project site is a through lot located at 469 Stevenson Street in the South of Market (SoMa) neighborhood of San Francisco (Assessor's Block 3704, Lot 45). The project site is approximately 28,790 square feet (0.66-acre) and currently developed as a public surface parking lot with 176 parking spaces.

The project sponsor, BUILD, is proposing to demolish the existing surface parking lot and construct a new 27-story mixed-use building that is approximately 274 feet tall (with an additional 10 feet for rooftop mechanical equipment). The proposed project would total approximately 535,000[11] gsf and include 495 dwelling units, approximately 4,000 square feet of commercial retail use on the ground floor, and approximately 25,000 square feet of private and common open space. The proposed 495 dwelling units consisting of 192 studios, 33 junior one-bedroom units, 116 one-bedroom units, 96 two-bedroom units, 50 three-bedroom units, and 8 five-bedroom units would be available to rent. The proposed project would use the Individually Requested State Density Bonus Program[12] and provide affordable housing units onsite.

The proposed project would provide three below grade parking levels with 178 vehicular parking spaces, 200 class 1[13] bicycle spaces, and two service delivery loading spaces. Additionally, one on-site freight loading space would be located on the ground floor. Twenty-seven class 2[14] bicycle parking spaces would be placed along Jessie Street.

The proposed project would require 55,850 cubic yards of excavation and is anticipated to be constructed on a mat foundation. No pile driving or piers are proposed or required. Project construction would span approximately 36 months.

2.2 PROJECT SPONSOR'S OBJECTIVES

The project sponsor has identified the following project objectives:

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[11] All numbers are rounded to the nearest thousand or hundred thousand.

[12] City of San Francisco Planning Department, Individually Requested State Density Bonus Program, Informational and Supplemental Application Packet. http://forms.sfplanning.org/IndividuallyRequestedState_SupplementalApplication.pdf. Accessed September 18, 2019.

[13] Class 1 bicycle parking space(s) are spaces in secure, weather-protected facilities intended for use as long-term, overnight, and work-day bicycle storage by dwelling unit residents, non-residential occupants, and employees.

[14] Class 2 bicycle parking space(s) are bicycle racks located in a publicly-accessible, highly visible location intended for transient or short-term use by visitors, guests, and patrons to the building or use.

1. Redevelop an underutilized site in a transit-oriented, urban infill location with a range of dwelling units, ground-floor commercial retail uses, and open space amenities.

2. Build a substantial number of residential units onsite to help alleviate the current housing shortage in San Francisco and the greater Bay Area, and to contribute to the General Plan's Housing Element goals and ABAG's Regional Housing Needs Allocation for the City and County of San Francisco.

3. Promote the construction of affordable housing units in San Francisco by providing onsite inclusionary housing units.

4. Produce a high-quality architectural and landscape design that encourages variety, is compatible with its surrounding context and promotes sustainability through environmentally sensitive design features that meet or exceed the requirements of the San Francisco Public Utilities Commission's Non-Potable Water Ordinance as well as the City and County of San Francisco's Stormwater Management Requirements, Green Building Ordinance, and Better Streets Design Guidelines.

5. Develop the project site to encompass ample open space amenities for building residents and encourage use of common residential open space.

6. Provide off-street vehicle parking that is adequate for the occupancy proposed pursuant section 151.1 of the San Francisco Planning Code (planning code) and to meet investment capital parking requirements.

7. Design a project that incorporates building massing features, including massing articulation, that would improve the building's performance with respect to wind safety and comfort impacts.

8. Construct a high-quality project that includes a sufficient number of dwelling units and commercial space to make redevelopment of the site economically feasible by producing a reasonable return on investment for the project sponsor and its investors, attracting investment capital and construction financing, and generating sufficient revenue to provide onsite inclusionary housing units.

2.3 PROJECT LOCATION

The project site is located at 469 Stevenson Street in the SoMa neighborhood of San Francisco (Figure 1). As shown in Figure 2, the project site is a through lot with frontages on both Stevenson and Jessie streets and is located mid-block between Fifth and Sixth streets (Assessor's Block 3704, Lot 45). The project site is approximately 28,790 square feet (0.66-acre) and currently used as a public surface parking lot with 176 parking spaces. Access to the project site is currently available from the existing 24-foot-wide curb cut on Stevenson Street and the 12-foot-wide curb cut on Jessie Street. There is no existing vegetation on the project site. However, there are five trees adjacent to the east boundary of

the project site on the Clearway Energy property. The topography of the site is generally level with a ground surface elevation of approximately 30 feet above mean sea level.

Figure 1: Project Site Location

Figure 2: Proposed Project Site Plan

The project site is located within the C-3-G (Downtown-General) zoning district, which allows retail and high-density residential development, and a 160-F height and bulk district. This height and bulk designation allow for buildings up to 160 feet in height, and bulk limitations of 110 feet in length and 140 feet along the diagonal for buildings 80 feet in height or taller.

The project site is served by the city's transit network and is located less than one block south of the Powell Street Bay Area Rapid Transit (BART) station and the subsurface San Francisco Municipal Railway (Muni) lines. Additionally, there are several aboveground Muni bus lines that operate within 0.5 mile of the project site, including the 14-Mission, 27-Bryant, 45-Union/Stockton, and 8-Bayshore Express. The closest aboveground Muni stop is located about 300 feet north of the project site on Market Street and Sixth Street.

2.4 EXISTING SETTING

Land uses in the surrounding area consist of a mix of retail, commercial office, industrial, hotel, and residential uses. The east boundary of the project site is adjacent to Clearway Energy's thermal power station, Station T, which produces space heating, domestic hot water, air conditioning, and industrial process uses. The thermal power station is fully operational and includes six boilers and two gas stacks approximately 160 feet tall. Four buildings are adjacent to the west boundary of the project site, consisting of two 3-story hotels, a 3-story mixed-use building with commercial and hotel uses, and a 7-story mixed-use building with commercial and residential uses. Three buildings are located directly across from the project site on Stevenson Street. These buildings front Market Street and include two 7-story mixed-use buildings with commercial and office uses, and a 2-story commercial building. Four buildings are located directly across from the project site on Jessie Street consisting of automotive and office uses ranging from one to five-stories.

The average height of buildings in the immediate area ranges from one to seven stories, approximately 40 to 100 feet in height. The height of buildings generally increases east of the project site along Market Street with the maximum building height allowed up to 400 feet.

The project site is within the SoMa and mid-~~market~~ Market Street employment centers, and within walking distance to downtown. Class 2[15] and class 3[16] bicycle facilities currently run along Market Street in both directions. The nearest Bay Area bike share station is less than one block north of the project site at the northwest corner of Market and Fifth streets.

The nearest parks or public open spaces include Mint Plaza, about 0.1-mile to the northeast; Father Alfred E. Boeddeker Park, about 0.3-mile to the northwest; Gene Friend Recreation Center Park,

[15] Class 2 bicycle facilities are standard bike lanes within a portion of road reserved for the preferential or exclusive use of people biking, indicated by road markings. California Department of Transportation, A Guide to Bikeway Classification, July 2017. http://www.dot.ca.gov/d4/bikeplan/docs/caltrans-d4-bike-plan_bikeway-classification-brochure_072517.pdf. Accessed March 26, 2019.

[16] Class 3 bicycle facilities are typically wide travel lanes shared by bicyclists and vehicles. They are commonly marked with the standard or greenback ~~sharrows~~ arrows [IS THIS CORRECT?] and wayfinding signs to indicate shared use. California Department of Transportation, A Guide to Bikeway Classification, July 2017. http://www.dot.ca.gov/d4/bikeplan/docs/caltrans-d4-bike-plan_bikeway-classification-brochure_072517.pdf. Accessed March 26, 2019.

about 0.3-mile to the southeast; Turk-Hyde Mini Park, about 0.4-mile to the north; Tenderloin Recreation Center, about 0.4-mile to the north; United Nations (UN) Plaza, about 0.4-mile to the northwest; Victoria Manalo Draves Park, about 0.5-mile to the south; Joseph L. Alioto Performing Arts Piazza, about 0.5-mile to the northwest; Union Square, about 0.7-mile to the north; and Yerba Buena Gardens open space and recreational facilities, about 0.5-mile northeast of the project site.

In addition, six projects within a 0.25-mile radius are currently under construction and therefore are considered part of the existing environmental conditions. These projects include the following:

- **5M Project, 925-927 Mission Street (Case No: 2011.0409E)**: Involves retention and rehabilitation of two buildings on the site, demolition of six existing buildings on the site, and the construction of five new buildings. Buildings would range in height from approximately 50 feet to 400 feet. The total square footage of renovated existing buildings and new construction would include approximately 1.85 million gsf of new and existing uses, comprising 1,132,200 gsf of office uses, 552,800 gsf of residential uses (748 dwelling units), up to 146,900 gsf of active ground floor retail/office/cultural/educational uses, and 18,200 gsf of arts/cultural/educational uses. This project is about 600 feet southeast of the project site.
- **950-974 Market Street (Case No: 2013.1049E)**: Involves demolition of the existing buildings and parking structure to construct an approximately 406,000 gsf building containing 242 dwelling units, a 232-room hotel, and approximately 16,600 gsf of retail uses, in a 12-story, 120-foot-tall building. This project is about 400 feet north of the project site.
- **1066 Market Street (Case No: 2013.1753E)**: Involves demolition of the existing building and parking lot and construction of a new 12-story, 120-foot-tall, approximately 297,950 gsf residential building with ground floor retail space and two levels of subterranean parking. The mixed-use building would provide approximately 304 dwelling units and 4,540 gsf of ground-floor commercial retail space. This project is about 750 feet northwest of the project site.
- **Central Subway Project (Case No: 1996.281E)**: Involves extension of the Muni Metro T Third Street Line through SoMa, Union Square, and Chinatown. Construction is currently under way and operations are expected to begin in 2021. Once the Central Subway is completed, the T Third Line will travel mostly underground from the 4th Street Caltrain Station to Chinatown. Four new stations will be built along the 1.7-mile alignment: 4th and Brannan Station at 4th and Brannan streets, Yerba Buena/Moscone Station at 4th and Folsom streets, Union Square/Market Street Station on Stockton Street at Union Square, and Chinatown Station at Stockton and Washington streets.
- **Sixth Street Pedestrian Safety Project (Case No. 2014.1010E)**: Alters Sixth Street between Market and Howard streets by reducing the number of vehicle lanes on Sixth Street from four lanes to three lanes; widening the sidewalks on both sides of Sixth Street; installing new corner curb bulbouts at all intersections; installing new traffic signals at the intersections of Sixth Street/Stevenson Street and Sixth Street/Natoma Street; installing new crosswalk striping at all alleys crossing Sixth street; and installing new roadway striping and streetscape improvements (e.g., decorative sidewalks, pedestrian lighting).

2.5 PROJECT CHARACTERISTICS

The proposed project would replace the existing 176 space surface parking lot with a 27-story (274 foot-tall with an additional 10 feet for rooftop mechanical equipment) mixed-use residential building of approximately 535,000 gsf. The proposed building would consist of residential and commercial retail uses above a three-level below grade parking garage. The proposed project would provide sidewalk landscaping improvements and open space consisting of solariums, courtyards, and balconies. The proposed project would connect to existing utility lines including sewer, water, electricity, and gas lines. Table 2.5-1, Project Summary, lists the characteristics of the individual project components. Figure 2 shows the proposed project site plan.

Table 2.5-2: Project Summary

Project Component	Gross Square Feet[1]
Residential	475,000
Retail	4,000
Vehicle Parking	56,000
Building Total	**535,000**
Common Residential Open Space[2]	11,000
Private Residential Open Space[3]	14,000
Open Space Total	**25,000**
Dwelling Unit Type	**Number of Units**
Studios	192
Junior one-bedroom	33
One-bedroom	116
Two-bedroom	96
Three-bedroom	50
Five-bedroom	8
Total Dwelling Units	**495**
Parking Spaces	**Number of Spaces**
Residential Parking Spaces	178
Retail Parking Spaces	0
Total Parking Spaces	178
Bicycle Parking	**Number of Spaces**
Bicycle (class 1)	200
Bicycle (class 2)	27

Notes:

[1] All numbers are rounded to the nearest thousand or hundred thousand.

[2] Common residential open space consists of the lounge solarium, approximately 4,000 square feet; fitness solarium, approximately 6,000 square feet; and a ground floor courtyard, approximately 1,000 square feet. Common usable open space as defined in section 135(a) of the planning code pertains to areas jointly used by residents of the project.

[3] Private balconies would be provided to 22 dwelling units on the 2nd, 6th, and 27th floors.

The project proposes to use the Individually Requested State Density Bonus Program[17] and must provide at least 11 percent of the base[18] project's residential units as very low affordable dwelling units onsite in order to qualify for a 35 percent increase in density. The project proposes to use the Individually Requested State Density Bonus Program and provide at least 11 percent of the base[19] project's residential units as very low affordable dwelling units onsite in order to qualify for a 35 percent increase in density. The project proposes to provide 19 percent of the base project's residential units as very low affordable dwelling units onsite.

The project sponsor will also be requesting waivers from height, bulk, and other physical constraints of the planning code and is reserving its right to use the incentives afforded by providing affordable dwelling units onsite, as allowed by the State Density Bonus program.

2.5.1 Residential Component

The proposed project would provide approximately 495 dwelling units within approximately 475,000 square feet of residential space. Levels 2 through 5 would contain 21 units consisting of 6 studios, 3 junior one-bedroom units, 6 one-bedroom units, 2 two-bedroom units, 2 three-bedroom units, and 2 five-bedroom units. Level 6 would contain 19 units consisting of 6 studios, 3 junior one-bedroom units, 6 one-bedroom units, 2 two-bedroom units, and 2 three-bedroom units. Levels 7 through 26 would contain 19 units consisting of 8 studios, 1 junior one-bedroom unit, 4 one-bedroom units, 4 two-bedroom units, and 2 three-bedroom units. The 27th level would include 2 junior one-bedroom units, 6 one-bedroom units, and 4 two-bedroom units. The project floor plans are depicted in Figure 3 through Figure 8.[20] The building elevations are depicted in Figure 9 and Figure 10.

2.5.2 Commercial Retail Component

The proposed project would include two commercial retail spaces on the ground floor along Jessie Street. The commercial retail spaces would total approximately 4,000 square feet (Figure 3).

[17] City of San Francisco Planning Department, Individually Requested State Density Bonus Program, Informational and Supplemental Application Packet. http://forms.sfplanning.org/IndividuallyRequestedState_SupplementalApplication.pdf. Accessed September 18, 2019.

[18] In order to determine how much of a density bonus state law will allow, the density allowed by current controls ("base density" or "base project") must first be calculated. The base density is the maximum gross residential density allowed pursuant to the site's zoning requirements.

[19] In order to determine how much of a density bonus state law will allow, the density allowed by current controls ("base density" or "base project") must first be calculated. The base density is the maximum gross residential density allowed pursuant to the site's zoning requirements.

[20] The project floor plans presented in Figures 3 through 8 are representative; therefore, the exact configurations may change.

Figure 3: Ground Floor Plan

Figure 4: Level 2 Plan

Figure 5: Level 6 Plan

Figure 6: Levels 7 through 26 Plan

Figure 7: Level 27 Plan

Figure 8: Roof Plan

Figure 9: South and West Elevations

Figure 10: North and East Elevations

2.5.3 Building Features

The proposed project would incorporate building massing features, including massing articulation, to improve the building's performance with respect to wind safety and comfort to meet the wind hazard requirements of planning code section 148. The proposed project would also include a 12-foot tall glass wind screen along the full perimeter of the private open space areas on the second and sixth levels to further reduce wind speeds and enhance pedestrian safety and comfort.

The proposed heating, ventilation, and air conditioning (HVAC) equipment would be located on the roof and concealed behind a 10-foot tall roof screen (Figure 8). The HVAC system is required to be designed to include a MERV-13 filtration system in accordance with Health Code article 38. The proposed project would include one emergency back-up generator within the building's main electrical room on the ground floor (Figure 3).

The proposed project would comply with the San Francisco Green Building Ordinance by meeting the Leadership in Energy and Environmental Design (LEED) Silver certification requirements and incorporating building materials, fixtures, and landscaping that promote energy efficiency and water conservation. The proposed project would also designate at least 8 percent of the total parking spaces for low-emitting, fuel efficient, and carpool/van pool vehicles.

2.5.4 Open Space, Landscaping, and Stormwater Retention

Open Space

The proposed project would provide approximately 11,000 square feet of common open space. Common open space areas would consist of a fitness solarium, approximately 6,000 square feet; a lounge solarium, approximately 4,000 square feet; and an approximately 1,000 square foota courtyard area on the ground floor~~, approximately 1,000 square feet~~. In addition, the proposed project would include approximately 14,000 square feet of private open space. Private open space would consist of balconies for 22 dwelling units. The private balconies would be provided for units on the 2nd, 6th, and 27th floors.

Landscaping

Landscaping at the project site would include approximately eight street tree planting areas along Jessie Street. Due to the narrow sidewalks along Stevenson Street, street trees cannot be planted. Therefore, the proposed project would instead provide seven vegetated landscape strips along Stevenson Street. Trees would also be planted in the building's outdoor courtyard. Raised planters would be provided in the private balcony areas on the 2nd, 6th, and 27th floors. An 18-foot-tall "green screen" made from plants grown on a vertical trellis would be placed around the private balconies on the second floor. The landscape plans for the proposed project are provided on Figure 11 through Figure 14.

Figure 11: Ground Floor Landscape Plan

Figure 12: Level 2 Landscape Plan

Figure 13: Level 6 Landscape Plan

Figure 14: Level 27 Landscape Plan

Stormwater Retention

Landscaped areas along Jessie Street and Stevenson Street would retain and treat runoff before entering the city's stormwater system. The proposed project would also incorporate the following low impact design measures to reduce the amount of stormwater entering into the city's combined sewer system: vegetated sidewalk planting areas, roof drains to direct runoff from flow-through-planters, permeable pavement, and a rainwater cistern.

Streetscape and Sidewalk Improvements

The proposed project would provide sidewalk improvements along Stevenson Street and Jessie Street in accordance with the city's Better Streets Plan. These sidewalk improvements would include enhanced sidewalk paving, tree planting areas along Jessie Street, landscaped strips along Stevenson Street, bicycle racks, and relocation of one existing streetlight along Jessie Street to Stevenson Street near the driveway entrance. The proposed project would not alter the existing sidewalk widths on Stevenson Street or Jessie Street. The proposed project would also not result in any new bus stops or changes to existing bus stops in the vicinity of the project site.

The proposed project would relocate the existing commercial loading zone (yellow curb) west of the project site and convert the existing street parking to (white curb) passenger loading. In addition, some of the existing street parking on Stevenson Street would be converted to passenger loading. The passenger loading zone on Stevenson Street is proposed near a pedestrian entrance for the project. The passenger and commercial loading zones are shown on Figure 11.

2.5.5 Parking, Loading, and Bicycle Facilities

Site Access and Circulation

The proposed project would remove the existing 24-foot-wide curb cut on Stevenson Street and 12-foot-wide curb cut on Jessie Street and replace them with a new, single 24-foot wide driveway on Stevenson Street. This driveway would provide vehicle access to the parking garage and the onsite commercial loading area for both the residential and commercial retail components of the proposed project.

Stevenson Street and Jessie Street are each currently eastbound one-way roads and the proposed project would not result in a change of this designation. Vehicles would have to turn on Stevenson Street from Sixth Street and turn right to enter the garage. Vehicles exiting the garage would have to turn right onto Stevenson Street to reach Fifth Street. Each parking garage level would contain a central set of elevators and stairs to access the building's ground floor. The ground floor would contain a separate set of elevators and stairs to access the upper residential floors. Additionally, residents would be able to enter the building at the street level from the main lobby doorway on Jessie Street, or from the second lobby doorway on Stevenson Street.

Vehicle Parking

The proposed project would include approximately 56,000 square feet of off-street parking with a total of 178 parking spaces at a proposed parking ratio of 0.36 space per unit. Per sections 155(i) and

166 of the Planning Code, the proposed project would provide at least 9 accessible parking spaces and 3 car-share spaces. In addition, at least 8 percent of the total proposed parking spaces would be designated for low-emitting, fuel efficient, and carpool/van pool vehicles. The parking spaces would be reserved for residents only.

The off-street loading area for freight deliveries would be within the parking garage and accessed by the driveway on Stevenson Street. One freight loading space would be located on the ground floor and two service vehicle parking spaces would also be provided on the first parking level. The site plans for the ground-floor freight loading and three-level parking garage are depicted in Figure 3 and Figure 15 through Figure 17.

Bicycle Parking

The proposed project would provide 200 class 1 and 27 class 2 bicycle parking spaces. The class 1 bicycle parking spaces would be provided in a designated 3,400-square-foot room on the first parking garage level, which would be equipped with space efficient bicycle racks (Figure 15). The class 2 bicycle parking spaces would consist of bicycle racks installed along the sidewalk on Jessie Street.

Figure 15: Parking Garage Plan - Level 1

Figure 16: Parking Garage Plan - Level 2

Figure 17: Parking Garage Plan - Level 3

2.5.6 Transportation Demand Management Plan

The project sponsor proposes the following transportation demand management (TDM) measures for the proposed project. Additional TDM measures that are proposed are included in the project's TDM application.[21] The TDM measures are subject to review and approval as part of the planning department's approvals:

1. ACTIVE-1: Improve Walking Conditions (Option D): The project would provide streetscape improvement elements consistent with the Better Streets Plan.

2. ACTIVE-2: Bicycle Parking (Option B): The project would provide 100 class 1 bicycle spaces plus two class 1 bicycle spaces for every two dwelling units over 100, and two class 2 bicycle spaces for every 20 dwelling units.

3. ACTIVE-4: Bike Share Membership (Location B). The project would offer one complimentary bike share membership to each dwelling unit and/or employee, at least once annually, for the life of the project.

4. ACTIVE-5A: Bicycle Repair Station: The project would provide an indoor bicycle repair station in the below grade parking level that is equipped with tools and supplies necessary to perform basic bicycle maintenance.

5. ACTIVE-5B: Bicycle Maintenance Services. The property owner shall offer bicycle maintenance services to each dwelling unit and/or employee, at least once annually, for 40 years.

6. ACTIVE-6: Fleet of Bicycles: The project would provide five shared bicycles for building residents, visitors, or employees to use.

7. CSHARE-1: Carshare (Option E): The project would provide one car-share membership for each dwelling unit and reserve three parking spaces for car-share services.

8. DELIVERY-1: Delivery Supportive Amenities: The project would facilitate delivery support amenities by providing an area for receipt of deliveries that offers one of the following: (1) clothes lockers for delivery services; (2) temporary storage for package deliveries, laundry deliveries, and other deliveries; or, (3) providing temporary refrigeration for grocery deliveries.

9. FAMILY-1: Family TDM – Amenities (Option A + B): The project would provide family amenities that include onsite storage for family gear, utility carts, and cargo bicycles.

[21] San Francisco Planning Department, Transportation Demand Management Program Application, submitted August 29, 2018.

10. FAMILY-3: Family TDM Package. The project would include CSHARE-1 Option E and FAMILY-1, Options A and B.

11. HOV-1: Contributions or Incentives for Sustainable Transportation (Option A). The project would offer contributions or incentives to each dwelling unit and employee, at least once annually, for the life of the project. The project would provide at least 25 percent (Muni M pass = $81/month. As such, $81 x 25% = $20.25/month/DU) contribution or incentive.

12. INFO-1: Multimodal Wayfinding Signage. The project would provide multimodal wayfinding signage that can withstand weather elements in key locations. That is, the signs shall be located externally and/or internally so that the residents, tenants, employees, and visitors are directed to transportation services and infrastructure, including: transit, bike share, car-share, bicycle parking and amenities, showers and lockers, taxi stands, and carpool/shuttle/vanpool pick-up/drop-off locations.

13. INFO-2: Real Time Transportation Information Displays. The project would provide real time transportation information on displays in prominent locations on the project site to highlight sustainable transportation options and support informed trip-making.

14. INFO-3: Tailored Transportation Marketing Services (Option C). The project would provide individualized, tailored marketing and communication campaigns, including incentives to encourage the use of sustainable transportation modes.

15. LU-2: Onsite Affordable Housing (Option B). The project ~~proposes to~~would use the Individually Requested State Density Bonus Program, pursuant to which ~~and must~~it must provide at least 11 percent of the base[22] project's residential units as very low affordable dwelling units onsite in order to qualify for a 35 percent increase in density. The project ~~proposes to~~would provide 19 percent of the base project's residential units as very low affordable dwelling units onsite.

16. PKG-1: Unbundle Parking (Location E). The project would lease or sell all parking spaces separately from the rental for the life of the project, so that tenants have the option of renting or buying a parking space at an additional cost, and would, thus, experience a cost savings if they opt not to rent or purchase parking.

17. PKG-4: Parking Supply (Option A). The project would provide off-street private vehicular parking (Accessory Parking) in an amount no greater than the off-street parking rate for the

Comment [MM3]: Since have this footnote above, don't think need to include again here.

[22] ~~In order to determine how much of a density bonus state law will allow, the density allowed by current controls ("base density" or "base project") must first be calculated. The base density is the maximum gross residential density allowed pursuant to the site's zoning requirements.~~

neighborhood (neighborhood parking rate), based on the transportation analysis zone for the project site.

2.6 CONSTRUCTION ACTIVITIES AND SCHEDULE

The proposed project is anticipated to be constructed on a mat foundation and no pile driving or piers are proposed or required. To accommodate the below-grade parking and foundation, the proposed project would entail excavation to a maximum depth of 55 feet below ground surface (bgs). The entire 0.66-acre project site would be permanently disturbed and approximately 55,850 cubic yards of soil would be excavated and hauled offsite for disposal and recycling.

Construction of the proposed project is anticipated to begin in 2021 and be completed by 2024,[23] requiring approximately 36 months of construction. Construction activities would include site preparation/demolition, excavation and shoring, building construction, architectural coating, and sitework/paving. Construction would generally occur between the hours of 7:00 a.m. and 8:00 p.m. up to seven days a week. However, during the total 36-month construction phase, nighttime construction work may be required on up to five (5) nights and include the following activities:

1. Erection and dismantling of the tower crane;
2. Miscellaneous utility work;
3. Fire alarm testing; and
4. Concrete pour for the mat slab foundation.

This required nighttime work would occur at different times throughout the 36-month construction period and not for five (5) sequential nights. Depending on the construction phase, the number of onsite construction workers would range from approximately 15 to 75 workers per day.

Construction equipment and materials would be staged primarily onsite, although it is expected portions of the sidewalks along Stevenson Street and Jessie Street would be used for staging of materials, requiring temporary partial sidewalk closures. Additionally, both Stevenson Street and Jessie Street would require occasional closures to allow for project construction activities, such as installation of the tower crane, mat foundation construction, or material deliveries. During this time, both streets would not be entirely closed or closed at the same time. It is not expected that construction activities would block Jessie Street for more than one week at a time. Jessie Street could be used for temporary staging of the tower crane; however, that has not been determined. It is anticipated that construction activities would only block 100 feet of Jessie Street for the width of the sidewalk and one travel lane primarily for the tower crane erection and dismantling.

[23] The initial study incorrectly stated that the construction schedule would start in 2020 and end in 2023; however, the analysis presented in the initial study relied on the correct construction schedule that would start in 2021 and end in 2024.

2.7 CHANGES TO THE PROPOSED PROJECT SINCE PUBLICATION OF THE NOP AND INITIAL STUDY

The planning department published a NOP and initial study on October 2, 2019, announcing its intent to prepare and distribute a focused EIR for the proposed project (Appendix A). Since publication of the NOP and initial study, the project sponsor has made a few changes to the project description. These changes are summarized in Table 2.7-1 and have been incorporated into the environmental impact analysis presented in Chapter 4, Environmental Setting and Impacts.

Table 2.7-1: Summary of Changes to the Proposed Project

Project Component	Previously Proposed Project (gsf)[1]	Proposed Project (gsf)[1]
Residential	460,500	475,000
Retail	4,000	4,000
Vehicle Parking	77,500	56,000
Building Total	**542,000**	**535,000**
Common Residential Open Space[2]	14,000	11,000
Private Residential Open Space[3]	11,000	14,000
Open Space Total	**25,000**	**25,000**
Dwelling Unit Type	**Number of Units**	**Number of Units**
Studio	--	192
Junior one-bedroom	--	33
One-bedroom	358	116
Two-bedroom	54	96
Three-bedroom	42	50
Five-bedroom	8	8
Total Dwelling Units	**462**	**495**
Parking Spaces	**Number of Spaces**	**Number of Spaces**
Residential Parking Spaces	171	178
Retail Parking Spaces	0	0
Total Parking Spaces	171	178
Bicycle Parking	**Number of Spaces**	**Number of Spaces**
Bicycle (class 1)	192	200
Bicycle (class 2)	25	27

Notes:

[1] All numbers are rounded to the nearest thousand or hundred thousand.

[2] Common residential open space consists of the lounge solarium, approximately 4,000 square feet; fitness solarium, approximately 6,000 square feet; and ground floor courtyard, approximately 1,000 square feet. Common usable open space as defined in section 135(a) of the planning code pertains to areas jointly used by residents of the project.

[3] Private balconies would be provided to 22 dwelling units, each on the 2nd, 6th, and 27th floors.

The proposed project would still be approximately 274 feet tall (with an additional 10 feet for rooftop mechanical equipment) and include three levels of below-grade parking. The proposed project would also continue to use the Individually Requested State Density Bonus Program and provide affordable housing units onsite. The environmental impacts of these project description changes are addressed in Chapter 4; however, these changes would not result in any new significant environmental impacts or necessitate implementation of additional or considerably different mitigation measures than those identified in the initial study.

The initial study incorrectly stated on pages 54 and 108 that the construction schedule would start in 2020 and end in 2023, requiring approximately 36 months of construction. However, the analysis presented in the initial study relied on the correct construction schedule, which would start in 2021 and end in 2024 and require approximately 36 months of construction. The proposed construction activities would not change from what was evaluated in the initial study.

2.8 PROJECT APPROVALS

The following is a preliminary list of the anticipated approvals required for the proposed project; the list is subject to change. These approvals may be reviewed in conjunction with the required environmental review but may not be granted until after the required environmental review is completed.

2.8.1 Planning Commission

- Approval of an Individually Requested State Density Bonus project with up to two incentives/concessions and unlimited waivers from the following requirements: height, bulk, floor area ratio, and dwelling unit exposure.
- Adoption of findings under the California Environmental Quality Act (CEQA)
- Approval of a Downtown Project Authorization (planning code section 309)
- Approval of Conditional Use Authorization (planning code section 124[f])
- Approval of a TDM Plan (planning code section 169)

2.8.2 Actions by Other City Departments

Department of Building Inspection

- Review and approval of demolition, grading, and building permits

San Francisco Public Works

- If sidewalk(s) are used for construction staging and pedestrian walkways are constructed in the curb lane(s), approval of a street space permit from the Bureau of Street Use and Mapping

- Approval of an encroachment permit or a street improvement permit for streetscape improvements
- Approval of the placement of bicycle racks in the public right-of-way
- Approval of a new curb cut and removal of existing curb cuts

San Francisco Municipal Transportation Agency

- Approval of modifications to color curb designations for on-street parking and loading spaces
- Approval of a special traffic permit from the Sustainable Streets Division if sidewalk(s) are used for construction staging and pedestrian walkways are constructed in the curb lane(s)

San Francisco Public Utilities Commission

- Review and approval of stormwater design features, including a stormwater control plan, in accordance with city's 2016 Stormwater Management Requirements and Design Guidelines
- Review and approval of the project's landscape and irrigation plans per the Water Efficient Irrigation Ordinance and the SFPUC Rules and Regulations Regarding Water Service to Customers
- Review and approval of groundwater dewatering wells (if they are to be used during construction), per San Francisco Health Code article 12B (Soil Boring and Well Regulation Ordinance) (joint approval with the San Francisco Department of Public Health)

San Francisco Department of Public Health

- Review and approval of a site mitigation plan, in accordance with San Francisco Health Code article 22A (Maher Ordinance)
- Review and approval of a construction dust control plan, in accordance with San Francisco Health Code article 22B (Construction Dust Control Ordinance)
- Review and approval of groundwater dewatering wells (if they are to be used during construction) (joint approval with the SFPUC)
- Approval of an enhanced ventilation proposal in compliance with San Francisco Health Code article 38
- Approval to operate an alternative water source system under San Francisco Health Code article 12C

2.8.3 Actions by Other Government Agencies

- Approval of any necessary air quality permits for installation, operation, and testing (e.g., Authority to Construct/Permit to Operate) of individual air pollution sources, such as the proposed backup emergency diesel generator and any necessary boilers (Bay Area Air Quality Management District)

3.0 APPLICABLE PLANS

In accordance with CEQA Guidelines section 15125(d), this chapter provides a summary of relevant city and regional plans that are applicable to the proposed project, with a focus on the project's potential inconsistencies with those plans. Inconsistency with a plan does not necessarily result in a significant impact pursuant to CEQA. To result in an impact under CEQA, the inconsistency must be related to a direct or indirect physical impact on the environment and result in a significant, adverse impact. The potential physical impacts on the environment that may result from an inconsistency with a plan are discussed in Chapter 4, Environmental Setting and Impacts, or in the NOP and initial study prepared for this project (Appendix A).

Relevant city plans discussed in this chapter include the San Francisco General Plan and the San Francisco Planning Code, which includes the Accountable Planning Initiative. The chapter also discusses the regional plans that are applicable to the project, including the Bay Area Air Quality Management District's (air district) 2017 Bay Area Clean Air Plan, Plan Bay Area 2040, and the Regional Water Quality Control Board's San Francisco Bay Basin (Region 2) Water Quality Control Plan.

The determination of a project's consistency with an applicable local general plan, policy, or regional plan is ultimately made independent of the environmental review process by the project decision makers when they decide whether to approve or disapprove a project. The analysis in this chapter is intended to provide decision makers with a synopsis of relevant planning and policy considerations. The analysis presented is intended to supplement the decision makers' own understanding of the various and often competing policy considerations.

3.1 SAN FRANCISCO PLANS AND POLICIES

3.1.1 San Francisco General Plan

The San Francisco General Plan, as adopted by the planning commission and the board of supervisors, contains the comprehensive, long-term land use policy for San Francisco. The general plan serves as a guide to protect, preserve, and enhance the desirable quality and unique character of the city; improve the city as a place for living, commerce, and industry; coordinate the city's land use and circulation patterns for efficient functioning and the convenience and wellbeing of its residents, workers, and visitors; and coordinate the city's growth and development with adjoining jurisdictions. The general plan contains the following elements: housing, commerce and industry, recreation and open space, community facilities, transportation, community safety, environmental protection, urban design, air quality, and arts. In addition, the general plan includes a land use index that cross references the policies related to land use.

The general plan elements that are particularly relevant to planning considerations associated with this project include the urban design element and the air quality element, as the potentially significant environmental impacts analyzed in this draft EIR are air quality, wind, and shadow. The general plan also contains several area plans, which provide more specific policy direction for certain neighborhoods. Among these is the Downtown Area Plan, which encompasses the project site. The Downtown Area Plan contains objectives and policies that address retail space, housing, open space, and urban form.

As discussed below, the proposed project would not substantially conflict with any goals, policies, or objectives of the general plan, including those of the Downtown Area Plan. The compatibility of the proposed project with general plan goals, policies, and objectives that do not relate to physical environmental issues will be considered by decision makers when deciding whether to approve or disapprove the proposed project. Any potential conflicts identified as part of the project deliberation process would not alter the physical environmental effects of the proposed project.

Urban Design Element

The urban design element of the general plan focuses on the physical character and order of the city and is concerned both with development and preservation. Its goal is to protect public views of open space and water bodies, and to protect and enhance the aesthetic character of San Francisco. The urban design element includes a map titled "Street Areas Important to Urban Design and Views" which identifies particular street segments throughout the city possessing street views of important buildings, streets that define the city form, or streets that extend the effect of public open space. The map identifies Market Street as having "Street View of Important Building" and as one of the "Streets that Define the City Form." The project site and Market Street are visually disconnected by existing buildings. As such, the proposed project would not be inconsistent with policies addressing street views from Market Street.

The proposed project is an infill development on an existing surface parking lot. The proposed project would construct a new mixed-use building that is 274-feet tall (with an additional 10 feet for rooftop mechanical equipment). The urban design element includes policy 3.1,[24] policy 3.5,[25] and policy 3.6[26] which encourages new development to consider its scale in relation to the existing height and bulk of structures in the area. The proposed project would exceed the existing 160-foot height limit as set forth in the planning code and height maps and would be taller than surrounding structures. However, the proposed project is requesting a 35 percent increase in density and waivers from height and bulk would be part of the planning approvals. The proposed project may be potentially inconsistent with policy 3.5 in that the proposed building would be about 88 feet taller than the tallest of the immediately surrounding buildings. However, the proposed heights would be allowed with application of the Individually Requested State Density Bonus Program.

The proposed project would be potentially inconsistent with policy 3.4, which encourages building forms to respect and improve the integrity of open spaces and other public areas. The associated physical environmental impacts that could result from this potential inconsistency are discussed in Section 4.4, Shadow, in this EIR.

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[24] Policy 3.1: Promote harmony in the visual relationships and transitions between new and older buildings.

[25] Policy 3.5: Relate the height of buildings to important attributes of the city pattern and to the height and character of existing development.

[26] Policy 3.6: Relate the bulk of buildings to the prevailing scale of development to avoid an overwhelming or dominating appearance in new construction.

Air Quality Element

The general plan includes the 1997 air quality element, which focuses on adherence to regulatory air quality standards and the reduction of air pollution. Objectives applicable to the proposed project are provided in Section 4.2, Air Quality, of this EIR. Implementation of the proposed project would not conflict with the Air Quality Element. Refer to Section 4.2, Air Quality, for a more detailed discussion of the proposed project's air quality impact.

3.1.2 Downtown Area Plan

The General Plan also includes area plans that outline the goals and objectives for specific geographic planning areas. The project site is within the SoMa neighborhood, an area governed by San Francisco's Downtown Plan. The Downtown Plan is intended to maintain a compact downtown core and direct growth to areas with developable space and easy transit accessibility so that downtown encompasses a compact mix of activities, historical values, and distinctive architecture and urban forms that engender a special excitement reflective of a world city. Centered on Market Street, the Downtown Plan covers an area that is roughly bounded by Van Ness Avenue to the west, Steuart Street to the east, Folsom Street to the south, and Market Street, Sutter Street and Washington Street to the north.

The Downtown Area Plan contains objectives and policies that address the following issues: provision of space for commerce, housing, and open space; preservation of the past; urban form; and movement to, from, and within the downtown area. The proposed project is potentially inconsistent with policy 14.1, which promotes building forms that will maximize the sun access to open spaces and other public areas. Additionally, the proposed project could potentially conflict with policy 14.2, which promotes building forms that will minimize the creation of surface winds near the base of buildings. The associated physical environmental impacts that could result from these inconsistencies are discussed in Section 4.3, Wind, and Section 4.4, Shadow, in this EIR.

3.1.3 Accountable Planning Initiative

In November 1986, San Francisco voters approved Proposition M, the Accountable Planning Initiative, which added section 101.1 to the planning code to establish eight priority policies. The priority policies are also incorporated into the preamble to the general plan, which provides that the priority policies "shall be the basis upon which inconsistencies in the general plan are resolved." The priority policies are related to: (1) preservation and enhancement of neighborhood-serving retail uses and future opportunities for resident employment in and ownership of such businesses; (2) conservation and protection of existing housing and neighborhood character to preserve the cultural and economic diversity of neighborhoods; (3) preservation and enhancement of affordable housing (Appendix A, Initial Study; Section E.2, Population and Housing, Question 2b); (4) discouragement of commuter automobiles that impede Muni transit service or that overburden streets or neighborhood parking (Appendix A, Initial Study; Section E.5, Transportation and Circulation, Question 5a); (5) protection of industrial and service land uses from commercial office development and enhancement of resident employment and business ownership; (6) maximization of earthquake preparedness (Appendix A, Initial Study; Section E.15, Geology and Soils, Questions 15a through 15d); (7) preservation of landmarks and historic buildings (Appendix A, Initial Study; Section E.3, Cultural Resources, Question 3a); and (8) protection of parks and open space and their access to sunlight and

vistas (Appendix A, Initial Study; Section E.11, Recreation, Question 11a; and Section 4.4, Shadow).

Prior to issuing a permit for any project that requires an initial study under CEQA; prior to issuing a permit for any demolition, conversion, or change of use; and prior to taking any action that requires a finding of consistency with the San Francisco General Plan, the city is required to find that the proposed project or legislation is consistent with the priority policies. As noted above, the determination of a project's consistency with the general plan is ultimately made independent of the environmental review process by the project decision makers when they decide whether to approve or disapprove a project. The environmental analysis of the proposed project as discussed in the topical sections of Chapter 4, Environmental Setting and Impacts, and in the initial study in Appendix A of this EIR may aid decision makers in their determination of the project's consistency related to the general plan and priority policies.

3.1.4 Planning Code

The planning code incorporates by reference the city's zoning maps and governs allowable uses, densities, and the configuration of buildings in San Francisco. Permits to construct new buildings (or to alter or demolish existing ones) may not be issued unless either the proposed action conforms to the planning code or an exception is granted pursuant to provisions of the planning code. The following section describes the project's consistency with its applicable land use districts, and the bulk, height, and other regulations assigned to the project site.

Allowable Uses and Density

The proposed project would be constructed in the C-3-G zoning district. Pursuant to section 210.2 of the planning code, the C-3-G District "is composed of a variety of uses: retail, offices, hotels, entertainment, clubs and institutions, and high-density residential. Many of these uses have a citywide or regional function, although the intensity of development is lower here than in the downtown core area." The project site is also within the SoMa neighborhood, a rapidly changing neighborhood as its old industrial areas have been redeveloped into new residential uses, convention centers, and office parks.

The proposed project's commercial and residential uses are permitted uses in the C-3-G zoning district. The proposed project includes a request for additional exceptions to permit construction such as waivers from height, bulk, and other physical constraints of the planning code, as allowed under the Individually Requested State Density Bonus Program. These exceptions, including the applicable planning code sections, are described in detail in Section 2.7, Project Approvals.

Affordable Housing

The project proposes to use the Individually Requested State Density Bonus Program and must provide at least 11 percent of the base[27] project's residential units as very low affordable dwelling units onsite in order to qualify for a 35 percent increase in density. The project proposes to provide 19 percent of the base project's residential units as very low affordable dwelling units onsite. Therefore, the proposed project would comply with the city's Residential Inclusionary Affordable Housing Program requirements (planning code sections 415, et seq.), by including the applicable required number of units per current legislation.

Height and Bulk

The project site is within the 160-F Height and Bulk District. This height and bulk district allow for buildings up to 160 feet in height. For buildings over 80 feet in height, all portions of structures above the podium height are subject to the bulk restrictions in section 270(a) of the planning code. The proposed project is requesting a 35 percent increase in density and waivers from height and bulk, in exchange for providing affordable dwelling units. As a result, a waiver requesting exceedance of the maximum height and bulk limits would be included in the motions as part of the project's approval. The environmental effects of the project's proposed height and bulk are evaluated in the topical sections of Chapter 4, Environmental Setting and Impacts, and in the initial study (Appendix A).

Floor Area Ratio

Floor area ratio (FAR) is a measure of building intensity based on the ratio between the total floor area to be built on a site and the size of that site. In the C-3-G District, a base 6:1 FAR is allowed under planning code section 124, with a FAR of up to 9:1 with the purchase of transfer development rights (TDR). The proposed project would have a FAR of approximately 19:1. The project sponsor is requesting a waiver from the FAR limits under the Individually Requested State Density Bonus Program.

Other Planning Code Requirements

Setbacks and Open Space Requirements

The proposed project would not provide setbacks as required by planning code sections 132.1 and 134. The proposed project is requesting a waiver from the rear yard requirements in planning code section 134(g) under the Individually Requested State Density Bonus Program.

The proposed project would provide 14,000 square feet of private open space and11,000 square feet of common usable open space. Private open space would consist of private balcony spaces for 22

[27] In order to determine how much of a density bonus state law will allow, the density allowed by current controls ("base density" or "base project") must first be calculated. The base density is the maximum gross residential density allowed pursuant to the site's zoning requirements.

dwelling units. The private balconies would be provided on the 2nd, 6th, and 27th floors. The common usable open space would consist of the ground floor courtyard and solariums.

Rooftop Screening

Planning Code section 141 specifies that mechanical equipment and appurtenances must not be visible from any point at or below the roof level of the subject building. The proposed project's HVAC equipment would be located on the roof and concealed behind a 10-foot tall roof screen.

Ground-Level Wind Reduction

Pursuant section 148 of the planning code, buildings in the C-3 zoning districts are to be shaped or to incorporate other wind-baffling measures so that they will not cause ground-level wind currents to exceed more than 10 percent of the time year round, between 7:00 a.m. and 6:00 p.m., the comfort level of 11 miles per hour (mph) equivalent wind speed in areas of substantial pedestrian use and 7 mph equivalent wind speed in public seating areas.

When preexisting ambient wind speeds exceed the comfort level, or when a proposed building or addition may cause ambient wind speeds to exceed the comfort level, the building is to be designed to reduce the ambient wind speeds to meet the requirements. The proposed project would incorporate a 12-foot tall glass wind screen along the full perimeter of the private open space areas on the second and sixth levels to further reduce wind speeds and enhance pedestrian safety and comfort. In addition, per section 148, "no exception shall be granted, and no building or addition shall be permitted that causes equivalent wind speeds to reach or exceed the hazard level of 26 miles per hour for a single hour of the year." A wind analysis has been prepared for the proposed project and its results are further discussed in Section 4.3, Wind, in this EIR.

Shadow Reduction

According to section 147 of the planning code, new buildings and additions to existing buildings in the C-3, South of Market Mixed Use, and Eastern Neighborhoods Mixed Use Districts where the building height exceeds 50 feet shall be shaped, consistent with the dictates of good design and without unduly restricting the development potential of the site in question, to reduce substantial shadow impacts on public plazas and other publicly accessible spaces other than those protected under section 295.

In determining the impact of shadows, the following factors shall be taken into account: the amount of area shadowed, the duration of the shadow, and the importance of sunlight to the type of open space being shadowed. Determinations under this section with respect to C-3 Districts, the zoning district in which the project site is located, shall be made in accordance with the provisions of section 309 of the planning code. A shadow analysis has been prepared for the proposed project and its results are further discussed in Section 4.4, Shadow, in this EIR.

Street Trees

The project site currently does not contain any trees or landscaping and no street trees are present along the project site's frontages. Planning code section 138.1(c)(1) requires that the project sponsor

plant and maintain street trees as set forth in Article 16, sections 805(a) and (d) and 806(d) of the public works code. The proposed project would comply with section 138.1(c)(1) by providing approximately eight street trees along Jessie Street and seven vegetated landscape strips along Stevenson Street.

Parking and Loading Requirements

According to section 151.1 of the planning code, there is no minimum requirement for off-street parking in the C-3-G district. Maximum off-street parking is limited to 1 parking space for two dwelling units. The proposed project would include a total of 178 parking spaces at a proposed parking ratio of 0.36 space per unit. At least nine of these parking spaces would be ADA-compliant and three would be car-share spaces.

The proposed project would provide one loading space on the ground floor for freight deliveries, adjacent to the parking garage ramp on Stevenson Street. Two service vehicle parking spaces would also be provided on the first parking garage level.

For new residential buildings containing more than 100 dwelling units, planning code section 155.2 requires one secure (class 1) bicycle parking space for each unit for the first 100 units and one secure space for each four units above that, along with one class 2 space for each 20 units. In addition, the proposed project would include 4,000 square feet of commercial retail space, which requires one class 1 bicycle parking space for every 7,500 square feet of occupied floor area and a minimum of two class 2 bicycle parking spaces. As such, the proposed project would be required to provide 200 class 1 bicycle parking spaces and 27 class 2 bicycle parking spaces.

The proposed project would be consistent with the planning code requirements and provide 200 class 1 bicycle parking spaces on the first level of the parking garage, and 27 class 2 bicycle parking spaces along the sidewalk on Jessie Street.

Transportation Demand Management Plan

The San Francisco Planning Code requires certain new development projects to incorporate design features, incentives, and tools that reduce vehicle miles traveled (VMT) (section 169). Development projects must choose measures from a menu of options to develop an overall TDM plan. Some options in the menu overlap with requirements elsewhere in the planning code (e.g., bicycle parking, car-share parking). Each development project's TDM plan requires routine monitoring and reporting to the planning department to demonstrate compliance.

The project has submitted a TDM plan application[28] that complies with the city requirement by encouraging a reduction in the number of person trips by automobile through key design features that promote walking as well as transit and bicycle use in general. Section 2.5.6 in Chapter 2, Project Description, lists the proposed project's TDM measures.

[28] San Francisco Planning Department, Transportation Demand Management Program Application, submitted August 29, 2018.

3.2 REGIONAL PLANS AND POLICIES

3.2.1 2017 Bay Area Clean Air Plan

The air district adopted the 2017 Bay Area Clean Air Plan: Spare the Air, Cool the Climate, A Blueprint for Clean Air and Climate Protection in the Bay Area, on April 19, 2017, to provide a regional strategy for improving Bay Area air quality and meeting public health goals. The control strategy described in the 2017 Bay Area Clean Air Plan includes a wide range of control measures to reduce emissions and lower ambient concentrations of harmful pollutants, safeguard public health by reducing exposure to air pollutants that pose the greatest health risk, and reducing GHG emissions to protect the climate. The 2017 Bay Area Clean Air Plan addresses four categories of pollutants: ground-level ozone and its key precursors, reactive organic gases (ROG) and oxides of nitrogen; particulate matter, primarily particulate matter 2.5 microns in diameter or less ($PM_{2.5}$) and precursors to secondary $PM_{2.5}$; air toxics; and GHGs. The control measures are categorized according to an economic sector framework that includes stationary sources as well as sectors related to transportation, energy, buildings, agriculture, natural and working lands, waste management, and water. Refer to Section 4.2, Air Quality, for a discussion of the proposed project's compliance with the 2017 Bay Area Clean Air Plan.

3.2.2 Plan Bay Area 2040

Plan Bay Area 2040 is a state-mandated, integrated long-range transportation and land use plan. As required by Senate Bill 375, all metropolitan regions in California must complete a sustainable communities strategy or alternative planning strategy as part of a regional transportation plan. This strategy integrates transportation, land use, and housing to meet GHG reduction targets set by the California Air Resources Board (air board). Plan Bay Area 2040 meets those requirements. In addition, the plan sets a roadmap for future transportation investments and identifies what it would take to accommodate expected growth. The plan neither funds specific transportation projects nor changes local land use policies.

In the Bay Area, the Metropolitan Transportation Commission (MTC) and ABAG adopted the latest plan in 2017. MTC and ABAG forecast that the Bay Area will see increases in population as well as the number of jobs and households between 2010 and 2040. The population is estimated to increase from 7.2 million to 9.6 million, the number of jobs is forecast to increase from 3.4 million to 4.7 million, and the number of households is expected to increase from 2.6 million to 3.4 million. To meet the GHG reduction targets, the plan identified priority development areas (PDAs), areas within existing communities that local city or county governments have identified and approved for future growth. These areas are typically accessible by transit and located near established job centers, shopping districts, and other services. The proposed project would be consistent with the goals of Plan Bay Area 2040 by creating housing within the Downtown/Van Ness/Geary PDA, an existing neighborhood and near transit.

3.2.3 Water Quality Control Plan for the San Francisco Bay Basin

The San Francisco Bay Basin (Region 2) Water Quality Control Plan guides planning within the San Francisco Bay Basin. It designates beneficial uses and water quality objectives for waters of the State, including surface waters and groundwater. It also includes implementation programs to achieve

water quality objectives. As described in Section E.16, Hydrology and Water Quality, in the initial study (Appendix A), the proposed project would not result in significant water quality effects; therefore, the proposed project would not be inconsistent with the basin plan.

4.0 ENVIRONMENTAL SETTING AND IMPACTS

4.1 INTRODUCTION

4.1.1 Overview

This chapter provides an analysis of the physical environmental impacts of implementing the proposed project, as described in Chapter 2, Project Description. It describes the environmental setting, assesses impacts (offsite, onsite, construction-related, operational, direct, and indirect) and cumulative impacts, and identifies mitigation measures to reduce or avoid identified significant environmental impacts.

4.1.2 Scope of Analysis

The environmental setting discussion describes the current physical conditions, or baseline conditions, in the project area. The baseline used for environmental impacts analysis under CEQA reflects the conditions present at the time the NOP for this EIR was published. As discussed in Chapter 1, Introduction, the project's NOP and initial study were published on October 2, 2019. The initial study (Appendix A) concluded that many of the physical environmental impacts of the proposed project would result in no impact or less-than-significant impacts, and that mitigation measures agreed to by the project sponsor and required as conditions of approval would reduce significant impacts to a less-than-significant level. CEQA does not require further assessment of a project's less-than-significant impacts or those that can be reduced to less than significant with mitigation, which were identified in the initial study for the following environmental topics:

- Land use and Planning (all topics)
- Population and Housing (all topics)
- Cultural Resources (all topics)
- Tribal Cultural Resources (all topics)
- Transportation and Circulation (all topics)
- Noise (all topics)
- Air Quality (odors)
- Greenhouse Gas Emissions (all topics)
- Recreation (all topics)
- Utilities and Service Systems (all topics)
- Public Services (all topics)
- Biological Resources (all topics)
- Geology and Soils (all topics)
- Hydrology and Water Quality (all topics)
- Hazards and Hazardous Materials (all topics)
- Mineral Resources (all topics)
- Energy Resources (all topics)
- Agriculture and Forestry Resources (all topics)
- Wildfire (all topics)

As discussed in Chapter 1, Introduction, and in the initial study, impacts from the project related to aesthetics and parking are not applicable to the proposed project. [29]

The initial study determined that the proposed project could result in potentially significant impacts related to the following topics, which are addressed in this EIR:

- Air Quality (all topics except odors)
- Wind (all topics)
- Shadow (all topics)

Subsequent to publication and circulation of the NOP and initial study, the project sponsor revised the proposed project (see Chapter 2, Project Description).The environmental impacts of these project description changes are addressed in Section 4.5, pp 4-88; however, these changes would not result in any new significant environmental impacts, or necessitate implementation of additional or considerably different mitigation measures than those identified in the initial study.

4.1.3 CEQA Methodological Requirements

CEQA Guidelines section 15151 describes standards for the preparation of an adequate EIR. The specific standards under section 15151 are listed below.

- An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information that enables them to make a decision that intelligently takes into account environmental consequences of the project.
- An evaluation of the environmental impacts of a project need not be exhaustive; rather, the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible.
- Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts.

In practice, the above points indicate that EIR preparers should adopt a reasonable methodology upon which to estimate impacts. This approach means making reasonable assumptions, using the best information available. In some cases, when information is limited or there are variations in project characteristics, EIR preparers will employ a "reasonable worst-case analysis" to capture the largest expected change from existing baseline conditions resulting from implementation of a project.

[29] Pursuant to Public Resources Code section 21099(d), aesthetics and parking are not considered in determining whether a project has the potential to result in significant environmental effects for projects that meet the following three criteria: (1) is located in a transit priority area; (2) is located on an infill site; and (3) is residential, mixed-use residential, or an employment center. The proposed project meets each of these three criteria: It is located near major transit routes and on an infill site that has been previously developed and surrounded by areas of either recently completed or planned urban development. Further, the proposed project is a mixed-use residential project. Therefore, this EIR does not consider aesthetics and the adequacy of parking in determining the significance of project impacts under CEQA.

4.1.4 Format of Environmental Analysis

Each environmental topic analyzed in this chapter includes the following subsections:

- **Introduction**. This subsection includes a brief description of the types of impacts that are analyzed as well as a summary of the impacts that were scoped out in the initial study (e.g., impacts that were determined to result in a less-than-significant impact or no impact).
- **Environmental Setting**. This subsection presents a description of existing baseline physical conditions on the project site and in the surroundings (e.g., existing land uses, existing wind environment, open space areas) at time of issuance of the NOP (with respect to each resource topic), with enough detail and breadth to allow a general understanding of the environmental impacts of the proposed project.
- **Regulatory Framework**. This subsection describes the relevant federal, state, and local regulatory requirements that are directly applicable to the environmental topic being analyzed.
- **Impacts and Mitigation Measures**. This subsection describes the physical environmental impacts (e.g., the changes to baseline physical environmental conditions) that could result from implementation of the proposed project, as well as any mitigation measures that could avoid, eliminate, or reduce identified significant impacts. This subsection begins with a listing of the significance criteria that have been developed by the planning department for use in determining whether an impact is significant. Environmental topic sections also include an "Approach to Analysis" subsection. This discussion explains the parameters, assumptions, and data used in the analysis.

  Under the "Impact Evaluation" discussion, the impact analysis for each topic begins with an impact statement that reflects one or more of the applicable significance criteria. Some significance criteria may be combined in a single impact statement, if appropriate. Each impact statement is keyed to a subject area abbreviation (e.g., AQ for Air Quality) and an impact number (e.g., 1, 2, 3) for a combined alpha-numeric code (e.g., Impact AQ-1, Impact AQ-2, etc.).

  When potentially significant impacts are identified, mitigation measures are presented that would avoid, eliminate, or reduce significant adverse impacts of the project. All mitigation measures will be required as conditions of project approval. Each mitigation measure corresponds to the impact statement and has an "M" in front to signify it is a mitigation measure (e.g., Mitigation Measure M-AQ-1 for a mitigation measure that corresponds to Impact AQ-1). If there is more than one mitigation measure for the same impact statement, the mitigation measures are numbered with a lowercase letter suffix (e.g., Mitigation Measures M-AQ-1a and M-AQ-1b).

4.1.5 Significance Determinations

A "significant effect" is defined by CEQA Guidelines Section 15382 as "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment [but] may be considered in determining whether the physical change is significant."

The significance criteria used in this EIR are based on the planning department's guidance regarding the thresholds of significance for assessing the severity of the environmental impacts of the proposed project. The planning department's guidance is based on CEQA Guidelines Appendix G, with some modifications. The level of significance of the impact is indicated in parentheses at the end of the impact statement based on the following terms:

- **No Impact –** No adverse physical changes (or impacts) to the environment are expected.
- **Less than Significant –** Impact that would not exceed the defined significance criteria or would be eliminated or reduced to a less-than-significant level through compliance with existing local, state, and federal laws and regulations.
- **Less than Significant with Mitigation –** Impact that is reduced to a less-than-significant level through implementation of the identified mitigation measures.
- **Significant and Unavoidable with Mitigation –** Impact that exceeds the defined significance criteria and cannot be reduced to less-than-significant levels through compliance with existing local, state, and federal laws and regulations and/or implementation of all feasible mitigation measures.
- **Significant and Unavoidable –** Impact that exceeds the defined significance criteria and cannot be eliminated or reduced to a less-than-significant level through compliance with existing local, state, and federal laws and regulations and for which there are no feasible mitigation measures.

4.1.6 Cumulative Impacts

Cumulative impacts, as defined in CEQA Guidelines section 15355, refer to two or more individual effects that, when taken together, are "considerable" or that compound or increase other environmental impacts. A cumulative impact from several projects is the change in the environment that would result from the incremental impact of the project when added to the impact of closely related past, present, and reasonably foreseeable future projects. Pertinent guidance for cumulative impact analysis is provided in CEQA Guidelines section 15130:

- An EIR shall discuss cumulative impacts of a project when the project's incremental effect is "cumulatively considerable" (e.g., the incremental effects of an individual project are considerable when viewed in connection with the effects of past, current, and probable future projects, including those outside the control of the agency, if necessary).
- An EIR should not discuss impacts that do not result in part from the project evaluated in the EIR. A project's contribution is less than cumulatively considerable, and thus not significant, if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact.
- The discussion of impact severity and likelihood of occurrence need not be as detailed as the discussion of effects attributable to the project alone.
- The focus of the analysis should be on the cumulative impact to which the identified other projects contribute rather than the attributes of the other projects that do not contribute to the cumulative impact.

The cumulative impact analysis for each individual resource topic is described in each resource section immediately following the description of the direct project impacts and identified mitigation measures.

Approach to Cumulative Impact Analysis

Two approaches to a cumulative impact analysis are provided in CEQA Guidelines section 15130(b)(1):

- The analysis can be based on a list of reasonably foreseeable future projects that could produce closely related impacts and combine with those of a proposed project, or
- A summary of projections contained in a general plan or related planning document can be used to determine cumulative impacts. The following factors were used to determine an appropriate level for cumulative analysis in this EIR:
    - **Similar Environmental Impacts**. A relevant project contributes to effects on resources that are also affected by the proposed project. A relevant future project is defined as one that is "reasonably foreseeable," such as a project with an application on file at the approving agency or approved funding.
    - **Geographic Scope and Location**. A relevant project is within the geographic area where effects could combine. The geographic scope varies on a resource-by-resource basis. For example, the geographic scope for evaluating cumulative effects on regional air quality consists of the affected air basin, whereas the cumulative effects of construction noise are limited to combined noise from the project and nearby projects.
    - **Timing and Duration of Implementation**. Effects associated with activities for a relevant project (e.g., short-term construction or demolition, long-term operations) would most likely coincide with the timing of related effects from the proposed project.

The analyses in this EIR and initial study employ a list-based approach and projections-based approach, depending on the environmental topic analyzed. For instance, the cumulative analysis of shadow impacts considers individual projects that are anticipated to shade the same open spaces as the proposed project. Such projects in combination with the proposed project may result in cumulative shadow effects.

Cumulative Setting

Cumulative projects within a 0.25-mile radius of the project site are listed below in Table 4.1-1 and mapped on Figure 18. These cumulative projects are projects that are currently under review by the planning department or a building permit is on file or has been approved by the San Francisco Department of Building Inspection (building department).

Table 4.1-1: Cumulative Projects within 0.25-Mile Radius of the Proposed Project

Map No. Address (Case No.)	Description	Dwelling Units	Retail/ Commercial (gsf)	Office (gsf)	Hotel (gsf)	PDR[1] (gsf)	Group Housing Rooms	Status
1. 1025 Howard Street (2015-005200ENV)	Demolition of an existing building and construction of a new 8-story hotel with a ground floor retail space and below ground parking.	--	2,445	--	77,510 173 rooms	--	--	Under review
2. 1055 Market Street (2014.0408E)	Demolition of an existing commercial building and construction of a 10-story hotel with a ground floor retail space.	--	2,187	--	71,534 160 rooms	--	--	Approved - not yet under construction.
3. 1082 Howard Street (2015-010371ENV)	Demolition of a 2-story retail sales building and construction of a 9-story multi-family residential building.	9	--	--	--	--	--	On Hold
4. 1088 Howard Street (2017-009796ENV)	The proposed project would preserve the existing one story over mezzanine industrial building and construct an approximately 20,402 gsf, 74-foot-tall residential addition.	24	--	--	--	--	--	Under Review
5. 1125 Market Street (2013.0511E)	Construction of a 12-story, 138,101 sf building containing 181 hotel rooms, 5,587 sf of restaurant/retail, and a 18,737 sf co-working space/office.	--	5,587	18,737	95,506 181 rooms	--	--	Under Review
6. 219 Sixth Street (2017-001590CUA)	Change of use that would result in a net increase of 9 rooms.	--	--	--	--	--	9 guest rooms	On Hold
7. 270 Turk Street (2017-015701PRJ)	Addition of four accessory dwelling units at the basement level of the building.	4	--	--	--	--	--	Under Review
8. 415-417 Tehama Street (2017-016278PRJ)	Construction of one accessory dwelling unit.	1	--	--	--	--	--	Under Review
9. 457-475 Minna Street (2018-	Demolition of an existing 2-story building and proposed merger of four lots and	--	--	--	--	--	270	Under Review

Map No. Address (Case No.)	Description	Dwelling Units	Retail/ Commercial (gsf)	Office (gsf)	Hotel (gsf)	PDR[1] (gsf)	Group Housing Rooms	Status
016055PRJ)	construction of a new 16-story, 270-room group housing building.							
10. 481-483 Tehama Street (2015-006765 ENV)	Proposed demolition of an existing 2-story building. Construction of a new 4-story residential/ PDR building.	6	--	--	--	1,790	--	Approved – not yet under construction.
11. 527 Stevenson Street (2018-012429ENV)	Demolition of an existing 1-story commercial building and new construction of a 7-story commercial building.	--	--	7,062	--	--	--	Under Review
12. 57 Taylor Street aka 111 Turk Street (2015-007525ENV)	Subdivision of parcel containing a mixed-use residential and retail building and a surface parking lot. Demolition of a portion of the existing structure (vacant retail space). New construction of a 12-story over basement mixed-use residential group housing with ground floor retail.	--	11,000	--	--	--	77	Under Review
13. 611 Minna Street (2018-009426PRJ)	Addition of two new studio accessory dwelling units at the basement level of an existing 12-unit building.	2	--	--	--	--	--	Approved – not yet under construction.
14. 921 Howard Street (2017-000275ENV)	Construction of a new, 18-story, 180-foot-tall mixed-use residential tower and podium.	205	4,999	--	--	--	--	Under Review
15. 984 Folsom Street (2017-013741ENV)	Demolition of a 3-story building and construction of a new 8-story building with a restaurant on the ground floor and group housing on the remaining seven floors.	--	9,115	--	--	--	111	Under Review
16. 996 Mission Street (2015-015253	Demolition of 2-story existing residential hotel building. New construction of an 8-story hotel (2 floors residential hotel	--	--	--	5,645 (105 rooms)	--	--	Under Review

Map No. Address (Case No.)	Description	Dwelling Units	Retail/ Commercial (gsf)	Office (gsf)	Hotel (gsf)	PDR[1] (gsf)	Group Housing Rooms	Status
ENV)	units, 5 floors tourist hotel) with ground floor retail.							
17. Better Market Street (2014.0012E)	The multi-agency project would replace and upgrade aging infrastructure – including streetlights, traffic signals, streetcar tracks, overhead wires, and underground utilities.	--	--	--	--	--	--	Approved - not yet under construction.
18. Fifth Street Improvement Project[2]	This project involves bicycle and pedestrian safety improvements along Fifth Street between Townsend and Market streets in the SoMa neighborhood.	--	--	--	--	--	--	Approved – construction of near-term improvements in Fall 2019

Notes:
[1] PDR – Production, Distribution, Repair
[2] The Fifth Street Improvement Project was considered in the cumulative transportation analysis in Section E.5, Transportation and Circulation, of the initial study; however, this project was not included in this list of cumulative projects provided in the initial study.
Sources:
San Francisco Planning Department. 2019. San Francisco Planning Department – Permits in my Neighborhood Map. https://sfplanning.org/resource/permits-my-neighborhood. San Francisco Public Works Department. 2019. Projects Database. https://sfpublicworks.org/projects.

Figure 18: Cumulative Projects

4.2 AIR QUALITY

4.2.1 Introduction

This section discusses existing air quality conditions in the project area, presents the regulatory framework for air quality management, and analyzes the potential for the proposed project to affect existing air quality conditions, both regionally and locally, from activities that emit criteria and non-criteria air pollutants. It also analyzes the types and quantities of emissions that would be generated both on a temporary basis from construction activities and over the long term from operation of the proposed project. The analysis determines whether the emissions would be significant in relation to applicable air quality standards and identifies feasible mitigation measures for significant adverse impacts, if required. This section also includes an analysis of cumulative air quality impacts. As discussed in Section E.7, Air Quality, of the initial study (see Appendix A), construction and operation of the proposed project would not be expected to generate substantial odors, either individually or cumulatively. Therefore, this topic is not discussed further in this EIR. Emissions of GHGs and potential impacts on climate change, as well as City and County of San Francisco (City) and state goals regarding GHG emissions, are discussed in the initial study (see Appendix A, Section E.8, Greenhouse Gas Emissions).

The analysis in this section is based on a review of existing air quality conditions in the Bay Area and air quality regulations administered by the U.S. Environmental Protection Agency (U.S. EPA), the California Air Resources Board (air board), and the Bay Area Air Quality Management District (air district). This analysis includes methodologies identified in the air district's *CEQA Air Quality Guidelines*[30] and its companion documentation. Calculations were prepared to quantitatively assess the air pollutant emission from the proposed project (see EIR Appendix B); this information forms the basis of much of the assessment of air quality impacts presented herein.

The air quality impact methodologies and approach to analysis (described under Approach to Analysis and in "Air Quality Scope of Work" included in the EIR as Appendix B) are based on an approximately 36-month construction duration and six-phases of construction.

4.2.2 Environmental Setting

Climate and Meteorology

The project site is located within the San Francisco Bay Area Air Basin (air basin). The air basin's moderate climate steers storm tracks away from the region for much of the year, although storms affect the region from November through April. San Francisco's proximity to onshore breezes stimulated by the Pacific Ocean provides for generally good air quality in the city. Annual temperatures in the project area average in the mid-50s (degrees Fahrenheit), generally ranging from the low 40s on winter mornings to the low-70s during summer afternoons. Daily and seasonal changes in temperature are small because of the moderating effects of the nearby San Francisco Bay.

[30] Air District, *CEQA Air Quality Guidelines*, updated May 2017, http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en, accessed October 2, 2018

In contrast to the steady temperature regime, rainfall is highly variable and confined almost exclusively to the "rainy" period from November through April. Precipitation may vary widely from year to year because a shift in the annual storm track of a few hundred miles can mean the difference between a very wet year and drought conditions. Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants regionally. The project area is within the Peninsula climatological subregion. Marine air traveling through the Golden Gate is a dominant weather factor that affects the dispersal of air pollutants within the region. Wind measurements recorded on the San Francisco mainland indicate a prevailing wind direction from the west and an average annual wind speed of 8.7 miles per hour.[31] Increased temperatures create conditions in which ozone formation can increase.

Ambient Air Quality – Criteria Air Pollutants

As required by the 1970 federal Clean Air Act, the U.S. EPA initially identified six criteria air pollutants that are pervasive in urban environments and for which state and federal health-based ambient air quality standards have been established. The U.S. EPA calls these pollutants "criteria air pollutants" because it has regulated them by developing specific public-health-based and welfare-based criteria for setting permissible levels. Ozone, carbon monoxide (CO), particulate matter, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead were the six criteria air pollutants originally identified by the U.S. EPA. Since adoption of the 1970 act, subsets of particulate matter have been identified for which permissible levels have been established. These include particulate matter of 10 microns in diameter or less (PM_{10}) and particulate matter of 2.5 microns in diameter or less ($PM_{2.5}$).

The air district is the regional agency with jurisdiction for regulating air quality within the nine-county air basin. The region's air quality monitoring network provides information on ambient concentrations of criteria air pollutants at various locations in the San Francisco Bay Area. Table 4.2-1, Summary of San Francisco Air Quality Monitoring Data (2014–2018), presents a 5-year summary of the highest annual criteria air pollutant concentrations recorded at the air quality monitoring station operated and maintained by the air district at 16th and Arkansas streets (Potrero Hill), approximately 3 miles southeast of the project site. Table 4.2-1 also compares measured pollutant concentrations with the most stringent applicable ambient air quality standards (state and federal). These concentrations are health-based standards established with an ample margin of safety. To determine attainment of air quality standards, exceedances are assessed on a region-wide basis. Concentrations shown in boldface type indicate only a localized exceedance of the standard.

[31] National Oceanic and Atmospheric Administration, National Centers for Environmental Information, 2018.

Table 4.2-1. Summary of San Francisco Air Quality Monitoring Data (2014-2018)

Pollutant	Most Stringent Applicable Standard	Number of Days Standards Were Exceeded and Maximum Concentrations Measured				
		2014	2015	2016	2017	2018
Ozone						
Maximum 1-hour Concentration (ppm)	>0.09[b]	0.079	0.085	0.070	0.087	0.065
Days 1-hour Standard Exceeded		0	0	0	0	0
Maximum 8-hour Concentration (ppm)	>0.070[c]	0.069	0.067	0.057	0.054	.049
Days 8-hour Standard Exceeded		0	0	0	0	0
Carbon Monoxide (CO)						
Maximum 1-hour Concentration (ppm)	>20[b]	1.6	1.8	1.7	2.5	1.9
Days 1-hour Standard Exceeded		0	0	0	0	0
Maximum 8-hour Concentration (ppm)	>9.0[b]	1.2	1.3	1.1	1.4	1.6
Days 8-hour Standard Exceeded		0	0	0	0	0
Respirable Particulate Matter (PM_{10})						
Maximum 24-hour Concentration ($\mu g/m^3$)	>50[b]	36	47	29	**77**	43
Days 24-hour Standard Exceeded		0	0	0	2	0
Fine Particulate Matter ($PM_{2.5}$)						
Maximum 24-hour Concentration ($\mu g/m^3$)	>35[c]	33	35	20	**50**	**177**
Days 24-hour Standard Exceeded		0	0	0	7	14
Annual Average ($\mu g/m^3$)	>12[b,c]	7.7	9.6	7.5	9.7	11.7
Nitrogen Dioxide (NO_2)						
Maximum 1-hour Concentration (ppm)	>0.100[c]	0.08	0.07	0.06	0.07	0.07
Days 1-hour Standard Exceeded		0	0	0	0	0

Source: Air District, Bay Area Air Pollution Summary, 2013-2018, http://www.baaqmd.gov/about-air-quality/air-quality-summaries

Notes: **Bold** values are in excess of applicable standard; ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter; > = greater than.

a. Number of days exceeded is for all days in a given year, except for PM_{10}, which has been monitored every 12 days as of January 2013.

b. State standard not to be exceeded.

c. Federal standard not to be exceeded.

Ozone

Ozone is a secondary air pollutant that is produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG, also sometimes referred to as "volatile organic compounds" [VOCs] by some regulatory agencies) and oxides of nitrogen (NO_X) in the presence of sunlight. The main sources of ROG and NO_X, often referred to as "ozone precursors," are combustion processes (including combustion within motor vehicle engines) and the evaporation of solvents, paints, and fuels. In the Bay Area, automobiles are the single largest source of ozone precursors. Ozone is referred to as a "regional air pollutant" because its precursors are transported and diffused by wind concurrently with ozone production through a photochemical reaction process. Ozone causes eye irritation, airway constriction, and shortness of breath and can aggravate existing respiratory diseases, such as asthma, bronchitis, and emphysema. According to published data, and as shown in Table 4.2-1, the most stringent applicable standards for ozone (state 1-hour standard of 0.09 part per million [ppm] and the federal 8-hour standard of 0.075 ppm) were not exceeded in San Francisco between 2014 and 2018. In 2015, the U.S. EPA strengthened the 8-hour ozone standard to 0.070 ppm, and the new standard became effective December 28, 2015.

Carbon Monoxide

CO is an odorless, colorless gas, usually formed as the result of the incomplete combustion of fuels. The single largest source of CO is motor vehicles; the highest emissions occur during low travel speeds, stop-and-go driving, cold starts, and hard acceleration. Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, nausea, dizziness, and fatigue; impair central nervous system function; and induce angina (chest pain) in persons with serious heart disease. Very high levels of CO can be fatal. As shown in Table 4.2-1, the more stringent state CO standards were not exceeded between 2014 and 2018. Measurements of CO indicate hourly maximums ranging between 8 and 10 percent of the more stringent state standard and maximum 8-hour CO levels that are approximately 12 to 16 percent of the allowable 8-hour standard.

Particulate Matter

Particulate matter is a class of air pollutants that consists of a complex mix of solid and liquid airborne particles from human-made and natural sources. Regulated particulate matter is measured in two size ranges: PM_{10} and $PM_{2.5}$. In the Bay Area, motor vehicles generate about one-half of the air basin's particulates through tailpipe emissions as well as brake pad and tire wear. Wood burning in fireplaces and stoves, industrial facilities, and ground-disturbing activities such as construction are other sources of such fine particulates. These fine particulates are small enough to be inhaled into the deepest parts of the human lung and can cause adverse health effects. According to the air board, studies in the United States and elsewhere "have demonstrated a strong link between elevated particulate levels and premature deaths, hospital admissions, emergency room visits, and asthma attacks," and studies of children's health in California have demonstrated that particle pollution "may significantly reduce lung function growth in children."[32] The air board also reports that

[32] California Air Resources Board, Recent Research Findings: Health Effects of Particulate Matter and Ozone Air Pollution, November 2007, p. 1.

statewide attainment of particulate matter standards could prevent thousands of premature deaths, lower hospital admissions for cardiovascular and respiratory disease and asthma-related emergency room visits, and avoid hundreds of thousands of episodes of respiratory illness in California.[33]

Among the criteria pollutants that are regulated, particulates appear to represent a serious ongoing health hazard. As long ago as 1999, the air district was reporting, in its CEQA Air Quality Guidelines, that studies had shown that elevated particulate levels contribute to the death of approximately 200 to 500 people per year in the Bay Area. $PM_{2.5}$ is of concern because epidemiological[34] studies have demonstrated that people who live near freeways, especially people who live within 500 feet of freeways or high-traffic roadways, have poorer health outcomes, including increased asthma symptoms and respiratory infections and decreased pulmonary function and lung development in children.[35]

As shown in Table 4.2-1, the state 24-hour PM_{10} standard was exceeded on two monitored occasions between 2014 and 2018 in San Francisco (both in 2017 during the wildfire period in the counties to the north of San Francisco). The federal 24-hour $PM_{2.5}$ standard was exceeded on 21 monitored occasions between 2014 and 2018. The federal and state annual average standards were not exceeded between 2014 and 2018. However, with the 2017 fires in the counties to the north of San Francisco, the federal 24-hour $PM_{2.5}$ standard was exceeded on up to seven days just in the first part of the month of October 2017 in certain counties. Similar air quality patterns due to wildfires occurred in 2018. The 24-hour $PM_{2.5}$ standard was exceeded 14 times in the Bay Area in 2018. During the November 2018 wildfire period, the Bay Area experienced unhealthy air quality for nearly two weeks. The AQI in San Francisco reach 218 during the November wildfire period. These levels of $PM_{2.5}$ in many counties have been the highest levels recorded in recent times. As a result, the Air Quality Index (AQI) in several neighboring counties reached the "very unhealthy" designation,[36] ranging from 201 to 300. During that period the air district issued "Spare the Air" alerts and recommended that individuals stay inside with windows closed and refrain from substantial outdoor activity.

Nitrogen Dioxide

NO_2 is a reddish-brown gas that is a byproduct of combustion processes. Automobiles and industrial operations are the main sources of NO_2. Aside from its contribution to ozone formation, NO_2 can increase the risk of acute and chronic respiratory disease and reduce visibility. NO_2 may be visible as a coloring component of the air on high-pollution days, especially in conjunction with high ozone levels. The current state 1-hour standard for NO_2 (0.18 ppm) is being met in San Francisco. In 2010, the U.S. EPA implemented a new 1-hour NO_2 standard (0.10 ppm), which is presented in Table 4.2-2,

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[33] Ibid.

[34] Epidemiology is a branch of medical science that deals with the incidence, distribution, and control of disease in a population.

[35] San Francisco Department of Public Health, Assessment and Mitigation of Air Pollutant Health Effect from Intra-urban Roadways: Guidance for Land Use Planning and Environmental Review, May 2008, p. 7

[36] Daily air quality data were queried during the period of fire (approximately November 8 to 25, 2018) for AQI information, with particulate matter concentrations at monitoring stations from the air district's Air Quality Monitoring Data web page. Air District, Air Quality Monitoring Data, http://www.baaqmd.gov/ about-air-quality/current-air-quality/air-monitoring-data?DataViewFormat=daily&DataView=aqi&ParameterId =316, accessed October 16, 2019.

State and Federal Ambient Air Quality Standards and Attainment Status for the air basin. Currently, the air board is recommending that the air basin be designated as an attainment area for the new standard.[37] As shown in Table 4.2-1, this new federal standard was not exceeded at the San Francisco station between 2014 and 2018.

The U.S. EPA has also established requirements for a new monitoring network to measure NO_2 concentrations near major roadways in urban areas with a population of 500,000 or more. Sixteen new near-roadway monitoring sites are required in California, three of which are in the Bay Area. These monitors are located in Berkeley, Oakland, and San Jose. The Oakland station commenced operation in February 2014, the San José station in March 2015, and the Berkeley station in July 2016. The new monitoring data may result in a need to change area designations in the future. The air board will revise the area designation recommendations, as appropriate, once the new monitoring data become available.

Table 4.2-2. State and Federal Ambient Air Quality Standards and Attainment Status For the San Francisco Bay Area Air Basin

Pollutant	Averaging Time	State (CAAQS)[a,h]		Federal (NAAQS)[b,h]	
		Standard	Attainment Status	Standard	Attainment Status
Ozone	1-hour[f]	0.09 ppm	N	NA	See Note c
	8-hour[d,e]	0.70 ppm	N	0.070 ppm	N
Carbon Monoxide (CO)	1-hour	20 ppm	A	35 ppm	A
	8-hour	9 ppm	A	9 ppm	A
Nitrogen Dioxide (NO_2)	1-hour	0.18 ppm	A	0.100 ppm	A
	Annual	0.030 ppm	NA	0.053 ppm	A
Sulfur Dioxide (SO_2)	1-hour	0.25 ppm	A	0.075 ppm	See Note g
	24-hour	0.04 ppm	A	0.14 ppm	See Note g
	Annual	NA	NA	0.03 ppm	See Note g
Particulate Matter (PM_{10})[i]	24-hour	50 µg/m³	N	150 µg/m³	U
	Annual	20 µg/m³	N	NA	NA
Particulate Matter ($PM_{2.5}$)[i]	24-hour	NA	NA	35 µg/m³	N
	Annual	12 µg/m³	N	12 µg/m³	U/A
Sulfates	24-hour	25 µg/m³	A	NA	NA
Lead	30-day	1.5 µg/m³	A	NA	NA
	Calendar-quarter	NA	NA	1.5 µg/m³	A

Source: Air District, Standards and Attainment Status, last updated January 5, 2017, http://www.baaqmd.gov/about-air-quality/research-and-data/air-quality-standards-and-attainment-status. Accessed January 10, 2020.

Notes:

A = Attainment; N = Non-attainment; U = Unclassified; NA = Not Applicable, no applicable standard; ppm = parts per million; µg/m³ = micrograms per cubic meter.

a. CAAQS = California ambient air quality standards. CAAQS for ozone, CO (except Lake Tahoe), SO2 (1-hour and 24-hour standards), NO_2, particulate matter, and visibility-reducing particles are values that are not to be exceeded. All other state standards shown are values not to be equaled or exceeded.

[37] California Air Resources Board, Recommended Area Designations for the 2010 Nitrogen Dioxide Standards, Technical Support Document, January 2011, https://www.arb.ca.gov/desig/NO2_Enclosure_1.pdf, accessed October 16, 2019.

b. NAAQS = national ambient air quality standards. NAAQS, other than ozone and particulates and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a year. The 8-hour ozone standard is attained when the 3-year average of the fourth-highest daily concentration is 0.07 ppm or less. The 24-hour PM10 standard is attained when the 3-year average of the 99th percentile of monitored concentrations is less than the standard. The 24-hour $PM_{2.5}$ standard is attained when the 3-year average of the 98th percentile is less than the standard.
c. The U.S. EPA revoked the national 1-hour ozone standard on June 15, 2005.
d. This federal 8-hour ozone standard was approved by the U.S. EPA in October 2015 and became effective on December 28, 2015.
e. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm. An area will meet the standard if the fourth-highest maximum daily 8-hour ozone concentration per year, averaged over 3 years, is equal to or less than 0.070 ppm. The U.S. EPA made recommendations on attainment designations for California on October 3, 2016. After the final designations were made, San Francisco county was determined to be not in attainment.
f. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010).
g. On June 2, 2010, the U.S. EPA established a new 1-hour SO2 standard, effective August 23, 2010, which is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. The existing 0.030 ppm annual and 0.14 ppm 24-hour SO2 NAAQS, however, must continue to be used until 1 year following U.S. EPA initial designations of the new 1-hour SO2 NAAQS. The U.S. EPA classified the air basin as being in attainment/unclassifiable in January 2018 (Federal Register Vol. 83, No. 6, pp. 1098–1172).
h. State standard = annual geometric mean; national standard = annual arithmetic mean.
i. In June 2002, the air board established new annual standards for $PM_{2.5}$ and PM_{10}.

Sulfur Dioxide

SO_2 is a colorless, acidic gas with a strong odor. It is produced by the combustion of sulfur-containing fuels such as oil, coal, and diesel. SO_2 has the potential to damage materials and can cause health effects at high concentrations. It can irritate lung tissue and increase the risk of acute and chronic respiratory disease.[38] Pollutant trends suggest that the air basin currently meets and will continue to meet the state standard for SO_2 for the foreseeable future. In 2010, the U.S. EPA implemented a new 1-hour SO_2 standard, which is presented in Table 4.2-2. The U.S. EPA initially designated the air basin as an attainment area for SO_2. Similar to the new federal standard for NO_2, the U.S. EPA established requirements for a new monitoring network to measure SO_2 concentrations beginning in January 2013.[39] No additional SO_2 monitors are required for the Bay Area because the air district's jurisdiction has never been designated as a non-attainment area for SO_2, and no state implementation plans or maintenance plans have been prepared for SO_2.[40]

Lead

Leaded gasoline (phased out from use in automobiles in the United States beginning in 1973), paint (on older houses, cars), smelters (metal refineries), and manufacturers of lead storage batteries have

[38] Air District, CEQA Air Quality Guidelines, May 2017, p. C-16, http://www.baaqmd.gov/ ~/media/files/-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en, accessed October 16, 2019.

[39] U.S. EPA, Fact Sheet: Revisions to the Primary National Ambient Air Quality Standard, Monitoring Network, and Data Reporting Requirements for Sulfur Dioxide, June 2, 2010, https://www.epa.gov/sites/production/ files/2016-05/documents/final_primary_naaqs_factsheet.pdf, accessed October 16, 2019.

[40] Air District, 2013 Air Monitoring Network Plan, July 2014, p. 27, http://www.baaqmd.gov/~/media//Technical%20Services/2013_Network_Plan.ashx?la=en, accessed October 16, 2019.

been the primary sources of lead in the atmosphere. Lead has a range of adverse neurotoxic health effects, which put children at special risk. Some lead-containing chemicals cause cancer in animals. Lead levels in the air have decreased substantially since leaded gasoline in automobiles was eliminated.

Ambient lead concentrations are monitored only on an as-warranted, site-specific basis in California. On October 15, 2008, the U.S. EPA strengthened the national ambient air quality standard for lead by lowering it from 1.50 μg/m³ to 0.15 μg/m³ on a rolling three-month average. The U.S. EPA revised the monitoring requirements for lead in December 2010.[41] These requirements focused on airports and large urban areas and increased the number of monitors nationally by 76. In the Bay Area, lead monitoring stations are located at Reid-Hillview Airport and at 158 East Jackson Street, both in San José. Another lead monitoring station, at San Carlos Airport, was discontinued as of April 11, 2017.

Air Quality Index

The U.S. EPA developed the AQI to make the public health impacts of air pollution concentrations easily understandable. The AQI, much like an air quality "thermometer," translates daily air pollution concentrations into a number on a scale between 0 and 500, then assigns the number to one of the following six color-coded ranges that rank air quality:

A. **Good (Green, AQI = 0–50)**: Air quality is considered satisfactory, and air pollution poses little or no risk.

B. **Moderate (Yellow, AQI = 51–100)**: Air quality is acceptable; however, for some pollutants, there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution. Unusually sensitive people should consider reducing prolonged or heavy outdoor exertion.

C. **Unhealthy for Sensitive Groups (Orange, AQI = 101–150)**: Although the general public is not likely to be affected at this AQI range, people with lung disease, as well as older adults and children, are at a greater risk from exposure to ozone, whereas persons with heart and lung disease, older adults, and children are at greater risk from the presence of particles in the air. Active children and adults, as well as people with respiratory disease, such as asthma, should limit prolonged or heavy outdoor exertion.

D. **Unhealthy (Red, AQI = 151–200)**: Everyone may begin to experience some adverse health effects, and members of the sensitive groups may experience more serious effects. Active children and adults, as well as people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else, especially children, should limit prolonged outdoor exertion.

[41] U.S. EPA, Fact Sheet: Revisions to Lead Ambient Air Quality Monitoring Requirements, https://www.epa.gov/sites/production/files/2016-03/documents/leadmonitoring_finalrule_factsheet.pdf, accessed October 16, 2019.

E. **Very Unhealthy (Purple, AQI = 201–300)**: The rating of "very unhealthy" air quality would trigger a health alert, signifying that everyone may experience more serious health effects. Active children and adults, as well as people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else, especially children, should limit outdoor exertion.

F. **Hazardous (Maroon, AQI = 301–500)**: The rating of "hazardous" air quality would trigger health warnings regarding emergency conditions. The entire population is more likely to be affected. Everyone, especially children, should limit outdoor exertion.

The AQI numbers refer to specific amounts of pollution in the air. They are based on the federal air quality standards for ozone, CO, NO_2, SO_2, PM_{10}, and PM_{25}. In most cases, the federal standard for these air pollutants corresponds to the number 100 on the AQI chart. If the concentration of any of these pollutants rises above its respective standard, the air quality can be unhealthy for the public. In determining the air quality forecast, local air districts, including the Bay Area Air Quality Management District, use the anticipated concentration measurements for each of the major pollutants, convert them into AQI numbers, then determine the highest AQI for each zone in a district.

Readings below 100 on the AQI scale would not typically affect the health of the general public (although readings in the moderate range of 50 to 100 may affect unusually sensitive people). Levels above 300 rarely occur in the United States, and readings above 200 have not occurred in the Bay Area in decades, with the exception of the October 2017 wildfires north of San Francisco and the November 2018 wildfires in Butte County.[42] As a result of both wildfires, the AQI in San Francisco and several neighboring counties reached the "very unhealthy" designation, ranging from 201 to 300.[43] During these periods, the air district issued "Spare the Air" alerts and recommended that individuals stay inside with the windows closed and refrain from any outdoor activity.

AQI statistics over recent years indicate that air quality in the Bay Area is predominantly in the "Good" or "Moderate" categories and healthy on most days for most people. AQI ozone statistics for the air basin are shown in Table 4.2-3, Ozone Air Quality Index Statistics for the air basin. The air basin had a total of nine orange-level (unhealthy for sensitive groups) days in 2014, 12 days in 2015, 11 days in 2016, three days in 2017, and two days in 2018. In 2014, 2016, and 2018, ozone levels in the air basin were in the red-level (unhealthy) range one day per year; in 2017, four days had ozone levels that were in the unhealthy range.

Table 4.2-3: Ozone Air Quality Index Standards for the San Francisco Bay Area Air Basin

Air Quality Index Levels	Number of Days by Year

[42] Air District, Spare the Air, http://sparetheair.org/Stay-Informed/Todays-Air-Quality/Air-Quality-Index.aspx, accessed October 16, 2019.

[43] Air District, Air Monitoring Data, http://www.baaqmd.gov/about-air-quality/current-air-quality/air-monitoringdata?DataViewFormat=monthly&DataView=aqi&StartDate=11/1/2018&ParameterId=316, accessed October 16, 2019.

	2014	2015	2016	2017	2018
Unhealthy for Sensitive Groups (Orange)	9	12	11	3	2
Unhealthy (Red)	1	0	1	4	1

Source: Air District, Air Monitoring Data, https://sfgov.org/scorecards/environment/days-epa-air-quality-index-rating-good, accessed October 15, 2019

Toxic Air Contaminants and Local Health Risks and Hazards

In addition to criteria air pollutants, individual projects may emit toxic air contaminants (TACs). TACs collectively refer to a diverse group of air pollutants that are capable of causing chronic (i.e., of long duration) and acute (i.e., severe but short term) adverse effects on human health, including carcinogenic effects.[44] Human health effects of TACs include birth defects, neurological damage, cancer, and death. There are hundreds of different types of TACs with varying degrees of toxicity. Individual TACs vary greatly in the health risk they present; at a given level of exposure, one TAC may pose a hazard that is many times greater than another.

Unlike criteria air pollutants, TACs are not subject to ambient air quality standards but are regulated by the air district using a risk-based approach to determine which sources and pollutants to control as well as the degree of control. A health risk assessment is an analysis that estimates human health exposure to toxic substances and, when considered together with information regarding the toxic potency of the substances, provides quantitative estimates of health risks.[45]

Exposures to fine particulate matter ($PM_{2.5}$) are strongly associated with mortality, respiratory diseases, and impaired lung development in children as well as other end results, such as hospitalization for cardiopulmonary disease.[46] In addition to $PM_{2.5}$, diesel particulate matter (DPM), a byproduct of diesel fuel combustion, is also of concern. The air board identified DPM as a TAC in 1998, based primarily on evidence demonstrating cancer effects in humans.[47] The estimated cancer risk from exposure to diesel exhaust is much higher than the risk associated with any other TAC routinely measured in the region.

San Francisco Modeling of Air Pollution Exposure Zones

In an effort to identify areas of San Francisco most adversely affected by sources of TACs, San Francisco partnered with the air district to inventory and assess air pollution and exposures from

[44] "Carcinogenic" indicates that scientific studies have shown that exposure to a substance or mixture of substances at certain levels for some period of time has the potential to promote the formation of cancer.

[45] In general, a health risk assessment is required if the air district concludes that projected emissions of a specific air toxic compound from a proposed new or modified source suggest a potential public health risk. The applicant is then subject to a health risk assessment for the source in question. Such an assessment generally evaluates chronic, long-term effects as well as maximum short-term effects, estimating the increased risk of cancer or hazard index as a result of exposure to one or more TACs.

[46] San Francisco Department of Public Health, Assessment and Mitigation of Air Pollutant Health Effects from Intra-Urban Roadways: Guidance for Land Use Planning and Environmental Review, May 2008

[47] California Air Resources Board, Fact Sheet: The Toxic Air Contaminant Identification Process: Toxic Air Contaminant Emissions from Diesel-fueled Engines, October 1998.

vehicles, stationary sources, and area sources within San Francisco. Citywide air quality dispersion modeling was conducted using AERMOD[48] to assess emissions from the following primary sources: vehicles on local roadways, permitted stationary sources, port and maritime sources, and Caltrain. Emissions of PM_{10} (DPM is assumed equivalent to PM_{10}), $PM_{2.5}$, and total organic gases were modeled on a 20- by 20-meter receptor grid covering the entire city. The citywide modeling results represent a comprehensive assessment of existing cumulative exposures to air pollution throughout the city. The methodology and technical documentation for modeling citywide air pollution is available in the *San Francisco Community Risk Reduction Plan: Technical Support Documentation.*[49]

Model results were used to identify areas in the city with poor air quality, termed Air Pollutant Exposure Zones (APEZs), based on the following health-protective criteria: (1) cumulative $PM_{2.5}$ concentrations greater than 10 $\mu g/m^3$ and/or (2) an excess cancer risk from the contribution of emissions from all modeled sources greater than 100 per 1 million persons exposed.

An additional health vulnerability layer was incorporated in the APEZ for those San Francisco ZIP codes in the worst quintile of Bay Area health vulnerability scores (ZIP codes 94102, 94103, 94105, 94124, and 94130). In these areas, the standard for identifying areas within the zone were lowered to (1) cumulative $PM_{2.5}$ concentrations greater than 9 $\mu g/m^3$, and/or (2) excess cancer risk from the contribution of emissions from all modeled sources greater than 90 per 1 million persons exposed.

Lastly, all parcels within 500 feet of a major freeway were also included in the APEZ, consistent with findings in the air board's Air Quality and Land Use Handbook: A Community Health Perspective, which suggests air pollutant levels decrease substantially at approximately 500 feet from a freeway.[50]

The project site is located within an area that meets the APEZ criteria. The highest existing background cancer risk values on the project site is 94 in 1 million, with background values ranging from 40 to 178 in 1 million within 1,000 meters of the site. The highest background $PM_{2.5}$ concentration is 9.4 $\mu g/m^3$ on the project site, with background values varying between 8.6 and 10.2 $\mu g/m^3$ within 1,000 meters of the site. The nearest offsite sensitive receptors[51] within an APEZ are the residential hotels located adjacent to the project site. Permitted stationary sources of emissions within or near 1,000 feet of the project site contributing to these risks and $PM_{2.5}$ concentrations include Clearway Energy, which supplies heating services to buildings in a two-square-mile area of the

[48] AERMOD is U.S. EPA's preferred or recommended steady-state air dispersion plume model. Dispersion modeling uses mathematical formulations to characterize the atmospheric processes that disperse a pollutant emitted by a source. Based on emissions and meteorological inputs, a dispersion model can be used to predict concentrations at selected downwind receptor locations. These air quality models are used to determine compliance with National Ambient Air Quality Standards and other regulatory requirements, such as the New Source Review regulation. For more information on AERMOD, and to download the AERMOD Implementation Guide, see https://www.epa.gov/scram/air-quality-dispersion-modelingpreferred-and-recommended-models, accessed October 16, 2019.

[49] Air District, San Francisco Department of Public Health, and San Francisco Planning Department, The San Francisco Community Risk Reduction Plan: Technical Support Documentation, December 2012, http://www.gsweventcenter.com/Appeal_Response_References/2012_1201_BAAQMD.pdf, accessed October 16, 2019.

[50] California Air Resources Board, Air Quality and Land Use Handbook: A Community Health Perspective, April 2005, http://www.arb.ca.gov/ch/handbook.pdf, accessed October 16, 2019.

[51] The air district defines sensitive receptors as children, adults, and seniors who occupy or reside in residential dwellings, schools, daycare centers, hospitals, or senior-care facilities.

central business district of San Francisco, California. Station T located at 460 Jessie Street, and adjacent to the project site's eastern property line, houses six steam boilers. All boilers are fueled 100 percent by natural gas; however, No. 2 diesel is available as a backup fuel on some units. As a permitted source, the emissions from Station T are included in the city-wide health risk modeling and are part of the existing health risk described above. Vehicle emissions along the following major roadways also contribute to these risks and $PM_{2.5}$ concentrations: Market, Mission, and 6th streets. There are no other sources of mobile activity or otherwise "non-permitted" sources (e.g., rail yards, trucking distribution facilities, and high-volume fueling stations) within 1,000 feet of the project site.

Fine Particulate Matter

In April 2011, the U.S. EPA published the Policy Assessment for the Particulate Matter Review of the National Ambient Air Quality Standards. In this document, the U.S. EPA concludes that the then-current federal annual $PM_{2.5}$ standard of 15 $\mu g/m^3$ should be revised to a level within the range of 13 to 11 $\mu g/m^3$, with evidence strongly supporting a standard within the range of 12 to 11 $\mu g/m^3$. APEZs for San Francisco are based on the health-protective $PM_{2.5}$ standard of 11 $\mu g/m^3$, as supported by the U.S. EPA's Policy Assessment for the Particulate Matter Review of the National Ambient Air Quality Standards, although lowered to 10 $\mu g/m^3$ to account for uncertainty in accurately predicting air pollutant concentrations using emissions modeling programs.

Excess Cancer Risk

The 100-per-1-million-persons-exposed (100 excess cancer risk) criterion discussed in San Francisco Modeling of Air Pollution Exposure Zones is based on U.S. EPA guidance for conducting air toxic analyses and making risk management decisions at the facility and community-scale level.[52] As described by the air district, the U.S. EPA considers a cancer risk of 100 per 1 million or less to be within the "acceptable" range of cancer risk. Furthermore, in the 1989 preamble to the benzene National Emissions Standards for Hazardous Air Pollutants rulemaking,[53] the U.S. EPA states that it "…strives to provide maximum feasible protection against risks to health from hazardous air pollutants by (1) protecting the greatest number of persons possible to an individual lifetime risk level no higher than approximately one in one million and (2) limiting to no higher than approximately one in ten thousand [100 in one million] the estimated risk that a person living near a plant would have if he or she were exposed to the maximum pollutant concentrations for 70 years." The 100-per-1-million-excess-cancer-cases criterion is also consistent with the ambient cancer risk in the most pristine portions of the Bay Area, based on the air district's regional modeling.[54]

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[52] Air District, Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance, December 2009, p. 67, http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ proposed-thresholds-of-significance-dec-7-09.pdf?la=en, accessed October 16, 2019.

[53] 54 Federal Register 38044, September 14, 1989.

[54] Air District, Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance, December 2009, p. 67, http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ proposed-thresholds-of-significance-dec-7-09.pdf?la=en, accessed October 16, 2019.

Toxic Air Contaminant Monitoring

In addition to monitoring criteria pollutants, both the air district and the air board operate TAC monitoring networks in the air basin. These stations measure 10 to 15 TACs, depending on the station. The TACs selected for monitoring are those that traditionally have been found in the highest concentrations in ambient air and therefore can produce significant risk. The air district's ambient TAC monitoring station nearest to the project site is at 10 Arkansas Street, approximately 3 miles southeast of the project site. The ambient concentrations of carcinogenic TACs measured at the Arkansas Street station are presented in Table 4.2-4, 2017 Annual Average Ambient Concentrations of Carcinogenic Toxic Air Contaminants. The estimated cancer risk from a lifetime exposure (70 years) to these substances is also shown in Table 4.2-4.

When TAC measurements at this station are compared to ambient concentrations of various TACs for the Bay Area as a whole, the cancer risks associated with mean TAC concentrations in San Francisco are similar to those for the Bay Area as a whole. Therefore, the estimated average lifetime cancer risk resulting from exposure to TAC concentrations monitored at the San Francisco station does not appear to be any greater than that for the Bay Area as a region.

Table 4.2-4: 2017 Annual Average Ambient Concentrations of Carcinogenic Toxic Air Contaminants

Substance		
Gaseous TACs (ppb)	**Concentration**	**Cancer Risk per Million**
Acetaldehyde	0.69	10
Benzene	0.216	56
1,3-butadiene	0.036	39
Carbon tetrachloride	*	*
Chloroform	0.028	2
Para-dichlorobenzene	*	*
cis-1,3-dichloropropene	0.05	10
trans-1,3-dichloropropene	.05	10
Ethyl benzene	0.11	3
Ethylene dibromide	*	*
Ethylene dichloride	*	*
Formaldehyde	1.64	35
Methyl tertiary-butyl ether (MTBE)	*	*
Methylene chloride	0.114	1
Perchloroethylene	0.009	1
Trichloroethylene	0.010	0.3
Polycyclic Aromatic Hydrocarbons (ng/m³)		
Benzo(a)pyrene	*	*

Benzo(b)fluoranthene	*	*
Benzo(k)fluoranthene	*	*
Dibenz(a,h)anthracene	*	*
Indeno(1,2,3-cd)pyrene	*	*
Particulate TACs (ng/m³)		
Arsenic	0.92	9
Beryllium	0.150	1
Cadmium	0.70	9
Chromium (hexavalent)	*	*
Lead	*	*
Nickel	3.2	2
Total Risk for All TACs		188

Source: California Air Resources Board, Annual Toxics Summaries by Monitoring Site, 2017.
Notes: TACs = toxic air contaminants; ppb = part per billion; ng/m3 = nanograms per cubic meter; *= indicates that insufficient or no data were available to determine the value.

a. Measured at air district monitoring station at 10 Arkansas Street in San Francisco.

b. The potential cancer risk estimates reflect the risk assessment methodology finalized by the Office of Environmental Health Hazard Assessment on March 6, 2015. Information on the agency's new risk assessment methodology can be found at http://www.oehha.ca.gov/air/hot_spots/hotspots2015.html.

Roadway-Related Pollutants

Motor vehicles are responsible for a large share of air pollution, especially in California. Vehicle tailpipe emissions contain diverse forms of particles and gases, and vehicles also contribute to particulates by generating road dust through tire wear. Epidemiological studies have demonstrated that people living close to freeways or busy roadways have poorer health outcomes, including increased asthma symptoms and respiratory infections, and decreased pulmonary function and lung development in children. Air pollution monitoring conducted in conjunction with epidemiological studies has confirmed that roadway-related health effects vary with modeled exposure to particulate matter and NO_2. In traffic-related studies, the additional non-cancer health risk attributable to roadway proximity was seen within 1,000 feet of the roadway and strongest within 300 feet.[55] As a result, the air board recommends that new sensitive land uses not be located within 500 feet of a freeway or urban roads carrying 100,000 vehicles per day.

Diesel Particulate Matter

The air board identified DPM as a TAC in 1998 based primarily on evidence demonstrating cancer effects in humans. The exhaust from diesel engines includes hundreds of different gaseous and particulate components, many of which are toxic. Mobile sources such as trucks and buses are among the primary sources of diesel emissions, and concentrations of DPM are higher near heavily traveled

[55] California Air Resources Board, Air Quality and Land Use Handbook: A Community Health Perspective, April 2005, https://www.arb.ca.gov/ch/handbook.pdf, accessed October 16, 2019.

highways. The air board estimated that, as of 2000, the average Bay Area cancer risk from exposure to DPM, based on a population-weighted average ambient DPM concentration, is approximately 480 in 1 million, which is much higher than the risk associated with any other toxic air pollutant routinely measured in the region. The statewide risk from DPM, as determined by the air board, declined from 750 in 1 million in 1990 to 570 in 1 million in 1995; by 2000, the air board estimated the average statewide cancer risk from DPM at 540 in 1 million.[56,57]

In 2000, the air board approved a comprehensive Diesel Risk Reduction Plan to reduce diesel emissions from both new and existing diesel-fueled vehicles and engines. Subsequent regulations approved by the air board apply to new trucks and diesel fuel. With new controls and fuel requirements, a medium heavy-duty or heavy heavy-duty truck built in 2010 or later would have particulate exhaust emissions that are more than 50 times lower than a medium heavy-duty or heavy heavy-duty truck built before 1990.[58] The regulations are anticipated to result in an 80 percent decrease in statewide diesel health risk in 2020 compared with the diesel risk in 2000. Despite notable emission reductions, the air board recommends that proximity to sources of DPM emissions be considered in the siting of new sensitive land uses. The air board notes that these recommendations are advisory and should not be interpreted as defined "buffer zones" and that local agencies must balance other considerations, including transportation needs, the benefits of urban infill, community economic development priorities, and other quality-of-life issues. The position of the air board is that, with careful evaluation of exposure and health risks, as well as affirmative steps to reduce risks where necessary, infill, mixed-use, higher-density, and transit-oriented development, as well as other concepts that benefit regional air quality, can be compatible with protecting the health of individuals at the neighborhood level.[59]

Sensitive Receptors

Air quality does not affect every individual in the population in the same way, and some groups are more sensitive to adverse health effects than others. The population subgroups that are sensitive to the health effects of air pollutants include the elderly and the young; those with higher rates of respiratory disease, such as asthma and chronic obstructive pulmonary disease; and those with other environmental or occupational health exposures (e.g., indoor air quality) that affect cardiovascular or respiratory diseases. The air district defines sensitive receptors as children, adults, and seniors who

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[56] California Air Resources Board, California Almanac of Emissions and Air Quality – 2009 Edition, Table 5-44 and Figure 5-12, http://www.arb.ca.gov/aqd/almanac/almanac09/chap509.htm, accessed October 16, 2019.

[57] This calculated cancer risk value from ambient air exposure in the Bay Area can be compared against the lifetime probability of being diagnosed with cancer in the United States from all causes, which for men is more than 40 percent (based on a sampling of 17 regions nationwide), or more than 400,000 in 1 million, according to the American Cancer Society. American Cancer Society, Lifetime Risk of Developing or Dying from Cancer, last revised March 23, 2016, http://www.cancer.org/cancer/cancerbasics/ lifetime-probability-of-developing-or-dying-from-cancer, accessed October 16, 2019.

[58] Pollution Engineering, New Clean Diesel Fuel Rules Start, July 2006; Air Resources Board, Methods to Find the Cost-Effectiveness of Funding Air Quality Projects for Evaluating Motor Vehicle Registration Fee Projects and Congestion Mitigation and Air Quality Improvement Projects, Table 5-A, https://www.arb.ca.gov/planning/ tsaq/eval/evalTables.pdf, accessed October 16, 2019.

[59] California Air Resources Board, Air Quality and Land Use Handbook: A Community Health Perspective, April 2005, http://www.arb.ca.gov/ch/handbook.pdf, accessed October 16, 2019.

occupy or reside in residential dwellings, schools, daycare centers, hospitals, or senior-care facilities. Workers are not considered sensitive receptors because all employers must follow regulations set forth by the Occupational Safety and Health Administration to ensure the health and well-being of their employees.[60]

Existing sensitive receptors evaluated in this analysis include a representative sample of known residents (children and adults) in the surrounding neighborhood approximately 3,280 feet (1,000 meters) surrounding the project site. The closest residential receptors are located adjacent to the project site on Sixth Street. The closest non-residential sensitive receptors include the De Marillac Academy, located approximately 1,157 feet west of the project site and the San Francisco Christian Academy located approximately 1,237 feet northwest. The citywide modeling effort, discussed under San Francisco Modeling of Air Pollution Exposure Zones (below), evaluated all sensitive receptors as residential receptors because they have longer exposure durations based on the recommended health risk methodology from the Office of Environmental Health Hazard and Assessment, and are therefore expected to have greater health impacts.

4.2.3 Regulatory Framework

Federal Regulations

Federal Clean Air Act

The 1970 Clean Air Act (last amended in 1990) requires that regional planning and air pollution control agencies prepare a regional air quality plan to outline the measures by which both stationary and mobile sources of pollutants are planned to be controlled in order to achieve all standards by the deadlines specified in the act. These ambient air quality standards are intended to protect the public health and welfare, and they specify the concentration of pollutants (with an ample margin of safety) to which the public can be exposed without adverse health effects. They are designed in consideration of those segments of the public that are most susceptible to respiratory distress, including asthmatics, the very young, the elderly, people who are weak from other illness or disease, and persons who engage in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollution levels that are somewhat above ambient air quality standards without observing adverse health effects.

The current attainment status for the air basin, with respect to federal standards, is summarized in Table 4.2-2. In general, the air basin experiences low concentrations of most pollutants compared to federal standards, except for particulate matter (PM_{10} and PM_{25}), for which standards are exceeded periodically (see Table 4.2-1).

Emission Standards for New Off-Road Equipment

Before 1994, there were no standards to limit the amount of emissions from off-road equipment, which includes construction equipment. In 1994, the U.S. EPA established emission standards for hydrocarbons, NO_x, CO, and particulate matter to regulate new pieces of off-road equipment. These

[60] Air District, Recommended Methods for Screening and Modeling Local Risks and Hazards, May 2011, p. 12

emission standards came to be known as Tier 1. Since that time, increasingly more stringent Tier 2, Tier 3, and Tier 4 (interim and final) standards were adopted by the U.S. EPA as well as the air board. Each adopted emission standard was phased in over time. New engines built in or after 2015 across all horsepower sizes must meet Tier 4 final emission standards. In other words, new engines cannot exceed the emissions established for Tier 4 final emissions standards.

State Regulations

California Clean Air Act

Although the federal Clean Air Act established national ambient air quality standards, individual states retained the option to adopt more stringent standards and include other pollution sources. California established its own air quality standards when the federal standards were established. Because of the unique meteorological problems in California, there is considerable diversity between the state and national ambient air quality standards, as shown in Table 4.2-2. California ambient standards are as protective as national ambient standards and often more stringent. In 1988, California passed the California Clean Air Act (California Health and Safety Code section 39600 et seq.), which, like its federal counterpart, required the designation of areas as attainment or non-attainment areas, but based these designations on state ambient air quality standards rather than the federal standards. As indicated in Table 4.2-2, the air basin is designated "non-attainment" for state ozone, PM_{10}, and PM_{25} standards and "attainment" or "unclassified" for other pollutants.

Toxic Air Contaminants

In 2005, the air board approved a regulatory measure to reduce emissions of toxic and criteria pollutants by limiting the idling of new heavy-duty diesel vehicles. The regulations limit the idling of commercial motor vehicles (including buses and trucks) within 100 feet of a school or residential area to five consecutive minutes or aggregate periods of five minutes in any one hour. Buses or vehicles also must turn off their engines upon stopping at a school and must not turn their engines on more than 30 seconds before beginning to depart from a school. Also, in accordance with Senate Bill 352, adopted in 2003, public schools cannot be located within 500 feet of a freeway or busy traffic corridor (Education Code section 17213; Public Resources Code section 21151.8).

Tanner Air Toxics Act and Air Toxics Hot Spots Information and Assessment Act

TACs in California are regulated primarily through the Tanner Air Toxics Act (Assembly Bill 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (Assembly Bill 2588), also known as the Hot Spots Act. To date, the air board has identified more than 21 TACs and adopted the U.S. EPA's list of hazardous air pollutants as TACs.

California Air Resources Board's In-Use Off-Road Diesel-Fueled Fleets Regulation

In 2007, the air board adopted a regulation to reduce DPM and NO_X emissions from in-use off-road heavy-duty diesel vehicles in California.[61] The regulation imposes limits on vehicle idling and requires fleets to reduce emissions by retiring, replacing, repowering, or installing exhaust retrofits on older engines. In December 2010, major amendments were made to the regulation, including a delay of the compliance date for the first performance standards to no earlier than January 1, 2014.

Regional Regulations and Plans

Bay Area Air Quality Management District

The air district is the regional agency with jurisdiction over the nine-county region located in the air basin. The Association of Bay Area Governments, Metropolitan Transportation Commission, county transportation agencies, cities and counties, and various non-governmental organizations also participate in efforts to improve air quality through a variety of programs. These programs include the adoption of regulations and policies as well as implementation of extensive education and public outreach programs. The air district is responsible for maintaining air quality in the region. Specifically, the air district is responsible for monitoring ambient air pollutant levels and developing and implementing strategies to attain the applicable federal and state standards. However, the air district does not have authority to regulate emissions from motor vehicles. Specific rules and regulations adopted by the air district limit emissions generated by various stationary sources and identify specific pollution reduction measures that must be implemented in association with various activities. These rules regulate not only emissions of the six criteria air pollutants but also TACs through the air district's permitting process and standards of operation. Through this permitting process, including an annual permit review, the air district monitors the generation of stationary emissions and uses this information to develop its air quality plans. Any sources of stationary emissions constructed as part of the proposed project, such as the diesel emergency back-up generator, would be subject to air district rules and regulations. Both federal and state ozone plans rely heavily on stationary-source control measures set forth in the air district's rules and regulations.

2017 Bay Area Clean Air Plan

The air district adopted the 2017 Bay Area Clean Air Plan, Spare the Air, Cool the Climate, on April 19, 2017, to provide a regional strategy to improve Bay Area air quality and meet public health goals.[62] The control strategy described in the 2017 Bay Area Clean Air Plan includes a wide range of control measures to reduce emissions and lower ambient concentrations of harmful pollutants, safeguard public health by reducing exposure to air pollutants that pose the greatest health risk, and reducing GHG emissions to protect the climate. The 2017 Bay Area Clean Air Plan addresses four categories of pollutants: ground-level ozone and its key precursors, ROG and NO_X; particulate matter, primarily $PM_{2.5}$ and precursors to secondary $PM_{2.5}$; air toxics; and GHGs. The control

[61] California Code of Regulations, Title 13, sections 2449, 2449.1, 2449.2, and 2449.3.

[62] Air District, 2017 Bay Area Clean Air Plan: Spare the Air, Cool the Climate. A Blueprint for Clean Air and Climate Protection in the Bay Area, April 19, 2017, http://www.baaqmd.gov/~/media/files/planningand-research/plans/2017-clean-air-plan/attachment-a_-proposed-final-cap-vol-1-pdf.pdf?la=en, accessed October 16, 2019.

measures are categorized according to an economic sector framework that includes stationary sources, transportation, energy, buildings, agriculture, natural and working lands, waste management, and water measures.

Particulate Matter Plan

To fulfill federal air quality planning requirements, the air district adopted a $PM_{2.5}$ emissions inventory for 2010, which was presented at a public hearing on November 7, 2012. The 2017 Bay Area Clean Air Plan also included several measures for reducing particulate matter emissions from stationary sources and wood burning. On January 9, 2013, the U.S. EPA issued a final rule, determining that the Bay Area had attained the 24-hour $PM_{2.5}$ national ambient air quality standard and thereby suspended federal State Implementation Plan requirements for the air basin.[63] Despite this U.S. EPA action, the air basin will continue to be designated as a non-attainment area for the national 24-hour $PM_{2.5}$ standard until the air district submits a redesignation request and a maintenance plan to the U.S. EPA and the U.S. EPA approves the proposed redesignation.

2001 Ozone Attainment Plan

The air district adopted the Bay Area Ozone Attainment Plan in 2001 in response to the U.S. EPA's finding that the Bay Area had failed to attain the national ambient air quality standard for ozone. The plan includes a control strategy for ozone and its precursors to ensure a reduction in emissions from stationary sources, mobile sources, and the transportation sector.[64]

Regulation 2, Rule 5

The air district regulates back-up emergency generators, fire pumps, and other sources of TACs through its New Source Review (Regulation 2, Rule 2)[65] and New Source Review for Air Toxics (Regulation 2, Rule 54)[66] permitting process. Although emergency generators are intended to be used only during periods of power outages, monthly testing of each generator is required; however, the air district limits testing to no more than 50 hours per year. Each emergency generator is assumed to meet a minimum of Tier 2 emission standards (before control measures). As part of the permitting process, the air district requires implementation of best available control technology for toxics and

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[63] U.S. EPA, Determination of Attainment for the San Francisco Bay Area Nonattainment Area for the 2006 Fine Particle Standard, California, Determination Regarding Applicability of Clean Air Act Requirements, January 9, 2013, https://www.federalregister.gov/documents/2013/01/09/2013-00170/determination-of-attainment-forthe-san-francisco-bay-area-nonattainment-area-for-the-2006-fine, accessed October 16, 2019.

[64] Air District, Revised San Francisco Bay Area Ozone Attainment Plan for the 1-Hour National Ozone Standard, adopted October 24, 2001, http://www.baaqmd.gov/~/media/files/planning-and-research/plans/2001- ozone-attainment-plan/oap_2001.pdf, accessed October 16, 2019.

[65] Air District, Regulation 2, Permits, Rule 2, New Source Review, adopted December 6, 2017, http://www.baaqmd.gov/~/media/dotgov/files/rules/reg-2-rule-2-new-source-review/documents/rg0202.pdf ?la=en, accessed October 16, 2019.

[66] Air District, Regulation 2, Permits, Rule 5, New Source Review of Toxic Air Contaminants, adopted December 2016, http://www.baaqmd.gov/~/media/dotgov/files/rules/reg-2-rule-5-new-source-review-oftoxic-air-contaminants/documents/rg0205_120716-pdf.pdf?la=en, accessed October 16, 2019.

denies permission to construct or operate any new or modified source of TACs that exceeds a cancer risk of 10 in 1 million or a chronic or acute hazard index of 1.0.

Metropolitan Transportation Commission and Association of Bay Area Governments-Plan Bay Area

On July 18, 2013, the Metropolitan Transportation Commission and the Association of Bay Area Governments approved Plan Bay Area, which includes integrated land use and transportation strategies for the region. Plan Bay Area was developed through OneBayArea, a joint initiative between the Association of Bay Area Governments, the air district, the Metropolitan Transportation Commission, and the San Francisco Bay Conservation and Development Commission. The plan's transportation policies focus on maintaining the extensive transportation network and using the system more efficiently to handle the density in Bay Area transportation cores.[67] Assumptions for land use development are from local and regional planning documents. Emission forecasts in the 2017 Bay Area Clean Air Plan rely on projections regarding vehicle miles traveled, population, employment, and land use made by local jurisdictions during development of Plan Bay Area. In July 2017, the Metropolitan Transportation Commission and the Association of Bay Area Governments adopted an update to the 2013 plan: Plan Bay Area 2040. The updated plan addresses housing and economic issues and provides strategies concerning the area's transportation and land use goals. The plan's land use and transportation strategies achieve two mandated requirements for reductions in per-capita CO_2 emissions from passenger vehicles and adequate housing for the Bay Area's expected population growth through 2040.[68]

Local Regulations and Plans

San Francisco General Plan Air Quality Element

The San Francisco General Plan includes the 1997 air quality element.[69] The objectives specified by the city include the following:

- Objective 1: Adhere to state and federal air quality standards and regional programs.
- Objective 2: Reduce mobile sources of air pollution through implementation of the transportation element of the general plan.
- Objective 3: Decrease the air quality impacts of development by coordination of land use and transportation decisions.

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[67] Association of Bay Area Governments and Metropolitan Transportation Commission, Plan Bay Area: Regional Transportation Plan and Sustainable Communities Strategy for the San Francisco Bay Area, 2013–2040, adopted July 18, 2013, https://mtc.ca.gov/our-work/plans-projects/plan-bay-area-2040/plan-bay-area, accessed October 16, 2019.

[68] Association of Bay Area Governments and Metropolitan Transportation Commission, Plan Bay Area 2040: Regional Transportation Plan and Sustainable Communities Strategy for the San Francisco Bay Area, 2017–2040, adopted July 26, 2017, http://2040.planbayarea.org/reports and http://2040.planbayarea.org/cdn/farfuture/u_7TKELkH2s3AAiOhCyh9Q9QIWEZIdYcJzi2QDCZuIs/1510696833/sites/default/files/2017-11/Fi nal_Plan_Bay_Area_2040.pdf, accessed October 17, 2019.

[69] San Francisco Planning Department, San Francisco General Plan, air quality element, July 1997, updated in 2000

- Objective 4: Improve air quality by increasing public awareness regarding the negative health effects of pollutants generated by stationary and mobile sources.
- Objective 5: Minimize particulate matter emissions from road and construction sites.
- Objective 6: Link the positive effects of energy conservation and waste management to emission reductions.

San Francisco Construction Dust Control Ordinance

In 2008, the city adopted San Francisco Health Code article 22B and San Francisco Building Code section 106.A.3.2.6, which collectively constitute the Construction Dust Control Ordinance.[70] The ordinance requires all site preparation work, demolition, or other construction activities within San Francisco that have the potential to create dust or expose or disturb more than 10 cubic yards or 500 square feet of soil to comply with specified dust control measures whether or not the activity requires a permit from the Department of Building Inspection. For projects affecting more than 0.5 acre, the Construction Dust Control Ordinance requires that the project sponsor submit a dust control plan for approval by the San Francisco Department of Public Health prior to issuance of a building permit by the Department of Building Inspection.

Building permits will not be issued without written notification from the Director of Public Health stating that the applicant has a site-specific dust control plan, unless the director waives the requirement. The Construction Dust Control Ordinance requires project sponsors and contractors responsible for construction activities to control construction dust on the site or implement other practices that result in equivalent dust control that are acceptable to the Director of Public Health.

Dust suppression activities may include watering all active construction areas to prevent dust from becoming airborne; increased watering may be necessary whenever wind speeds exceed 15 miles per hour. Reclaimed water must be used if required by article 21, section 1100 et seq., of the San Francisco Public Works Code.

The project site is approximately 0.66 acres; therefore, the project sponsor would be required to prepare a dust control plan for approval by the San Francisco Department of Public Health.

San Francisco Health Code Provisions for Urban Infill Development (Article 38)

San Francisco adopted article 38 of the Health Code in 2008, with revisions that took effect in December 2014. The revised code requires sensitive land use developments within mapped APEZs to incorporate Minimum Efficiency Reporting Value 13 (MERV-13) or equivalent ventilation systems to remove particulates from outdoor air.[71] This regulation also applies to the conversion of uses to a sensitive use (such as a residential use, a senior care facility, or a daycare center). Article 38 is

[70] Ordinance 176-08, effective July 30, 2008, https://www.sfdph.org/dph/EH/Air/Dust.asp, accessed October 16, 2019.

[71] The MERV rating is a measurement scale designed by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers to rate the effectiveness of air filters. The scale is designed to represent the worst-case performance of a filter when dealing with particles in the range of 0.3 to 10 micrometers. The MERV rating system ranges from 1 to 16, with higher MERV ratings correspond to a greater percentage of particles captured on each pass.

applicable to the proposed project because the project site is located within a mapped APEZ, according to the San Francisco Department of Public Health.[72]

4.2.4 Impacts and Mitigation Measures

This section describes the impact analysis related to air quality for the proposed project. It describes the methods used to determine the impacts of the proposed project and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany the discussion of each identified significant impact. The potential for the proposed project to result in significant odor and greenhouse gas emissions is addressed in the initial study in Section E.7 Air Quality (pages 153-154) and Section E.8 Greenhouse Gas Emissions (pages 155-158). The initial study found impacts to these resource topics to be less than significant and therefore these topics are not addressed further in this EIR.

Significance Criteria

The criteria for determining the significance of impacts in this analysis are consistent with the environmental checklist in Appendix G of the State CEQA Guidelines, which has been modified by the planning department. For the purpose of this analysis, the following criteria were used to determine whether implementing the proposed project would result in a significant air quality impact:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Result in a cumulatively considerable net increase in any criteria pollutant for which the project region is in non-attainment status under an applicable federal, state, or regional ambient air quality standard; or
- Expose sensitive receptors to substantial pollutant concentrations.

Approach to Analysis

In general, a project could result in two types of potential air quality impacts: impacts from construction activities and impacts from project operations due to increased vehicle travel and new sources of emissions (e.g., natural gas combustion, one or more emergency diesel generators).

Direct impacts are separated into impacts from criteria air pollutant emissions, which are generally regional in nature, and impacts associated with exposure to $PM_{2.5}$ and TACs, which result in localized health impacts and expressed in terms of exposure to $PM_{2.5}$ concentrations and the probability of contracting cancer per 1 million persons exposed to TAC concentrations. The assessment of criteria air pollutant impacts addresses the second bulleted significance threshold identified above. The assessment of exposure to $PM_{2.5}$ concentrations and excess cancer risk address the third bulleted significance threshold identified above.

[72] San Francisco Department of Public Health, Air Pollution Exposure Zone Maps, https://www.sfdph.org/dph/files/EHSdocs/AirQuality/AirPollutantExposureZoneMap.pdf, accessed October 17, 2019.

The air quality analysis conducted for this project uses emission factors, models, and tools distributed by a variety of agencies, including the air board, the California Air Pollution Officers Association, the California Office of Environmental Health Hazard Assessment (OEHHA),[73] and the U.S. EPA. In addition, the analysis includes methodologies identified in the air district's *CEQA Air Quality Guidelines*.[74]

Project Features

The project site is located within an APEZ, which is an area designated by the San Francisco Department of Public Health as having poor air quality.[75] The proposed project's HVAC equipment is required to be designed to include a MERV-13 filtration system in accordance with Health Code article 38.

Air Quality Plan

The applicable air quality plan is the air district's 2017 Bay Area Clean Air Plan. Consistency with the 2017 Bay Area Clean Air Plan can be determined if the project would support the goals of the plan, would include applicable control measures from the plan, and would not disrupt or hinder implementation of any control measures from the plan. Consistency with the 2017 Bay Area Clean Air Plan is the basis for determining whether the proposed project would conflict with or obstruct implementation of an applicable air quality plan.

Criteria Air Pollutants

As described above under Regulatory Framework, the air basin experiences low concentrations of most pollutants with respect to federal and state standards and is designated as either in attainment or unclassified for most criteria pollutants, with the exception of ozone, $PM_{2.5}$, and PM_{10}, which are designated as non-attainment for the state and federal air quality standards.

By definition, regional air pollution is largely a cumulative impact in that no single project is large enough by itself to result in non-attainment of air quality standards. Instead, a project's individual emissions are considered to contribute to existing cumulative air quality conditions. If a project's contribution to cumulative air quality conditions is considerable, then the project's impact on air quality would be considered significant.[76]

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[73] CalEPA. 2015. Air Toxics Hot Spots Program, Risk Assessment Guidelines, Guidance Manual for Preparation of Health Risk Assessments, Office of Environmental Health Hazard Assessment, February, http://oehha.ca.gov/air/hot_spots/hotspots2015.html.

[74] Air District, CEQA Air Quality Guidelines, May 2017, http://www.baaqmd.gov/~/media/files/ planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en, accessed October 16, 2019.

[75] San Francisco Department of Public Health and San Francisco Planning Department, Air Pollutant Exposure Zone Map – Citywide, April 10, 2014, https://www.sfdph.org/dph/files/EHSdocs/AirQuality/AirPollutantExposureZoneMap.pdf, Accessed October 28, 2019.

[76] Air District, CEQA Air Quality Guidelines, May 2017, http://www.baaqmd.gov/~/media/files/ planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en, accessed October 16, 2019.

Table 4.2-5, Criteria Air Pollutant Thresholds, identifies quantitative criteria air pollutant significance thresholds. The table is followed by a discussion of each threshold. Projects that would result in criteria pollutant emissions that would be below these significance thresholds would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is designated as non-attainment under state or federal air quality standards. Both the average daily and maximum annual significance thresholds apply to operational emissions from a given project. Construction emissions are assessed solely with respect to the average daily thresholds, pursuant to the air district's guidance, because of the generally temporary nature of construction-related emissions.[77]

Table 4.2-5: Criteria Air Pollutant Thresholds

Pollutant	Average Daily Emissions (pounds per day)	Maximum Annual Emissions (tons per year)
ROG	54	10
NO_x	54	10
PM_{10}	82	15
$PM_{2.5}$	84	10
Fugitive Dust	Construction dust ordinance or other best management practices to control fugitive dust emissions	

Source: Air District, CEQA Air Quality Guidelines, May 2017.

The thresholds of significance for criteria air pollutants are based on substantial evidence, as presented in Appendix D of the air district's 2017 *CEQA Air Quality Guidelines* and 2009 *Revised Draft Options and Justification Report, CEQA Thresholds of Significance*.[78]

The potential for a project to result in a cumulatively considerable net increase in criteria air pollutants that may contribute to an existing or projected air quality violation is based on the emissions limits for stationary sources set by the federal and California Clean Air Acts. To ensure that new stationary sources do not cause or contribute to a violation of an air quality standard, the air district's Regulation 2, Rule 2, requires any new source that emits criteria air pollutants above a specified emissions limit to offset those emissions. For ozone precursors ROG and NO_x, the offset emissions level is an annual average of 10 tons per year (or 54 pounds per day).[79] These levels

[77] Ibid.

[78] Ibid., p. 2-1 to 2-3 and Appendix D; Air District, Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance, October 2009, p. 16-17.

[79] Air District, Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance, December 2009, p. 67, http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ proposed-thresholds-of-significance-dec-7-09.pdf?la=en, accessed October 16, 2019.

represent emissions below which new sources are not anticipated to contribute to an air quality violation or result in a considerable net increase in criteria air pollutants that could result in increased health effects.

The federal New Source Review program was created under the federal Clean Air Act to ensure that stationary sources of air pollution are constructed in a manner that is consistent with attainment of federal health-based ambient air quality standards. For PM_{10} and $PM_{2.5}$, the emissions limit under the New Source Review program is 15 tons per year (82 pounds per day) and 10 tons per year (54 pounds per day), respectively. These emissions limits represent levels below which a source alone is not expected to have a significant impact on air quality.[80]

Although the regulations specified above apply to new or modified stationary sources, land use development projects generate ROG, NO_x, PM_{10}, and $PM_{2.5}$ emissions as a result of increases in vehicle trips, energy use, the application of architectural coatings, and construction activities. Therefore, the identified thresholds can be applied to the construction and operational phases of land use projects. Projects that would result in emissions below the thresholds would not be considered projects that would contribute considerably to non-attainment criteria air pollutants.

Fugitive dust emissions are typically generated during construction phases. Studies have shown that the application of best management practices at construction sites significantly controls fugitive dust,[81] and individual measures have been shown to reduce fugitive dust by anywhere from 30 to 90 percent.[82] The air district has identified eight best management practices to control fugitive dust emissions from construction activities.[83] San Francisco's Construction Dust Control Ordinance requires a number of fugitive dust control measures to ensure that construction projects do not result in visible dust. The project would be subject to the requirements of the Construction Dust Control Ordinance, which is the basis for determining the significance of air quality impacts from fugitive dust emissions.

Other Criteria Pollutants

Regional concentrations of CO and SO_2 in the Bay Area have not exceeded the state standards for more than two decades. The primary source of CO emissions from development projects is vehicle traffic. Construction-related SO_2 emissions represent a negligible portion of total basin-wide emissions, and construction-related CO emissions represent less than 5 percent of the Bay Area's total basin-wide CO emissions. As discussed previously, the Bay Area is in attainment for both CO and SO_2. Furthermore, the air district has demonstrated, based on modeling, that to exceed the California ambient air quality standard of 9.0 ppm (8-hour average) or 20.0 ppm (1-hour average) for CO,

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[80] Ibid, p. 16.

[81] Western Regional Air Partnership, WRAP Fugitive Dust Handbook, September 7, 2006, wrapair.org/forums/dejf/fdh/content/FDHandbook_Rev_06.pdf, accessed October 17, 2019.

[82] Air District, Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance, December 2009, p. 27, http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ proposed-thresholds-of-significance-dec-7-09.pdf?la=en, accessed October 16, 2019.

[83] Such as a tunnel, underpass, or urban canyon between buildings where a free flow of air currents can be impeded.

project traffic in addition to existing traffic would need to exceed 44,000 vehicles per hour at affected intersections (or 24,000 vehicles per hour where vertical and/or horizontal mixing is limited). The transportation analysis included as an appendix in the initial study (see Appendix B of the initial study) indicates that the intersection in the project area with the greatest vehicle volume would be the 5th and Mission, with peak-hour traffic volumes of 4,440 vehicles per hour in 2040 with the project and future traffic growth. This is less than 44,000 vehicles per hour. Given the Bay Area's attainment status and the limited CO and SO_2 emissions that could result from project implementation, the proposed project would not result in a cumulatively considerable net increase in CO or SO_2, and a quantitative analysis is not required.

Local Health Risks and Hazards

As discussed previously, the proposed project's onsite receptors and the nearest offsite receptors are located within an area that currently meets the APEZ criteria. Therefore, existing health risk impacts to sensitive receptors are significant. A health risk assessment was conducted to determine whether the proposed project's contribution to existing health risk impacts would be considerable. For project's located within the APEZ, a considerable contribution is defined as an increased cancer risk of 7.0 per million persons exposed or $PM_{2.5}$ concentrations of 0.2 $\mu g/m^3$. These thresholds are more stringent than the air district's thresholds for determining a cumulatively considerable contribution to health risks, but appropriate for locations that experience higher levels of air pollution and associated health risk.[84,85]

As part of the environmental review for the proposed project, a health risk assessment was conducted to provide quantitative estimates of health risks from exposure to TACs as a result of the proposed project. The health risk assessment examines all sensitive receptors within 1,000 meters of the project boundary. Figure 19 shows the extent of the area studied for localized air quality impacts.

In order to evaluate health impacts to onsite and offsite sensitive receptors, receptors were placed at locations collocated with the receptors used in the citywide health risk modeling and within 1,000 meters of the proposed project site. This approach of collocating sensitive receptor locations with those in the citywide health risk modeling facilitates the assessment of cumulative health risks and $PM_{2.5}$ concentrations.

Exposure assessment guidance established the assumption that people in residences would be exposed to air pollution 24 hours per day, 350 days per year for 30 years as the basis for calculating cancer risk in any health risk assessment. Therefore, the assessment of residents' air pollutant exposure typically results in the greatest adverse health outcomes of all population groups. In accordance with OEHHA guidance, the estimated excess lifetime cancer risk for a resident was

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[84] Air District, CEQA Air Quality Guidelines, May 2017, http://www.baaqmd.gov/~/media/files/ planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en, accessed October 29, 2019.

[85] The air district's thresholds for determining a considerable health risk contribution from $PM_{2.5}$ emissions are 0.3 $\mu g/m^3$ and an excess cancer risk of 10 per million persons exposed. The city's $PM_{2.5}$ significance threshold of 0.2 $\mu g/m^3$ is based on a 0.28 percent increase in non-injury mortality or an increase of about twenty-one excess deaths per 1,000,000 population per year from non-injury causes in San Francisco. This information is based on Jerrett M et al., Spatial Analysis of Air Pollution and Mortality in Los Angeles, Epidemiology 16 (2005): 727–736. The cancer risk has been proportionally reduced to result in a significance criteria of 7 per million persons exposed.

adjusted using the age sensitivity factors recommended in OEHHA's Technical Support Document for Cancer Potency Factors. This approach accounts for an "anticipated special sensitivity to carcinogens" of infants and children. Cancer risk estimates were weighted by a factor of 10 for exposures that occur from the third trimester of pregnancy to 2 years of age (labeled by OEHHA as "3rd trimester" and "0 < 2") and by a factor of

Figure 19: Project Boundary and Air Quality Modeling Extent

three for exposures that occur from 2 through 15 years of age ("2 < 16"). No weighting factor (i.e., an age sensitivity factor of one, which is equivalent to no adjustment) was applied to ages 16 and older.

Cumulative Impacts

As discussed above, the contribution of a project's individual air emissions to regional air quality impacts is, by its nature, a cumulative effect. Emissions from reasonably foreseeable future projects in the vicinity would contribute to adverse regional air quality impacts on a cumulative basis. No single project by itself would be large enough to result in non-attainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulative air quality conditions.[86] As described above, the project-level thresholds for criteria air pollutants are based on levels that would not be anticipated to result in a considerable contribution to non-attainment criteria air pollutants. Therefore, if a project's emissions are below the project-level thresholds, the project would not result in a considerable contribution to cumulative regional air quality impacts. As a result, no separate cumulative impact statement is included for the project's impact with respect to regional air quality.

Similarly, the health risk assessment takes into account the cumulative contribution of localized health risks to sensitive receptors from sources included in the citywide health risk modeling plus the proposed project's sources. The cumulative health risk analysis provides a qualitative and semi-quantitative discussion of additional health risks that may occur as a result of reasonably foreseeable cumulative projects. However, because the project site is already located within an air pollutant exposure zone, cumulative health risks are significant and an exceedance of the project-level thresholds discussed above (an increased cancer risk of 7.0 per million persons exposed or $PM_{2.5}$ concentrations of 0.2 $\mu g/m^3$) would constitute a considerable contribution to cumulative health risks.

Impact Evaluation

The following analysis evaluates potential air quality impacts, including those related to criteria air pollutants and toxic air contaminants, that could result from construction and operation of the proposed project.

Impact AQ-1: During construction, the proposed project would not result in a cumulatively considerable net increase in non-attainment criteria air pollutants. (*Less than Significant*)

Construction activities required for the proposed project would include site preparation/demolition, excavation/shoring, foundation/below grade construction, building construction, exterior finishing, and site work/paving. These construction activities would require the use of heavy trucks, excavating and grading equipment, material loaders, dozers, and other mobile and stationary construction equipment. Fugitive dust emissions during construction would be generated during ground-disturbing activities, materials handling, and mobile equipment use on unimproved surfaces. Fugitive ROG emissions would be generated during application of architectural coatings. Equipment

[86] Air District, CEQA Air Quality Guidelines, May 2017, http://www.baaqmd.gov/~/media/files/ planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en, accessed October 29, 2019

exhaust would be generated from construction worker vehicle trips, material truck trips, and the operation of construction equipment onsite.

Demolition and construction of the proposed project are estimated to take approximately 36 months from groundbreaking, which is anticipated to occur in 2021. The proposed project would be constructed in one continuous phase and all construction materials would be accommodated onsite.

Fugitive Dust

Project-related demolition, excavation, grading, and other construction activities may cause wind-blown dust that could contribute particulate matter to the local atmosphere. Despite the established federal standards for air pollutants and ongoing implementation of state and regional air quality control plans, air pollutants continue to have impacts on human health throughout the country.

Dust can be an irritant, causing watery eyes or irritating the lungs, nose, and throat. Depending on exposure, particulate matter in general can cause adverse health effects, as can specific contaminants such as lead or asbestos, which may be constituents of dust.

The project site is approximately 0.5 acre and is therefore subject to a dust control plan as required by the Construction Dust Control Ordinance. The project sponsor must submit a site-specific dust control plan to the health department and the building department will not issue a building permit without written notification from the Director of Public Health stating that the applicant has an approved site-specific dust control plan.

Because the project site would be within 1,000 feet of sensitive receptors, the site-specific dust control plan submitted to the Director of Public Health would be required to include a map showing the locations of sensitive receptors. This plan also must contain the following measures, as specified in section 106.3.2.6.3 of the building code: designate an individual who will be responsible for monitoring compliance with dust control requirements, water all active construction areas to prevent dust from becoming airborne, use reclaimed water whenever possible, wet sweep or vacuum streets and sidewalks during excavation and dirt-moving activities, cover any inactive stockpiles, and use dust enclosures, curtains, and dust collectors as necessary. In addition, the site-specific dust control plan may require the project sponsor to wet down areas with soil at least three times per day; provide an analysis of wind direction and install upwind and downwind particulate dust monitors; record particulate monitoring results; hire an independent third party to conduct inspections and keep a record of those inspections; establish shut-down conditions, based on wind, soil migration, etc.; establish a hotline for surrounding community members who may be affected by project-related dust; limit the area subject to construction activities at any one time; install dust curtains and windbreaks at the property lines, as necessary; limit the amount of soil in hauling trucks to the size of the truck bed and secure with a tarpaulin; enforce a 15-mile-per-hour speed limit for vehicles entering and exiting construction areas; sweep affected streets with water sweepers at the end of the day; install and use wheel washers to clean truck tires; terminate construction activities when winds exceed 25 miles per hour; and sweep off adjacent streets to reduce particulate emissions. Inactive stockpiles (where no disturbance occurs for more than seven days) with more than 10 cubic yards or 500 square feet of excavated material, backfill material, import material, gravel, sand, road base, or soil must be covered with a 10-millimeter (0.01-inch) polyethylene plastic (or equivalent) tarpaulin that has been secured (equivalent soil stabilization techniques may also be used). Reclaimed water must be used for dust suppression watering, when required by article 21, section 1100 et seq., of the San Francisco

Public Works Code. Contractors must provide as much water as necessary to control dust (without creating runoff in any area of land clearing and/or earth movement). The San Francisco Public Utilities Commission operates a recycled water fill station at the Southeast Water Pollution Control Plant, which provides recycled water at no charge.

Implementation of dust control measures, in compliance with the regulations and procedures set forth by the Construction Dust Control Ordinance, would ensure that the potential dust-related construction air quality impacts of the proposed project would be less than significant, and no mitigation measures are necessary.

Criteria Air Pollutants

Construction emissions would be generated by many different sources, including off-road construction equipment, such as excavators, loaders, backhoes, lifts, paving equipment, and cranes, and on-road trucks. The predominant source of emissions of NO_X, PM_{10}, and $PM_{2.5}$ would be combustion emission from off-road equipment. The predominant source of ROG emissions would be off-gassing emissions from the application of architectural coatings.

Project-specific construction equipment inventories that include details on the type, quantity, construction schedule and hours of operation anticipated for each piece of equipment for each construction phase were used to estimate construction emissions. Because there is typically a delay between new emission factors being developed and incorporated into air quality models, the air district-approved California Emissions Estimator Model (CalEEMod®) has not been updated to incorporate the latest air board OFFROAD2017 and the air board's Emission Factor (EMFAC) 2017 emission factors. As such, the air quality analysis used methodologies consistent with CalEEMod® to estimate equipment emissions and created spreadsheets incorporating the air board's emission factors and load factors from OFFROAD2017 to estimate construction emissions and EMFAC2017 to estimate on-road mobile source emissions for diesel fueled equipment. The analysis is based on the anticipated project-specific off-road equipment types and hours provided by the project sponsor (included in EIR Appendix B). CalEEMod off-road default horsepower and load factors were used to calculate emissions from each piece of equipment.

On-road haul truck traffic would consist primarily of material deliveries to the site and the removal of demolition and excavation materials. Approximately 55,850 cubic yards of soil would be hauled away from the entire site primarily during the first two phases of the construction program, resulting in approximately 2,075 round trips (4,150 one-way trips). These haul trips, which would include excavated soil, demolition spoils, and material removed during site work, were allocated to the demolition, excavation, and site work components of each phase of the construction program. Additional trucks would be required for concrete deliveries during building construction. Up to 7 material/vendor trips per day for the duration of each phase of the construction program were assumed. Truck routes may vary, but the differences in potential routes are not expected to result in a material difference in air quality impacts because total criteria air pollutant emissions would be virtually equivalent, regardless of which route is selected. The CalEEMod default trip lengths were revised from 20 miles to 40 miles because final locations for material and soil import/export have not been determined and a 40-mile trip length would provide a conservative estimate of emissions associated with disposal locations within the region.

Emission factors for on-road truck traffic were developed using EMFAC2017, the air board's on-road mobile emissions program, with the same methodology used to develop CalEEMod trucking emission factors.

More information on emissions calculations can be found in Appendix B. Construction of the proposed project would occur over a period of approximately 36 months. The construction schedule is discussed in Section 2.0, Project Description.

Total construction emissions by phase and year were calculated and divided by 763 construction days to derive average daily emissions for comparison against applicable significance thresholds.

Table 4.2-6, Criteria Air Pollutant Emissions from the Proposed Project during Construction, presents the construction-period emissions that would result from the proposed project. The maximum average daily emission rate during construction of the proposed project is compared to significance thresholds to establish a significance determination. Specifically, Table 4.2-6 indicates that maximum average daily emissions (in pounds per day), would amount to an increase of 12.25 lbs/day for ROG, 18.69 lbs/day for NO_X, 1.46 lbs/day for PM_{10} (exhaust), and 0.98 lbs/day for $PM_{2.5}$ (exhaust), each of which is below the respective thresholds of 54 lbs/day for ROG, NO_X, and $PM_{2.5}$ and 82 lbs/day for PM_{10}. Therefore, as shown in Table 4.2-6, construction-related criteria air pollutant emissions for the duration of the construction program, would be less than significant, and no mitigation measures are necessary.

Table 4.2-6: Criteria Air Pollutant Emissions from the Proposed Project During Construction

Year	Annual Emissions (Lbs/Year)				
	Source	ROG	NOx	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
2021	Off-road	34.34	337.01	13.75	12.65
	On-road	55.44	1,583.43	60.62	35.54
2021 Subtotal		**89.78**	**1,920.44**	**74.37**	**48.18**
2022	Off-road	314.60	2,688.62	170.43	156.80
	On-road	40.23	749.10	111.91	0.00
	Fugitive PM	0.00	0.00	0.00	0.00
2022 Subtotal		**354.83**	**3,437.72**	**282.35**	**156.80**
2023	Off-road	461.27	3,789.04	236.08	217.19
	On-road	68.43	1,190.18	204.63	91.14
	Architectural Coating	1,430.60	0.00	0.00	0.00
2023 Subtotal		**1,960.31**	**4,979.22**	**440.70**	**308.33**
2024	Off-road	404.86	3,320.94	202.74	186.52
	On-road	36.69	599.19	116.34	51.28
	Architectural Coating	6,499.20	0.00	0.00	0.00
2024 Subtotal		**6,940.76**	**3,920.13**	**319.08**	**237.80**
Grand Total		**9,345.68**	**14,257.52**	**1,116.50**	**751.11**
Average Daily Emissions		12.25	18.69	1.46	0.98
Significance Threshold		54	54	82	54
Above Threshold?		No	No	No	No

Source: Stantec 2020, Table 3, Appendix B

Notes:

1. Average daily emissions based on 763 total working days.
2. Totals may not add due to rounding.

Impact AQ-2: At project buildout, operation of the proposed project would not result in a cumulatively considerable net increase in non-attainment criteria air pollutants. (*Less than Significant*)

Operation of the proposed project would have the potential to create air quality impacts, which would be associated primarily with mobile, area, and energy sources. Mobile source emissions would occur from increases in vehicle traffic, including daily resident-access, visitor, delivery truck, and employee vehicle trips. Area source emissions include landscaping equipment, architectural coatings and the associated off-gassing during reapplication, and consumer products (e.g., solvents, cleaning supplies, cosmetics, toiletries). Energy source emissions include natural gas combustion for space and water heating. The proposed project would also include a diesel emergency generator, which would be permitted through the air district. Each of these sources was taken into account in calculating the proposed project's long-term operational emissions.

Area-source and energy emissions were calculated using CalEEMod, based on the type and size of land uses associated with the proposed project. Area sources include hearths, consumer products, architectural coatings, and landscaping equipment. San Francisco County–specific consumer product emission rate data were used in the CalEEMod model to estimate daily ROG (or VOC) emissions.

Mobile-source emissions would result from vehicle trips (auto and truck) associated with the proposed project. EMFAC2017 emission factors were used to estimate mobile-source emissions consistent with CalEEMod methodologies. Trip lengths for the proposed project are 2.3 miles for residential vehicle and 0.995 miles for retail (employee and customer) vehicle trips, consistent with the data regarding daily vehicle miles traveled per capita for residential and commercial land for the Traffic Analysis Zone (TAZ) the project site is located in.

The methodology for quantifying operational emissions is further described in Appendix B. The average daily and maximum annual emissions associated with operation of the proposed project is shown in Table 4.2-7, Criterial Air Pollutant Emissions from the Proposed Project During Operations, with results showing the contribution of emissions by each source. As shown in Table 4.2-7, the proposed project would result in criteria air pollutant emissions well below the significance thresholds with maximum ROG emissions of 13.04 lbs/day, NOx emission of 4.46 lbs/day, and PM_{10} and $PM_{2.5}$ emissions of 0.39 lbs/day. Therefore, the proposed project would not result in a cumulatively considerable net increase in non-attainment criteria air pollutants and this impact would be less than significant.

Table 4.2-7: Criteria Air Pollutant Emissions from the Proposed Project During Operations

Source	Maximum Annual Emissions (tons/year)			
	ROG	NOx	PM_{10}	$PM_{2.5}$
Area	2.40	0.04	0.02	0.02
Energy	0.02	0.19	0.02	0.02
Generators	0.11	0.49	0.02	0.02
Traffic	0.01	0.05	0.00	0.00
Total Emissions (tons/year)	**2.38**	**0.77**	**0.05**	**0.05**
Significance Threshold (tons/year)	10	10	15	10
Above Threshold?	No	No	No	No
Average Daily Emissions (lbs/day)				
Area	12.82	0.44	0.21	0.21
Energy	0.12	1.03	0.08	0.08
Generators	0.60	2.70	0.09	0.09
Traffic	0.08	0.28	0.00	0.00
Total Emissions (lbs/day)	**13.04**	**4.46**	**0.39**	**0.39**
Significance Threshold (lbs/day)	54	54	82	54
Above Threshold?	No	No	No	No

Source: Stantec, 2019, Table 4, Appendix B

Note: Totals may not add due to rounding.

Impact AQ-3: Construction and operation of the proposed project would generate toxic air contaminants, including DPM, at levels that would expose sensitive receptors to substantial pollutant concentrations. (*Less than Significant with Mitigation*)

Demolition, excavation, grading, foundation construction, building construction, and interior and exterior work would affect localized air quality during the construction phases of the proposed project. Short-term emissions from construction equipment during these site preparation activities would include directly emitted particulate matter ($PM_{2.5}$ and PM_{10}) and TACs such as DPM. In addition, the long-term emissions from the proposed project's mobile and stationary sources, as described under Impact AQ-1 and Impact AQ-2, would include particulate matter ($PM_{2.5}$) and TACs such as DPM and some compounds or variations of ROGs. A health risk assessment was conducted for the proposed project to evaluate the potential health risks to nearby residents resulting from project implementation.

Methodology

In general, a health risk assessment is used to determine if a particular chemical poses a significant risk to human health and, if so, under what circumstances. For the proposed project, a health risk assessment was conducted to identify health risks to offsite and onsite sensitive receptors due to inhalation of $PM_{2.5}$ and TACs. The health risk assessment prepared for the proposed project focused on $PM_{2.5}$ and TACs (primarily DPM) because these types of air pollutants, more so than others, pose substantial health impacts at the local level. A detailed discussion of the methods used for the health risk assessment is provided in the air quality analysis included in EIR Appendix B.

The health risk analysis estimated DPM (a TAC) and $PM_{2.5}$ emissions from project construction and operational emissions using emission factors from OFFROAD 2017 and EMFAC 2017 in accordance with methodologies provided in CalEEMod. Near-field air dispersion modeling of DPM and $PM_{2.5}$ emissions from project sources was conducted using the U.S. EPA's AERMOD model (version 19191). The DPM and $PM_{2.5}$ emissions rates were used as AERMOD inputs to predict worst-case DPM and $PM_{2.5}$ concentrations at sensitive receptor locations, respectively. AERMOD is also the model that was used by the air district and the city in the citywide health risk assessment modeling discussed above under Environmental Setting. DPM concentrations were then used to determine the lifetime cancer risk resulting from the proposed project at sensitive receptor locations, based on the health risk assessment methodology published by the Office of Environmental Health Hazard Assessment in 2015. Construction activities were modeled as area sources; haul trips were modeled as adjacent volume sources.

AERMOD requires inputs such as source parameters, meteorological parameters, topography information, and receptor parameters. The exposure parameters were obtained using risk assessment guidelines from the California Environmental Protection Agency (CalEPA) and the air district. Exposure parameters include daily breathing rate, exposure time, exposure frequency, exposure duration, averaging time, and inhalation intake factors (refer to Appendix B for details regarding the AERMOD modeling inputs, toxics analysis, and exposure parameters).

Offsite residents were assumed to be present at one location for the entire construction period and exposure was assumed to begin for a child in the third trimester in utero at the start of construction in year 2021. Offsite residents were assumed to be exposed to construction emissions for the entire duration of construction activity and then operational emissions until the resident reached 30 years of

age. Onsite residents were assumed to be present after completion of construction in 2024 and therefore not exposed to the project's construction emissions but were assumed to be exposed to 30 years of operational emissions from the project. Offsite and onsite residents were assumed to be present at one location for 30 years, consistent with OEHHA guidance. $PM_{2.5}$ concentrations are evaluated on an annual average basis.

The DPM and $PM_{2.5}$ concentrations were modeled separately by year of construction to account for emissions specific to construction activities occurring in specific time periods. The excess lifetime cancer risk and $PM_{2.5}$ concentrations from project construction and operational emissions were added to the existing health risks from the citywide health risk assessment database at each receptor point to determine the existing plus project cancer risk and $PM_{2.5}$ concentration at the maximally exposed sensitive receptor.

Results for Offsite Sensitive Receptors

The locations of modeled offsite sensitive receptors are presented in Figure 19, Project Boundary and Modeling Extent. The maximum estimated excess lifetime cancer risk from the project (assuming a receptor was born at the beginning of construction at offsite locations) is presented in Table 4.2-8, Lifetime Cancer Risk and $PM_{2.5}$ Concentrations at Maximally Exposed Offsite Receptors.

Existing cancer risk and $PM_{2.5}$ concentrations are available from San Francisco's citywide health risk assessment database, the most recent comprehensive citywide health risk assessment available to date. As shown in Table 4.2-8, the combination of unmitigated construction-related and operational emissions at the maximum impacted offsite sensitive receptor would result in an increased cancer risk of 65 in 1 million, which is above the 7 in 1 million significance threshold for projects in the APEZ. Therefore, the proposed project would result in a significant cancer risk impact at offsite sensitive receptors. Also, as shown in Table 4.2-8, the proposed project would contribute $PM_{2.5}$ concentrations of 0.3 $\mu g/m^3$, which is above the 0.2 $\mu g/m^3$ significance threshold. Therefore, $PM_{2.5}$ concentrations at offsite sensitive receptors would also be significant.

Table 4.2-8. Existing Plus Project Lifetime Cancer Risk and $PM_{2.5}$ Concentration at Maximally Exposed Offsite Receptors

Comment [MM4]: Fix formatting (i.e., no header row on next page) once finalize.

Source	Unmitigated		Mitigated	
	Cancer Risk[a] (in 1 million)	$PM_{2.5}$ concentration ($\mu g/m^3$)	Cancer Risk[a] (in 1 million)	$PM_{2.5}$ concentration ($\mu g/m^3$)
Existing Background[b]	143	9.6	143	9.6
Project Construction	65.2	0.3	6.43	0.031
Project Operation (diesel generator and traffic)	0.08	0.0004	0.08	0.0004
Project Contribution Subtotal	**65.28**	**0.3004**	**6.51**	**0.0314**
Total with Background	208.28	9.9004	149.51	9.6314
Project Contribution Significance Threshold	7	0.2	7	0.2

Source	Unmitigated		Mitigated	
	Cancer Risk[a] (in 1 million)	$PM_{2.5}$ concentration ($\mu g/m^3$)	Cancer Risk[a] (in 1 million)	$PM_{2.5}$ concentration ($\mu g/m^3$)
Above Threshold?	**Yes**	**Yes**	**No**	**No**

Source: Stantec 2020, Table 6, Appendix B

Notes:

a. The cancer risks were estimated using the information specified in ~~EIR~~ Appendix B.

b. Background cancer risk and $PM_{2.5}$ concentrations were estimated from the 2014 values in the citywide health risk assessment database.

c. Stantec confirmed that the sources at Station T are include in the CRRP HRA and part of existing background health risk.

Comment [MM5]: Spell out?

To address the excess cancer risk and $PM_{2.5}$ concentrations during construction of the proposed project, Mitigation Measure M-AQ-3a, Off-Road Construction Equipment Emissions Minimization and Mitigation Measure M-AQ-3b, Diesel Backup Generator Specifications shown below, have been identified and would apply to the proposed project. Table 4.2-8 also shows the lifetime cancer and $PM_{2.5}$ concentrations risk under the mitigated scenario.

Mitigation Measures

M-AQ-3a: Off-road Construction Equipment Emissions Minimization.

The project sponsor shall comply with all of the following:

E. *Engine Requirements.*

Comment [MM6]: Why does the numbering start at E and at 6? Seems should be A and 1, then F should be B and start with 1 under that again, etc.,

6. All off-road equipment greater than 25 hp and operating for more than 20 total hours over the entire duration of construction activities shall have engines that meet or exceed either: (a) Tier 4 Interim or Tier 4 Final off-road emission standards, or (b) U.S. Environmental Protection Agency (USEPA) or air board Tier 2 off-road emission standards *and* have been retrofitted with an air board Level 3 Verified Diesel Emissions Control Strategy (VDECS).

Comment [MM7]: If Tier 4 is what was modeled and shown to work for the mitigated levels, should this be deleted since only way can show consistent with results of analysis for mitigated levels is by using Tier 4 Final?

7. Where access to alternative sources of power are available, portable diesel engines shall be prohibited.
8. Diesel engines, whether for off-road or on-road equipment, shall not be left idling for more than two minutes, at any location, except as provided in exceptions to the applicable state regulations regarding idling for off-road and on-road equipment (e.g., traffic conditions, safe operating conditions). The project sponsor shall post legible and visible signs in English, Spanish, and Chinese, in designated queuing areas and at the construction site to remind operators of the two-minute idling limit.
9. Off-road

Comment [MM8]: Something is missing.

10. The project sponsor shall instruct construction workers and equipment operators on the maintenance and tuning of construction equipment and require that such workers and operators properly maintain and tune

equipment in accordance with manufacturer specifications.

F. *Waivers.*

3. The Planning Department's Environmental Review Officer or designee (ERO) may waive the alternative source of power requirement of Subsection (A)(2) if an alternative source of power is limited or infeasible at the project site. If the ERO grants the waiver, the project sponsor must submit documentation that the equipment used for onsite power generation meets the requirements of Subsection (A)(1).

4. The ERO may waive the equipment requirements of Subsection (A)(1) if: a particular piece of off-road equipment with an air board Level 3 VDECS is technically not feasible; the equipment would not produce desired emissions reduction due to expected operating modes; installation of the equipment would create a safety hazard or impaired visibility for the operator; or, there is a compelling emergency need to use off-road equipment that is not retrofitted with an ARB Level 3 VDECS. If the ERO grants the waiver, the project sponsor must use the next cleanest piece of off-road equipment, according to Table AQ-1 below. Additionally, the project sponsor must demonstrate that use of the alternative equipment would not result in a cancer risk from project construction and operation that exceeds 7 per one million exposed.

Table AQ-1– Off-Road Equipment Compliance Step-down Schedule

Compliance Alternative	Engine Emission Standard	Emissions Control
1	Tier 2	ARB Level 2 VDECS
2	Tier 2	ARB Level 1 VDECS
3	Tier 2	Alternative Fuel*

How to use the table: If the ERO determines that the equipment requirements cannot be met, then the project sponsor would need to meet Compliance Alternative 1. If the ERO determines that the project sponsor cannot supply off-road equipment meeting Compliance Alternative 1, then the project sponsor must meet Compliance Alternative 2. If the ERO determines that the project sponsor cannot supply off-road equipment meeting Compliance Alternative 2, then the project sponsor must meet Compliance Alternative 3.

*Alternative fuels are not a VDECS.

G. *Construction Emissions Minimization Plan.* Before starting on-site construction activities, the project sponsor shall submit a Construction Emissions Minimization Plan (Plan) to the ERO for review and approval. The Plan shall state, in reasonable detail, how the project sponsor will meet the requirements of Section A.

4. The Plan shall include estimates of the construction timeline by phase, with a

description of each piece of off-road equipment required for every construction phase. The description may include, but is not limited to: equipment type, equipment manufacturer, equipment identification number, engine model year, engine certification (Tier rating), horsepower, engine serial number, and expected fuel use and hours of operation. For VDECS installed, the description may include: technology type, serial number, make, model, manufacturer, Air board verification number level, and installation date and hour meter reading on installation date. For off-road equipment using alternative fuels, the description shall also specify the type of alternative fuel being used.

5. The project sponsor shall ensure that all applicable requirements of the Plan have been incorporated into the contract specifications. The Plan shall include a certification statement that the project sponsor agrees to comply fully with the Plan.
6. The project sponsor shall make the Plan available to the public for review on-site during working hours. The project sponsor shall post at the construction site a legible and visible sign summarizing the Plan. The sign shall also state that the public may ask to inspect the Plan for the project at any time during working hours and shall explain how to request to inspect the Plan. The project sponsor shall post at least one copy of the sign in a visible location on each side of the construction site facing a public right-of-way.

H. *Monitoring.* After start of construction activities, the project sponsor shall submit quarterly reports to the ERO documenting compliance with the Plan. After completion of construction activities and prior to receiving a final certificate of occupancy, the project sponsor shall submit to the ERO a final report summarizing construction activities, including the start and end dates and duration of each construction phase, and the specific information required in the Plan.

Mitigation Measure M-AQ-3b: Diesel Backup Generator Specifications.

B. The project sponsor shall ensure that the proposed diesel backup generator meets or exceeds California Air Resources Board Tier 4 off-road emission standards. Additionally, once operational, the diesel backup generator shall be maintained in good working order for the life of the equipment and any future replacement of the diesel backup generator shall be required to be consistent with these emissions specifications. The operator of the facility at which the generator is located shall be required to maintain records of the testing schedule for the diesel backup generator for the life of that diesel backup generator and to provide this information for review to the planning department within three months of requesting such information.

Significance after Mitigation: The health risk analysis quantitatively evaluated the effectiveness of Mitigation Measures M-AQ-3a and M-AQ-3b. Revised emission estimates for the mitigated equipment were quantified and the $PM_{2.5}$ and cancer risks were estimated using dispersion modeling and risk characterization methods consistent with BAAQMD and OEHHA risk assessment guidance and the Community Risk Reduction Plan – Health Risk Assessment. The results of that analysis are

presented in Table 4.2-8, above. As shown there, with implementation of M-AQ-3a and M-AQ-3b, the proposed project would result in an excess cancer risk of 6.51 in 1 million and $PM_{2.5}$ concentrations of 0.03 µg/m³, which is below the 7 in 1 million cancer risk and 0.2 µg/m³ $PM_{2.5}$ significance thresholds. Therefore, particulate emission reductions from Mitigation Measures M-AQ-3a and M-AQ-3b would reduce potential health risk impacts to sensitive receptors to less than significant levels. With iImplementation of these mitigation measures, the proposed project would not result in significant adverse environmental effects.

Results for Onsite Receptors

The proposed project would include development of residential units, which is considered a sensitive land use for purposes of air quality evaluation. Onsite receptors would not be exposed to increased cancer risks from construction emissions because they would not occupy the buildings until after construction is complete. The estimated excess cancer risk at the onsite maximally exposed individual sensitive receptor is presented in Table 4.2-9, Lifetime Cancer Risk and $PM_{2.5}$ Concentrations at the Maximally Exposed Onsite Receptors. Existing background cancer risk information is available from the citywide health risk assessment database. The proposed project's emissions would result in health impacts that would combine with existing background health impacts resulting in a cancer risk at the maximally exposed onsite receptor of 147 in 1 million. The incremental increase in cancer risk from the proposed project to onsite receptors would be 4.14 in 1 million, which is below the 7 in 1 million significance threshold. Similarly, the proposed project would result in $PM_{2.5}$ concentrations well below the significance threshold of 0.2 µg/m³. Therefore, the proposed project would result in a less-than-significant health risk impact on onsite receptors.

Table 4.2-9 Existing Plus Project Lifetime Cancer Risk and $PM_{2.5}$ Concentrations At Maximally Exposed Onsite Receptors

Source	Excess Lifetime Cancer Risk[a] (in 1 million)	$PM_{2.5}$ concentration (µg/m³)
Existing Background[b]	143	9.6
Project Operation (diesel generator and traffic)	4.14	0.0009
Project Contribution Subtotal	**4.14**	**0.0009**
Total with Background	147	9.6
Project Contribution Significance Threshold	7	0.2
Above Significance Threshold?	**No**	**No**

Source: Stantec 2020, Table 6, Appendix B

Notes:

a. The cancer risks were estimated using the information specified in ~~EIR~~ Appendix B.

b. Background cancer risk and $PM_{2.5}$ concentrations were estimated from the 2014 values in the citywide health risk assessment database.

c. Stantec confirmed that the sources at Station T are include in the CRRP HRA and part of existing background health risk.

Impact AQ-4: The proposed project would not conflict with implementation of the 2017 Bay Area Clean Air Plan. (*Less than Significant*)

The most recently adopted air quality plan for the air basin is the 2017 Bay Area Clean Air Plan. The 2017 Bay Area Clean Air Plan is a road map that demonstrates how the Bay Area will, in accordance with the requirements of the California Clean Air Act, implement all feasible measures to reduce ozone precursors (ROG and NO_x) and reduce the transport of ozone and its precursors to neighboring air basins. It also provides a climate and air pollution control strategy to reduce ozone, particulate matter, TACs, and GHGs that builds upon existing regional, state, and national programs. In determining consistency with the 2017 Bay Area Clean Air Plan, this analysis considers whether the proposed project would (1) support the primary goals of the 2017 Bay Area Clean Air Plan, (2) include applicable control measures from the 2017 Bay Area Clean Air Plan, and (3) avoid disrupting or hindering implementation of control measures identified in the 2017 Bay Area Clean Air Plan.

The goals of the 2017 Bay Area Clean Air Plan are to protect air quality and health at the regional and local scale and protect the climate. Air quality protection and the safeguarding of public health from harmful air pollutants is accomplished through meeting state and national ambient air quality standards. Climate protection is focused on reducing GHG emissions to 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050. To meet these goals, the 2017 Bay Area Clean Air Plan recommends specific control measures and actions to reduce emissions and decrease concentrations of harmful air pollutants. To this end, the 2017 Bay Area Clean Air Plan includes 85 control measures that are aimed at reducing air pollutants in the air basin. These control measures are grouped into various categories: the stationary-source sector, transportation sector, buildings sector, energy sector, agriculture sector, natural- and working-lands sector, waste sector, water sector, and super-GHG pollutants sector. The 2017 Bay Area Clean Air Plan recognizes that, to a great extent, community design dictates individual travel modes and that a key long-term control strategy to reduce emissions of criteria pollutants, TACs, and GHGs from motor vehicles is to channel future Bay Area growth into mixed-use, pedestrian-friendly communities that are served by a range of viable transportation options and where goods and services meet the day-to-day needs of residents and workers. The proposed ~~development~~ project would be an urban infill development with neighborhood-serving uses in the immediate vicinity that would allow for many of the day-to-day needs of its residents to be met by walking, bicycling, or taking transit to or from the project site instead of taking trips by private automobile.

The control measures identified in the 2017 Bay Area Clean Air Plan that are most applicable to the proposed project are related to the transportation sector, building sector, energy sector, waste sector, and water sector, some of which would be implemented as part of, but not limited to, the proposed project's compliance with the general plan, planning code, green building code, and local GHG-reducing regulations detailed in the GHG checklist provided in the initial study, Appendix A of this EIR. For example, as described in Chapter 2, Project Description, the proposed project is required to implement a transportation demand management (TDM) plan that would encourage a reduction in the number of automobile trips by improving sidewalks to promote walking; encouraging biking by installing secured bike parking for residents and patrons of on-site retail spaces; providing bike-share memberships, bicycle repair station and maintenance services; and offering contributions or incentives for sustainable transportation, among other TDM measures. Many of the TDM measures and other features of the proposed project would align with the transportation control measures identified in Table 5-13 of the 2017 Bay Area Clean Air Plan (e.g., TR2, Trip Reduction Programs; TR3, Local and Regional Bus Service; TR9, Bicycle and Pedestrian Access and Facilities; TR14, Cars and Light Trucks; and TR15, Public Outreach and Education).

Furthermore, the project site is within one of the city's transit priority areas, indicating that the proposed project would be developed at a site in a walkable urban area and near a concentration of regional and local transit service. The proposed project is located within one-half mile of several rail and bus transit routes, including the BART and Muni Powell Street Station.

The proposed project's impact with respect to GHGs is discussed in the initial study (see EIR Appendix A, Section E.8, Greenhouse Gas Emissions). As stated there, the proposed project would be compliant with the City's GHG reduction strategy and thus would not result in any significant impacts associated with an increase in GHGs or conflict with measures adopted for the purpose of reducing such emissions. The City's GHG compliance checklist for private projects lists regulatory requirements, many of which are related to transportation, energy conservation, waste reduction, and water conservation and align with those specific sectors of the 2017 Bay Area Clean Air Plan's control measures. Compliance with these requirements would ensure that the proposed project would include the relevant transportation sector, building sector, energy sector, waste sector, and water sector control measures specified in the 2017 Bay Area Clean Air Plan. Therefore, the proposed project would include applicable control measures identified in the 2017 Bay Area Clean Air Plan and support the primary goals of the 2017 Bay Area Clean Air Plan.

Examples of projects that could disrupt or delay 2017 Bay Area Clean Air Plan sector control measures are projects that would preclude the extension of a transit line or bike path or projects that propose excessive vehicular parking, beyond city parking requirements. There are no minimum vehicular parking requirements for the proposed project. The proposed project would provide 171 residential parking spaces at a ratio of approximately 0.36 parking spaces per dwelling unit. Therefore, the project does not propose an excessive amount of parking beyond city requirements. The proposed project would not preclude the extension of a transit line or a bike path, or any other transit improvement, and, thus, would not disrupt or hinder implementation of control measures identified in the 2017 Bay Area Clean Air Plan.

For the reasons described above, the proposed project would not interfere with implementation of the 2017 Bay Area Clean Air Plan. Because the proposed project would be consistent with the applicable air quality plan that demonstrates how the region would improve ambient air quality and achieve the state and federal ambient air quality standards, this impact would be less than significant, and no mitigation measures are necessary.

Cumulative Impacts

This section discusses cumulative air quality impacts that could result from the proposed project in combination with reasonably foreseeable future projects. The contribution of a project's individual air emissions to regional air quality impacts is, by nature, a cumulative effect. Emissions from reasonably foreseeable future projects in the region would contribute to adverse regional air quality impacts on a cumulative basis. No single project by itself would be large enough to result in non-attainment of ambient air quality standards. Instead, a project's individual emissions would contribute to existing

cumulative air quality conditions.[87] Refer to Impacts AQ-1 and AQ-2, which provide a cumulative criteria air pollutant analysis.

Impact C-AQ-1: The proposed project, in combination with reasonably foreseeable projects, would result in significant health risk impacts to sensitive receptors. (*Less than Significant with Mitigation*)

The geographic scope of analysis for cumulative health risks is a distance of 1,000 feet around the maximally exposed offsite and onsite sensitive receptors. The air district specifies that cumulative sources represent the combined total risk values of each individual source within the 1,000-foot evaluation zone. The contribution of TACs from the proposed project to health risks beyond the 1,000-foot evaluation zone as well as the contribution from projects beyond that zone to health risks at or near the project site would be greatly attenuated through both distance and intervening structures. Therefore, their contribution would be expected to be minimal. The cumulative health risk assessment takes into account the contribution of existing localized health risks to sensitive receptors from sources included in citywide health risk assessment database plus the proposed project's sources and also considers the effects of cumulative projects within 1,000 feet of the maximally exposed individual sensitive receptor. Each of these sources is described below.

Background Health Risks and $PM_{2.5}$ Concentrations

The planning department has conducted a citywide health risk assessment for year 2040. This citywide 2040 health risk assessment accounts for expected growth in vehicle trips and associated emissions, and accounts for projected lower emissions from vehicles as new regulations are phased in over time. Therefore, vehicle-generated emissions from the cumulative projects would be accounted for in the 2040 citywide health risk assessment database and are therefore accounted for in this cumulative analysis.

The citywide health risk assessment database for existing conditions (2014 citywide health risk model) and 2040 projected conditions were compared at the project's maximally exposed offsite sensitive receptor to determine which database (existing or projected 2040 conditions) had higher background cancer risk and $PM_{2.5}$ levels. The results of this comparison revealed that background $PM_{2.5}$ emissions at the project's maximally exposed sensitive receptor was the same as under existing conditions at 9.6 $\mu g/m^3$. However, the background modeled cancer risk is expected to decrease from a risk of 143 in 1 million to 80 in 1 million. Therefore, in order to present a worst-case cumulative analysis, the background $PM_{2.5}$ and cancer risk from the existing conditions, which report higher concentrations and risks, are included in the quantitative cumulative analysis below in Table 4.2-10.

Project Contributions

The methodology for analyzing the proposed project's health risk impact and $PM_{2.5}$ contributions at sensitive receptor locations is presented under Impact AQ-3, above.

[87] Air District, CEQA Air Quality Guidelines, May 2011, p. 2-1.

Other Cumulative Projects

This cumulative analysis evaluates known cumulative projects within 1,000 feet of the project site that could affect local air quality and health risks. Projects within an approximately 1,000-foot radius of the project site are included in Table 4.1-1, Cumulative Projects within 0.25-Mile Radius of the Proposed Project. There are 17 projects within the 1,000 feet that are included in the cumulative air quality analysis. There is one additional project, 5M, that is not included in Table 4.1-1, but is within the 1,000-foot radius ~~and that project is the 5M project~~.[88] The 5M Project is located on 4 acres between Fifth, Mission, and Howard streets. The 5M Project entails the development of office, retail, residential, cultural, educational, and open space uses in the southwest quadrant of Fifth and Mission streets and its construction would potentially overlap with the proposed project, resulting in cumulative air quality impacts. Two development options are proposed for the 5M Project that would result in approximately the same net increase of 1.5 million square feet of development. Of the cumulative projects, the 5M Project would be the largest. A health risk assessment has been conducted for the 5M project and the Better Market Street project. The construction and operational health risk impacts from those projects have been included in the quantitative cumulative analysis below.

Cumulative Results

Cumulative health risks are determined by summing baseline risks, project risks, and risks from cumulative projects that were not already included in the baseline risk assessment. Similarly, cumulative $PM_{2.5}$ concentrations are determined by summing baseline $PM_{2.5}$ concentrations, project $PM_{2.5}$ concentrations, and $PM_{2.5}$ concentrations from cumulative projects that were not already included in the baseline $PM_{2.5}$ assessment. Results of this analysis at the maximum offsite receptor are presented in Table 4.2-10. The cumulative excess lifetime cancer risk at the maximally exposed offsite residential receptor would be 156 in 1 million, and the $PM_{2.5}$ concentration would be 9.9 $\mu g/m^3$. The analysis accounts for the health risk and $PM_{2.5}$ contributions from the 5M Project. The analysis does not account for the construction and operational effects of the other cumulative projects because the health risks and $PM_{2.5}$ concentration from those projects cannot be known without detailed modeling. However, as discussed above the traffic-related operational emissions from cumulative projects are reasonably accounted for the in the quantitative analysis below. Nevertheless, the cumulative health risks at the maximally exposed offsite sensitive receptor is likely to be higher than that reported below in Table 4.2-10. Regardless, the proposed project's contribution to cumulative health risks would remain the same as that presented under the existing plus project scenario (see Impact AQ-3).

Results for Offsite Sensitive Receptors

As shown in Table 4.2-10, the proposed project's contribution to cumulatively significant health risks at offsite sensitive receptors would be an increased cancer risk of 13 in 1 million, which exceeds the

[88] The 5M project is approved and under construction and therefore is considered part of baseline conditions for the analysis of the proposed project's operational impacts. However, as construction of the 5M project is expected to overlap with construction of the proposed project, it is considered ~~as part~~ in the analysis as part of the proposed project's construction-related cumulative impacts.

project contribution significance threshold of 7 in 1 million, resulting in a significant contribution to cumulative health risks at offsite sensitive receptors.

As shown in Table 4.2-10, $PM_{2.5}$ concentrations at offsite sensitive receptors would be 0.3 $\mu g/m^3$, which exceeds the project contribution significance threshold of 0.2 $\mu g/m^3$. Therefore, the proposed project would result in a considerable contribution to cumulatively significant $PM_{2.5}$ concentrations at offsite sensitive receptors and this impact would be significant.

Table 4.2-10: Cumulative Lifetime Cancer Risk and $PM_{2.5}$ Concentrations At Maximally Exposed Offsite Receptors

Source	Unmitigated		Mitigated	
	Cancer Risk[a] (in 1 million)	$PM_{2.5}$ concentration ($\mu g/m^3$)	Cancer Risk[a] (in 1 million)	$PM_{2.5}$ concentration ($\mu g/m^3$)
Cumulative Baseline[b,c]	143	9.6	143	9.6
5-M Project	6.4	0.2	6.4	0.2
Better Market Street	2.4	0.1	2.4	0.1
Project Construction	65.2	0.3	6.43	0.031
Project Operation (diesel generator and traffic)	0.08	0.0004	0.08	0.0004
Project Contribution Subtotal	**65.28**	**0.3004**	**6.51**	**0.0314**
Total with Background	217.08	10.2004	158.31	9.9314
Project Contribution Significance Threshold	7	0.2	7	0.2
Above Threshold?	**Yes**	**Yes**	**No**	**No**

Source: Stantec 2020, Table 6, Appendix B

Notes:

a. The cancer risks were estimated using the information specified in ~~EIR~~ Appendix B.

b. Background cancer risk and $PM_{2.5}$ concentrations were estimated from the 2014 values in the citywide health risk assessment database.

c. Stantec confirmed that the sources at Station T are include in the CRRP HRA and part of existing background health risk.

Comment [MM9]: Is this what note (d) goes with?

d. From the 2016 Draft EIR, CASE NO. 2014-000362ENV, mitigated results.

Mitigation Measures

Implement ***Mitigation Measures M-AQ-3a and M-AQ-3b***

Significance after Mitigation: Mitigation Measures M-AQ-3a and M-AQ-3b, discussed above, would be required, and would reduce the proposed project's increased cancer risk contribution to 4.5 in 1 million and would also reduce the proposed project's $PM_{2.5}$ contribution to less than 0.2 µg/m³. Therefore, with implementation of M-AQ-3a and M-AQ-3b, the project's contribution to cumulatively significant health risks impacts would be reduced to less than significant.

Results for Onsite Sensitive Receptors

As shown in Table 4.2-11, the proposed project's contribution to cumulatively significant health risks at onsite sensitive receptors would be an increased cancer risk of 4.14 in 1 million and a $PM_{2.5}$ concentration of 0.0009 µg/m³, which are both well below the project contribution significance thresholds of an increased cancer risk of 7 in 1 million and $PM_{2.5}$ concentrations of 0.2 µg/m³. Therefore, the proposed project would not make a considerable contribution to health risk impacts at onsite sensitive receptors and this impact would be less than significant.

Table 4.2-11: Cumulative Lifetime Cancer Risk and $PM_{2.5}$ Concentrations At Maximally Exposed Onsite Receptors

Source	Unmitigated	
	Cancer Risk[a] (in 1 million)	$PM_{2.5}$ concentration (µg/m³)
Cumulative Baseline[b,c]	143	9.6
5-M Project	6.4	0.2
Better Market Street	2.4	0.1
Project Operation (diesel generator and traffic)	0.08	0.0004
Project Contribution Subtotal	**0.08**	**0.0004**
Total with Background	151.88	9.9004
Project Contribution Significance Threshold	7	0.2
Above Threshold?	**No**	**No**

Source: Stantec 2020, Table 6, Appendix B

Notes:

a. The cancer risks were estimated using the information specified in ~~EIR~~ Appendix B.

b. Background cancer risk and $PM_{2.5}$ concentrations were estimated from the 2014 values in the citywide health risk assessment database.

c. Stantec confirmed that the sources at Station T are include in the CRRP HRA and part of existing background health risk.

d. From the 2016 Draft EIR, CASE NO. 2014-000362ENV, mitigated results.

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Comment [MM10]: These don't seem to match Table 4.2-11.

Comment [MM11]: Is this what note (d) goes with?

4.3 WIND

4.3.1 Introduction

This section describes the project's impacts on ground-level wind speeds at various locations on and near the project site. This section is based on a wind study prepared for the proposed project by ARUP, included in this EIR as Appendix C.[89] The wind study assesses the probability that the proposed project would create areas of windiness at publicly accessible points in the project vicinity. The "Environmental Setting" discussion that follows includes a general description of the wind environment in San Francisco and existing wind conditions on the project site. The "Regulatory Framework" section discusses regulations related to wind applicable to proposed development projects. The "Impacts and Mitigation Measures" discussion describes the criteria for determining whether wind impacts are significant under CEQA, the wind impacts of the proposed project and cumulative development projects, and applicable mitigation measures, if required.

4.3.2 Environmental Setting

San Francisco's Existing Wind Environment

In San Francisco, average wind speeds are the highest in the summer and lowest in the winter. In the summer months landscaping tends to be at its fullest and helps to absorb and control windiness at street level. This is an advantage that the city of San Francisco has over many of its northern city neighbors where the stronger winds occur in the winter months when trees and landscaping are less beneficial in improving the local wind environment.

However, the strongest peak wind speeds occur in the winter and are generally associated with storm conditions. The highest average wind speeds occur in mid-afternoon and the lowest occur in the early morning. Based on over 40 years of recordkeeping, the highest mean hourly wind speeds (approximately 20 mph) occur mid-afternoon in July, while the lowest mean hourly wind speeds (in the range of 6 to 9 mph) occur throughout the day in November.

Meteorological data collected at the old San Francisco Federal Building at 50 UN Plaza and available for public access show that westerly through northwesterly winds are the most frequent and strongest winds during all seasons. Of the 16 primary wind directions, four primary wind directions comprise the majority of the strong wind occurrences. These four wind directions are northwesterly (10 to 13 percent of all winds), west northwesterly (14 to 26 percent of all winds), westerly (35 to 45 percent of all winds), and southwesterly (2 percent of all winds); they make up more than 60 percent of the general winds and more than 85 percent of the strongest winds in San Francisco.

Wind Effects on People

The acceptability of windiness is subjective and depends on several important factors, none more so than the type of activity being performed.

[89] ARUP. 2020. Wind Study for 469 Stevenson Street.

The criteria defined in section 148 of the San Francisco Planning Code are used to describe frequent wind conditions and specify acceptable limits for various activities. With regards to comfort, the planning code differentiates between areas of substantial pedestrian use (hereafter "pedestrian areas") and public seating areas (hereafter "seating areas"). The pedestrian areas are primarily suitable for walking. The seating areas are considered acceptable for reading a book or dining. These are comfort criteria.

There is also a hazard criterion used to describe a less frequent level of windiness and is to be exceeded less than one hour yearly. Exceeding this limit signifies a safety hazard for individuals, who may find themselves in difficulties at times in these strong winds. When the wind speed is above the hazard limit, aerodynamic forces approach the body weight and it rapidly becomes difficult to remain standing.

Wind Effects from Buildings

The local wind conditions onsite are strongly influenced by the surrounding buildings. Windiness depends both on the arrangement of buildings and structures within their surroundings and their orientation compared to the prevailing winds.

When strong winds approach a bluff façade, the façade will act to split the flow. The winds encountering the top one-third of the building will tend to accelerate up and over the top of the building as the winds seek the fastest path from the high-pressure region created on the windward façade to the low-pressure region created on the leeward façade of the building. Winds encountering the lower two-thirds of the building tend to be pushed, or *downdrafted*, to ground level. Downdrafts carry the same energy as the winds at the upper level. As a result, increased levels of windiness are experienced at ground level, especially around building corners where winds accelerate.

Local acceleration of winds occurs when two buildings are positioned side by side (*funneling*). Acceleration from funneling is greatest when the spacing between buildings ranges between 25 to 100 percent of the building's width.

Project Setting and Surrounding Vicinity

The project site is currently used as a surface parking lot. The 28,790 square-foot site is bounded to the north by Stevenson Street, to the south by Jessie Street and to the east by Clearway Energy's thermal power station. The site shares the property line to the west with the neighboring properties on Sixth Street. The project site measures 200 feet along Stevenson Street and Jessie Street, and 145 feet along its eastern and western property lines.

The immediate surroundings of the project site consist mostly of mid-rise buildings that are typically less than 100 feet tall, except for 995 Market Street (190 feet tall) to the west of the project site. Beyond the immediate project vicinity, the surrounding area consists of similar low- and mid-rise buildings to the south and taller buildings to the west and north. A large concentration of high-rise buildings is built in the Financial District, to the northeast of the project site.

4.3.3 Regulatory Framework

While there are no specific federal or state regulations which deal with wind effects on publicly accessible areas, San Francisco has established several provisions, policies, and procedures that

provide the framework to evaluate potential wind impacts from new development and to determine whether wind conditions are suitable for pedestrian activities.

Local Regulations

Downtown Area Plan

Policy 14.2 in the Downtown Area Plan states that new development should promote building forms that will minimize the creation of surface winds near the base of buildings. The Downtown Area Plan further states "variation in ground level wind impacts is related to several factors:

- Exposure of the building to the prevailing wind direction, the more exposed a building is, the greater the volume and momentum of the wind intercepted, and the greater the potential for wind accelerations at street level.
- The shape, area, and uniformity of the upwind facade. Relatively large, uniform facades typically result in greater wind accelerations than do narrow or complex facades with numerous setbacks.

These factors should be considered in the massing and detailing of new buildings. Exposed facades should use setbacks at various levels, and other configured shapes and design features, to reduce [the] wind impacts. In buildings of a size likely to cause problems, wind tunnel tests of alternative building masses should be undertaken, when appropriate, and the results employed in selecting the shape of the building. As a general rule, a building form should not be used which causes wind speeds to exceed 11 mph in areas where people are walking and 7 miles per hour where people are sitting.[90]"

Planning Code

Planning code section 148 outlines pedestrian comfort and hazardous wind speed criteria for the Downtown (C-3) Use Districts where the project site is located. Section 148 defines "equivalent wind speed" as "an hourly mean wind speed adjusted to incorporate the effect of gustiness or turbulence on pedestrians" and is used to determine comfort wind speeds. The pedestrian comfort wind speed criteria are 7 mph for no more than 10 percent of the time year-round, between 7 a.m. and 6 p.m., in public seating areas and 11 mph for no more than 10 percent of the time year-round, between 7 a.m. and 6 p.m., in areas of substantial pedestrian use. A hazardous wind condition is when the wind speed exceeds 26 mph for a single hour of the year.

Following the adoption of planning code section 148, the planning department developed procedures for implementation of the requirements, including a wind tunnel testing protocol that remains in use today. As such, the criteria defined in section 148 of the planning code are used to evaluate wind comfort and hazard, and to determine whether wind conditions are suitable for pedestrian activities.

[90] City and County of San Francisco. 1989. Downtown Area Plan. Available at: https://generalplan.sfplanning.org/Downtown.htm. Accessed October 23, 2019.

4.3.4 Impacts and Mitigation Measures

Significance Criteria

The following significance criterion is used by the planning department to determine whether the proposed project would result in a significant wind impact. Implementation of the proposed project would have a significant effect related to wind if the project would:

- Create wind hazards in publicly accessible areas of substantial pedestrian use.

Approach to Analysis

The methodology and the criteria for analyzing potential project wind impacts in this EIR are derived from planning code section 148. As noted, section 148 establishes a wind hazard criterion, whereby project buildings may not cause wind speeds that meet or exceed 26 mph, averaged for a full hour for any hour of the year. The 26 mph, one-hour wind hazard criterion is converted to a one-minute average wind speed of 36 mph, and 36 mph is accordingly used as the hazard threshold in the reporting of test results. Projects that exceed the wind hazard criteria would result in a significant wind impact. As also described above, section 148 establishes wind comfort criteria, whereby a project shall not cause ground-level wind currents to exceed, more than 10 percent of the time, 11 mph in areas of substantial pedestrian use, and 7 mph in public seating areas. Project effects on wind comfort are presented in this EIR for informational purposes.

Methodology

ARUP conducted a wind tunnel test to characterize the existing wind environment and to determine future wind conditions on sidewalks and open spaces around the project site should the proposed project be constructed. A 1-inch-to-25-foot scale (1:300) model of the proposed project and surrounding buildings within a 1,200-foot radius of the project site was constructed to simulate existing, existing-plus-project, cumulative, and cumulative-plus-project conditions. Such distance from the project site is considered appropriate to reproduce the local wind effects of the surrounding buildings (existing and planned) on site and is commonly used in the industry. The scale model, which was equipped with permanently mounted wind speed sensors, was placed inside an atmospheric boundary layer wind tunnel. The wind testing included multiple iterations of design scenarios to develop a design that would comply with the wind hazard criterion of section 148 of the planning code. The resulting project design is presented as the proposed project as described in Chapter 2, Project Description.

The wind tunnel test measured wind speeds for the existing setting and the existing-plus-project scenarios, as well as a cumulative and the cumulative-plus-project scenarios. Pedestrian-level wind speeds were measured at 63 locations for each of the four scenarios at an effective-full-scale height of approximately 6 feet above ground, which is the standard height used for assessing wind effects on pedestrians.[91]

[91] ARUP. 2020. Wind Study for 469 Stevenson Street Project.

Locations for wind speed sensors, or study test points, were selected to indicate how the general flow of winds would be directed around the project buildings. Consistent with section 148, the locations of test points are placed adjacent to the project site, in frequently used areas (e.g., public seating areas, entrances, retail frontages, walking zones), and in areas expected to experience higher wind speeds. The measurement locations are shown in Figure 20.

Existing Scenario

The existing scenario considers all existing buildings and projects within 1,200 feet of the project site, including the following:

- **5M Project (925-967 Mission Street)**, to the east of the proposed project on the southern corner of Fifth Street and Mission Street. The development consists of a 200-foot-tall tower along Mission Street, a 470-foot-tall tower on Fifth Street, a 350-foot-tall tower at the crossing of Fifth Street and Howard Street and a 395-foot-tall tower on Howard Street. The development is under construction.
- **945 Market Street**, to the north of the proposed project between Market Street and Stevenson Street. The scheme consists of an existing 5-story, 90-foot-tall retail building.
- **950-974 Market Street**, to the northwest of the proposed project at the southwest crossing of Market Street and Turk Street. The scheme consists of a 12-story, 120-foot-tall mixed-used building and is currently under construction.
- **1066 Market Street**, to the west of the proposed project at the southeast crossing of Jones Street and Golden Gate Avenue and north of Market Street. The scheme consists of a 12-story, 120-foot-tall residential building and is currently under construction.

Cumulative Scenario

The cumulative scenario includes the following projects that are within 1,200 feet of the proposed project and listed in Table 4.1-1:

- **996 Mission Street**, to the south of the proposed project at the northwest crossing of Mission Street and Sixth Street. The scheme has been modeled as an 8-story building.
- **1055 Market Street**, to the southwest of the proposed project on the southern side of Market Street between Sixth Street and Seventh Street. The scheme consists of a 10-story, 90-foot-tall hotel building with ground floor retail space.
- **921 Howard Street**, to the southeast of the proposed project on the south side of Howard Street between Fifth Street and Sixth Street. The scheme has been modeled as an 18-story building.
- **1025 Howard Street**, to the southeast of the proposed project at the southwest crossing of Howard Street and Harriet Street. The scheme consists of an 8-story, 90-foot-tall hotel building.
- **481-483 Tehama Street**, to the southeast of the proposed project on the south side of Tehama Street between Fifth Street and Sixth Street. The scheme consists of a 4-story, 50-foot-tall residential building.

- **457-475 Minna Street**, to the southeast of the proposed project on the south side of Minna Street between Fifth Street and Sixth Street. The scheme consists of a 16-story, 160-foot-tall residential building.
- **527 Stevenson Street**, to the southwest of the proposed project on the south side of Stevenson between Sixth Street and Seventh Street. The scheme consists of a 7-story, 74-foot-tall commercial building.
- **57 Taylor Street (111 Turk Street)**, to the northwest of the proposed project at the south-west crossing of Turk Street and Taylor Street. The scheme consists of a 11-story, 120-foot-tall residential building.

Additionally, for the cumulative analysis only, existing landscaping (including street trees and other green canopy) located at and near Mint Plaza were included in the model.[92]

Project Design Features to Reduce Wind Impacts

The proposed project as tested in the wind tunnel includes the following features specifically designed to minimize potential pedestrian-level winds:

- The position of the tower is about 26 feet away from the northeast side of the podium;
- The height of the volumetric elements toward Stevenson Street is reduced from 45 feet to 35 feet;
- A 20-foot-tall solid screen along the podium edge on Stevenson Street is proposed; and
- A 12-foot-tall solid screen on the volumetric elements is proposed.

[92] ARUP and planning staff reviewed cumulative projects in the area to ensure that there were no reasonably foreseeable cumulative projects that could potentially result in the removal of landscaping near Mint Plaza. Because there are no cumulative projects or proposals that would result in landscape removal near Mint Plaza, it is appropriate to consider this existing landscaping as part of the existing environmental conditions for the cumulative analysis.

Figure 20: Wind Measurement Locations

Impact Evaluation

The following analysis evaluates potential wind impacts that could result from construction and operation of the proposed project.

Impact WD-1: The proposed project would not create wind hazards in publicly accessible areas of substantial pedestrian use. (*Less than Significant*)

Wind Hazard Analysis

The proposed project would replace the existing 176 space surface parking lot with a 27-story, 274-foot-tall (with an additional 10 feet for rooftop mechanical equipment) mixed-use residential building of approximately 535,000 gsf. As shown in Figure 21, wind speeds were measured at 63 ground-level test locations for the existing conditions and the existing-plus-project conditions. Under existing conditions, the wind tunnel test determined that none of the 63 locations tested exceed the wind hazard criteria of 36 mph (refer to Table 4.3-1).

Pursuant section 148 of the planning code, the proposed project may not cause wind speeds that meet or exceed 36 mph; therefore, the proposed project has incorporated design features to ensure that wind speeds would not exceed the 36 mph wind hazard criteria. Physical design features incorporated into the project are discussed above. These design features would be maintained over the life of the proposed project. As such, under the existing-plus-project scenario, while the average wind speed would increase from approximately 22 mph to 24 mph, none of the 63 locations tested would exceed the wind hazard criteria of 36 mph (refer to Table 4.3-1).[93] Therefore, the proposed project would not create wind hazards that affect publicly accessible areas of substantial pedestrian use and this impact would be less than significant.

[93] ARUP. 2020. Wind Study for 469 Stevenson Street Project.

Table 4.3-1: Wind Hazard Results

References		Existing Conditions (No Project)		Existing-Plus-Project		
Measurement Location	Hazard Criterion (mph)	Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criterion	Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criterion	Hours Change Relative to Existing
1	36	25	0	24	0	0
2	36	23	0	25	0	0
3	36	20	0	29	0	0
4	36	17	0	33	0	0
5	36	19	0	31	0	0
6	36	19	0	22	0	0
7	36	22	0	25	0	0
8	36	19	0	18	0	0
9	36	19	0	19	0	0
10	36	19	0	19	0	0
11	36	21	0	20	0	0
12	36	25	0	35	0	0
13	36	24	0	29	0	0
14	36	17	0	28	0	0
15	36	20	0	34	0	0
16	36	20	0	25	0	0
17	36	16	0	29	0	0
18	36	21	0	23	0	0
19	36	23	0	26	0	0
20	36	22	0	26	0	0
21	36	20	0	23	0	0
22	36	18	0	25	0	0
23	36	19	0	20	0	0
24	36	20	0	17	0	0
25	36	20	0	17	0	0
26	36	27	0	19	0	0

References		Existing Conditions (No Project)		Existing-Plus-Project		
Measurement Location	Hazard Criterion (mph)	Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criterion	Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criterion	Hours Change Relative to Existing
27	36	19	0	17	0	0
28	36	16	0	19	0	0
29	36	21	0	20	0	0
30	36	18	0	25	0	0
31	36	17	0	22	0	0
32	36	19	0	20	0	0
33	36	21	0	21	0	0
34	36	25	0	27	0	0
35	36	22	0	31	0	0
36	36	24	0	29	0	0
37	36	19	0	22	0	0
38	36	27	0	23	0	0
39	36	20	0	22	0	0
40	36	28	0	26	0	0
41	36	20	0	23	0	0
42	36	24	0	24	0	0
43	36	27	0	26	0	0
44	36	33	0	30	0	0
45	36	27	0	27	0	0
46	36	23	0	25	0	0
47	36	26	0	24	0	0
48	36	22	0	23	0	0
49	36	20	0	19	0	0
50	36	26	0	26	0	0
51	36	23	0	19	0	0
52	36	26	0	20	0	0
53	36	31	0	31	0	0
54	36	34	0	30	0	0

References		Existing Conditions (No Project)		Existing-Plus-Project		
Measurement Location	**Hazard Criterion (mph)**	**Wind Speed Exceeded 1 Hour per Year (mph)**	**Hours per Year Wind Speed Exceeds Hazard Criterion**	**Wind Speed Exceeded 1 Hour per Year (mph)**	**Hours per Year Wind Speed Exceeds Hazard Criterion**	**Hours Change Relative to Existing**
55	36	26	0	27	0	0
56	36	23	0	26	0	0
57	36	21	0	23	0	0
58	36	27	0	27	0	0
59	36	22	0	23	0	0
60	36	24	0	23	0	0
61	36	26	0	27	0	0
62	36	21	0	22	0	0
63	36	23	0	23	0	0
Average Wind Speed		**22.3**	--	**24.3**	--	
No. of Exceedances		--	**0**	--	**0**	**0**
Total Hours Exceeded		--	**0**	--	**0**	**0**

Source: ARUP 2020

Figure 21: Wind Comfort and Hazard Results – Existing Conditions

Cumulative Impacts

This section discusses cumulative wind impacts that could result from the proposed project in combination with reasonably foreseeable future projects.

Impact C-WD-1: The proposed project in combination with reasonably foreseeable projects, would not create wind hazards in publicly accessible areas of substantial pedestrian use. (*Less than Significant*)

Wind Hazard Analysis

As described above, the wind analysis constructed a model of the proposed project and the following planned future buildings within a 1,200-foot radius of the project site to simulate the cumulative conditions:

- 996 Mission Street
- 1055 Market Street
- 921 Howard Street
- 1025 Howard Street
- 481-483 Tehama Street
- 457-475 Minna Street
- 527 Stevenson Street
- 57 Taylor Street (111 Turk Street)

These cumulative projects have either been approved or a project application is on file with the planning department. The current project plans were used to develop models of these projects for use in wind-tunnel testing with input as necessary from the planning department. Additionally, as noted above, existing landscaping (including street trees and other green canopy) located at and near Mint Plaza were included in the model for the cumulative analysis only.

With the introduction of these cumulative development projects the average wind speed would increase approximately 1 to 2 mph from existing conditions (22.3 mph under existing conditions and 23.8 mph under cumulative plus project conditions). However, none of the 63 measurement locations would exceed the wind hazard criterion of 36 mph (refer to Table 4.3-2). As discussed under Impact WD-1, the proposed project would incorporate several design features so that pedestrian-level wind speeds do not exceed the 36-mph wind hazard criterion. Therefore, the proposed project in combination with the cumulative development projects would not create wind hazards in publicly accessible areas of substantial pedestrian use (refer to Table 4.3-2). The proposed project in combination with cumulative projects would have a less-than-significant cumulative wind hazard impact.

Table 4.3-2: Wind Hazard Results for Cumulative Conditions

References		Existing Conditions (No Project)		Cumulative Conditions (No Project)		Cumulative-Plus-Project		
Measurement Location	Hazard Criterion (mph)	Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criterion	Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criterion	Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criterion	Hours Change Relative to Existing
1	36	25	0	23	0	23	0	0
2	36	23	0	18	0	22	0	0
3	36	20	0	17	0	27	0	0
4	36	17	0	17	0	32	0	0
5	36	19	0	19	0	23	0	0
6	36	19	0	20	0	18	0	0
7	36	22	0	23	0	23	0	0
8	36	19	0	19	0	18	0	0
9	36	19	0	19	0	20	0	0
10	36	19	0	18	0	18	0	0
11	36	21	0	21	0	20	0	0
12	36	25	0	25	0	36	0	0
13	36	24	0	24	0	26	0	0
14	36	17	0	17	0	29	0	0
15	36	20	0	20	0	29	0	0
16	36	20	0	19	0	27	0	0
17	36	16	0	16	0	33	0	0
18	36	21	0	19	0	24	0	0
19	36	23	0	21	0	25	0	0
20	36	22	0	16	0	21	0	0
21	36	20	0	22	0	19	0	0
22	36	18	0	19	0	24	0	0
23	36	19	0	20	0	22	0	0
24	36	20	0	20	0	19	0	0
25	36	20	0	20	0	20	0	0
26	36	27	0	28	0	28	0	0

References		Existing Conditions (No Project)		Cumulative Conditions (No Project)		Cumulative-Plus-Project		
Measurement Location	Hazard Criterion (mph)	Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criterion	Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criterion	Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criterion	Hours Change Relative to Existing
27	36	19	0	18	0	18	0	0
28	36	16	0	18	0	23	0	0
29	36	21	0	19	0	18	0	0
30	36	18	0	19	0	28	0	0
31	36	17	0	16	0	20	0	0
32	36	19	0	17	0	19	0	0
33	36	21	0	20	0	20	0	0
34	36	25	0	24	0	25	0	0
35	36	22	0	19	0	21	0	0
36	36	24	0	23	0	24	0	0
37	36	19	0	21	0	20	0	0
38	36	27	0	21	0	20	0	0
39	36	20	0	20	0	21	0	0
40	36	28	0	24	0	24	0	0
41	36	20	0	20	0	22	0	0
42	36	24	0	23	0	34	0	0
43	36	27	0	27	0	26	0	0
44	36	33	0	33	0	33	0	0
45	36	27	0	27	0	27	0	0
46	36	23	0	24	0	24	0	0
47	36	26	0	26	0	27	0	0
48	36	22	0	22	0	22	0	0
49	36	20	0	21	0	19	0	0
50	36	26	0	26	0	25	0	0
51	36	23	0	23	0	19	0	0
52	36	26	0	26	0	19	0	0
53	36	31	0	31	0	28	0	0

References		Existing Conditions (No Project)		Cumulative Conditions (No Project)		Cumulative-Plus-Project		
Measurement Location	Hazard Criterion (mph)	Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criterion	Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criterion	Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criterion	Hours Change Relative to Existing
54	36	34	0	33	0	30	0	0
55	36	26	0	26	0	29	0	0
56	36	23	0	23	0	23	0	0
57	36	21	0	20	0	24	0	0
58	36	27	0	27	0	28	0	0
59	36	22	0	21	0	24	0	0
60	36	24	0	25	0	24	0	0
61	36	26	0	26	0	27	0	0
62	36	21	0	21	0	21	0	0
63	36	23	0	22	0	20	0	0
Average Wind Speed		**22.3**	--	**21.8**	--	**23.8**	--	
No. of Exceedances		--	**0**	--	**0**	--	**0**	**0**
Total Hours Exceeded		--	**0**	--	**0**	--	**0**	**0**

Source: ARUP 2020

Supplemental Information

Wind Comfort Analysis

As noted above, the project site is located within a C-3 District and is subject to planning code section 148. The wind comfort criterion is presented here for information purposes only as the 11-mph wind comfort criterion is not the planning department's CEQA significance criterion. However, the wind comfort criterion is useful in describing the overall wind environment because the comfort criterion wind speeds (those exceeded 10 percent of the time) are more representative of "typical" windy conditions than are the hazard criterion wind speeds, which are those exceeded only one hour per year, or approximately one one-hundredth of a percent of the time.

Under existing conditions, wind speeds in the vicinity of the project site average 11.6 mph for all measurement locations. Winds at 61 of the 63 locations currently exceed the 11-mph pedestrian comfort criterion established by planning code section 148 (see Figure 21). In the immediate vicinity of the project site (locations #1 to #21), the highest wind speeds are 15 mph at location #12 and 14 mph at locations #1 and #13, where the seating comfort criterion (7 mph) is exceeded 40 to 50 percent of the time and the pedestrian comfort (11 mph) criterion is exceeded 20 to 24 percent of the time.[94]

Under the existing-plus-project conditions, average wind speeds for all measurement locations would increase by 0.8 mph, to 12.4 mph, and the comfort criterion would be exceeded at all 63 locations (Figure 22). The highest wind speeds in the immediate vicinity of the site are 19 mph at location #12 and 17 mph at location #13. Under the existing-plus-project condition at these locations, the wind exceeds the seating comfort criterion approximately 55 to 57 percent of the time and the pedestrian comfort criterion about 32 to 35 percent of the time.

Under cumulative conditions without the proposed project, wind speeds in the vicinity of the project site average 11 mph for all measurement locations (Figure 23). In the immediate vicinity of the project site (locations #1 to #21), the highest wind speed (13 mph) occurs at locations #12 and #13. At these locations under cumulative conditions, the winds exceed the seating comfort criterion approximately 43 to 47 percent of the time and the pedestrian comfort criterion approximately 16 to 19 percent of the time. For the cumulative conditions with the proposed project and landscaping at Mint Plaza, the average wind speed for all test locations would increase by 1.3 mph, to 12.3 mph. The highest wind speed in the immediate vicinity of the site is 19 mph at locations #12 and #17 along Jessie Street (Figure 24). In these conditions, the wind exceeds the seating comfort criterion approximately 56 to 62 percent of the time and the comfort criterion about 35 to 40 percent of the time.

Overall, the proposed project would increase the windiness in the area by about 1 mph and exceed the comfort criteria at two locations (locations #7 and #10) under existing plus project and cumulative conditions.

[94] ARUP. 2020. Wind Study for 469 Stevenson Street Project.

Table 4.3-2: Wind Comfort Results

References			Existing Conditions (No Project)			Existing-Plus-Project			
Measurement Location	Comfort criterion for seating areas (mph)	Comfort criterion for pedestrian areas (mph)	Wind Speed exceeded 10% of time (mph)	Percentage of time wind speed exceeds comfort criterion for seating areas	Percentage of time wind speed exceeds comfort criterion for pedestrian areas	Wind Speed exceeded 10% of time (mph)	Speed Change Relative to Existing (mph)	Percentage of time wind speed exceeds comfort criterion for seating areas	Percentage of time wind speed exceeds comfort criterion for pedestrian areas
1	7	11	14	41*	20*	14	0	51*	24*
2	7	11	13	36*	14*	13	0	48*	19*
3	7	11	11	28*	9	15	4	51*	24*
4	7	11	9	17*	2	16	7	52*	26*
5	7	11	7	9	1	15	8	53*	25*
6	7	11	8	16*	2	12	4	41*	13*
7	7	11	10	30*	5	11	1	33*	9
8	7	11	10	25*	4	10	0	28*	5
9	7	11	10	31*	6	11	1	35*	10
10	7	11	7	7	1	8	1	16*	1
11	7	11	11	36*	9	10	-1	31*	6
12	7	11	15	50*	24*	19	4	55*	35*
13	7	11	14	49*	21*	17	3	57*	32*
14	7	11	10	28*	4	15	5	56*	27*
15	7	11	12	40*	14*	14	2	56*	24*
16	7	11	12	41*	14*	14	2	52*	22*
17	7	11	9	25*	3	16	7	58*	30*
18	7	11	12	42*	13*	12	0	41*	11*
19	7	11	13	44*	18*	15	2	52*	26*
20	7	11	12	36*	13*	14	2	49*	22*
21	7	11	11	34*	9	14	3	47*	20*
22	7	11	9	25*	3	14	5	43*	20*
23	7	11	9	23*	3	10	1	31*	6
24	7	11	11	36*	9	10	-1	29*	5
25	7	11	10	29*	5	9	-1	19*	2

References			Existing Conditions (No Project)			Existing-Plus-Project			
Measurement Location	Comfort criterion for seating areas (mph)	Comfort criterion for pedestrian areas (mph)	Wind Speed exceeded 10% of time (mph)	Percentage of time wind speed exceeds comfort criterion for seating areas	Percentage of time wind speed exceeds comfort criterion for pedestrian areas	Wind Speed exceeded 10% of time (mph)	Speed Change Relative to Existing (mph)	Percentage of time wind speed exceeds comfort criterion for seating areas	Percentage of time wind speed exceeds comfort criterion for pedestrian areas
26	7	11	13	36*	14*	9	-4	20*	2
27	7	11	9	17*	3	8	-1	14*	1
28	7	11	8	15*	1	9	1	21*	3
29	7	11	11	30*	7	11	0	31*	7
30	7	11	10	25*	4	13	3	48*	19*
31	7	11	10	25*	4	12	2	43*	14*
32	7	11	11	33*	9	11	0	39*	10
33	7	11	12	37*	12*	13	1	42*	15*
34	7	11	10	27*	4	8	-2	13*	2
35	7	11	11	33*	10	15	4	45*	24*
36	7	11	13	45*	15*	15	2	53*	25*
37	7	11	11	32*	7	12	1	41*	14*
38	7	11	15	44*	23*	13	-2	40*	16*
39	7	11	12	36*	11*	11	-1	36*	8
40	7	11	17	55*	31*	15	-2	47*	24*
41	7	11	8	15*	2	8	0	16*	2
42	7	11	12	38*	13*	13	1	41*	14*
43	7	11	15	49*	23*	14	-1	49*	22*
44	7	11	14	45*	18*	14	0	45*	18*
45	7	11	13	47*	18*	15	2	49*	22*
46	7	11	13	47*	18*	14	1	48*	20*
47	7	11	12	40*	12*	12	0	38*	11*
48	7	11	13	42*	15*	13	0	43*	18*
49	7	11	11	36*	10	11	0	32*	7
50	7	11	13	48*	17*	13	0	49*	18*

References			Existing Conditions (No Project)			Existing-Plus-Project			
Measurement Location	Comfort criterion for seating areas (mph)	Comfort criterion for pedestrian areas (mph)	Wind Speed exceeded 10% of time (mph)	Percentage of time wind speed exceeds comfort criterion for seating areas	Percentage of time wind speed exceeds comfort criterion for pedestrian areas	Wind Speed exceeded 10% of time (mph)	Speed Change Relative to Existing (mph)	Percentage of time wind speed exceeds comfort criterion for seating areas	Percentage of time wind speed exceeds comfort criterion for pedestrian areas
51	7	11	14	42*	20*	10	-4	27*	6
52	7	11	16	45*	25*	11	-5	31*	7
53	7	11	14	50*	21*	12	-2	33*	11*
54	7	11	15	52*	24*	11	-4	31*	7
55	7	11	12	42*	12*	14	2	50*	22*
56	7	11	12	42*	12*	11	-1	38*	9
57	7	11	12	41*	14*	13	1	44*	17*
58	7	11	12	40*	13*	10	-2	28*	5
59	7	11	8	14*	2	10	2	28*	4
60	7	11	13	44*	15*	12	-1	40*	12*
61	7	11	12	32*	11*	12	0	29*	11*
62	7	11	11	36*	8	10	-1	27*	4
63	7	11	13	47*	18*	13	0	45*	19*
Average	--	--	**11.6**	**35**	**11.5**	**12.4**	**0.8**	**39.3**	**14.5**
No. of Exceedances	--	--	--	**61**	**34**	--	--	**63**	**39**

Source: ARUP 2020

Notes:

* = exceeds

Table 4.3-3: Wind Comfort Results for Cumulative Conditions

References			Existing Conditions (No Project)			Cumulative Conditions (No Project)			Cumulative-Plus-Project			
Measurement Location	Comfort criterion for seating areas (mph)	Comfort criterion for pedestrian areas (mph)	Wind Speed exceeded 10% of time (mph)	Percentage of time wind speed exceeds comfort criterion for seating areas	Percentage of time wind speed exceeds comfort criterion for pedestrian areas	Wind Speed exceeded 10% of time (mph)	Percentage of time wind speed exceeds comfort criterion for seating areas	Percentage of time wind speed exceeds comfort criterion for pedestrian areas	Wind Speed exceeded 10% of time (mph)	Speed Change Relative to Existing (mph)	Percentage of time wind speed exceeds comfort criterion for seating areas	Percentage of time wind speed exceeds comfort criterion for pedestrian areas
1	7	11	14	41*	20*	12	38*	13*	14	0	51*	24*
2	7	11	13	36*	14*	10	25*	5	13	0	48*	19*
3	7	11	11	28*	9	9	17*	2	15	4	51*	24*
4	7	11	9	17*	2	7	7	1	16	7	52*	26*
5	7	11	7	9	1	7	8	1	15	8	53*	25*
6	7	11	8	16*	2	8	14*	2	12	4	41*	13*
7	7	11	10	30*	5	10	28*	4	11	1	33*	9
8	7	11	10	25*	4	10	24*	4	10	0	28*	5
9	7	11	10	31*	6	10	31*	6	11	1	35*	10
10	7	11	7	7	1	7	6	1	8	1	16*	1
11	7	11	11	36*	9	11	34*	8	10	-1	31*	6
12	7	11	15	50*	24*	13	43*	16*	19	4	55*	35*
13	7	11	14	49*	21*	13	47*	19*	17	3	57*	32*
14	7	11	10	28*	4	10	27*	4	15	5	56*	27*
15	7	11	12	40*	14*	12	38*	12*	14	2	56*	24*
16	7	11	12	41*	14*	11	37*	10	14	2	52*	22*
17	7	11	9	25*	3	9	21*	2	16	7	58*	30*
18	7	11	12	42*	13*	11	38*	10	12	0	41*	11*
19	7	11	13	44*	18*	12	37*	11*	15	2	52*	26*
20	7	11	12	36*	13*	10	25*	4	14	2	49*	22*

References			Existing Conditions (No Project)			Cumulative Conditions (No Project)			Cumulative-Plus-Project			
Measurement Location	Comfort criterion for seating areas (mph)	Comfort criterion for pedestrian areas (mph)	Wind Speed exceeded 10% of time (mph)	Percentage of time wind speed exceeds comfort criterion for seating areas	Percentage of time wind speed exceeds comfort criterion for pedestrian areas	Wind Speed exceeded 10% of time (mph)	Percentage of time wind speed exceeds comfort criterion for seating areas	Percentage of time wind speed exceeds comfort criterion for pedestrian areas	Wind Speed exceeded 10% of time (mph)	Speed Change Relative to Existing (mph)	Percentage of time wind speed exceeds comfort criterion for seating areas	Percentage of time wind speed exceeds comfort criterion for pedestrian areas
21	7	11	11	34*	9	10	29*	5	14	3	47*	20*
22	7	11	9	25*	3	11	32*	7	14	5	43*	20*
23	7	11	9	23*	3	10	31*	5	10	1	31*	6
24	7	11	11	36*	9	11	36*	9	10	-1	29*	5
25	7	11	10	29*	5	9	24*	3	9	-1	19*	2
26	7	11	13	36*	14*	13	38*	15*	9	-4	20*	2
27	7	11	9	17*	3	9	17*	2	8	-1	14*	1
28	7	11	8	15*	1	8	14*	1	9	1	21*	3
29	7	11	11	30*	7	11	31*	7	11	0	31*	7
30	7	11	10	25*	4	10	23*	4	13	3	48*	19*
31	7	11	10	25*	4	8	15*	1	12	2	43*	14*
32	7	11	11	33*	9	10	26*	4	11	0	39*	10
33	7	11	12	37*	12*	10	30*	6	13	1	42*	15*
34	7	11	10	27*	4	9	20*	2	8	-2	13*	2
35	7	11	11	33*	10	10	26*	6	15	4	45*	24*
36	7	11	13	45*	15*	11	38*	9	15	2	53*	25*
37	7	11	11	32*	7	10	29*	7	12	1	41*	14*
38	7	11	15	44*	23*	12	38*	12*	13	-2	40*	16*
39	7	11	12	36*	11*	11	36*	10	11	-1	36*	8
40	7	11	17	55*	31*	14	49*	22*	15	-2	47*	24*
41	7	11	8	15*	2	8	12*	2	8	0	16*	2
42	7	11	12	38*	13*	12	38*	12*	13	1	41*	14*

References			Existing Conditions (No Project)			Cumulative Conditions (No Project)			Cumulative-Plus-Project			
Measurement Location	Comfort criterion for seating areas (mph)	Comfort criterion for pedestrian areas (mph)	Wind Speed exceeded 10% of time (mph)	Percentage of time wind speed exceeds comfort criterion for seating areas	Percentage of time wind speed exceeds comfort criterion for pedestrian areas	Wind Speed exceeded 10% of time (mph)	Percentage of time wind speed exceeds comfort criterion for seating areas	Percentage of time wind speed exceeds comfort criterion for pedestrian areas	Wind Speed exceeded 10% of time (mph)	Speed Change Relative to Existing (mph)	Percentage of time wind speed exceeds comfort criterion for seating areas	Percentage of time wind speed exceeds comfort criterion for pedestrian areas
43	7	11	15	49*	23*	15	49*	23*	14	-1	49*	22*
44	7	11	14	45*	18*	14	45*	19*	14	0	45*	18*
45	7	11	13	47*	18*	14	47*	19*	15	2	49*	22*
46	7	11	13	47*	18*	14	48*	20*	14	1	48*	20*
47	7	11	12	40*	12*	12	41*	13*	12	0	38*	11*
48	7	11	13	42*	15*	13	42*	16*	13	0	43*	18*
49	7	11	11	36*	10	12	35*	10*	11	0	32*	7
50	7	11	13	48*	17*	13	47*	16*	13	0	49	18*
51	7	11	14	42*	20*	14	41*	19*	10	-4	27	6
52	7	11	16	45*	25*	15	45*	24*	11	-5	31	7
53	7	11	14	50*	21*	14	50*	20*	12	-2	33	11*
54	7	11	15	52*	24*	14	49*	21*	11	-4	31	7
55	7	11	12	42*	12*	12	42*	12*	14	2	50	22*
56	7	11	12	42*	12*	12	40*	11*	11	-1	38	9
57	7	11	12	41*	14*	12	40*	12*	13	1	44	17*
58	7	11	12	40*	13*	12	41*	14*	10	-2	28	5
59	7	11	8	14*	2	8	16*	2	10	2	28	4
60	7	11	13	44*	15*	13	44*	15*	12	-1	40	12*
61	7	11	12	32	11*	12	34*	12*	12	0	29	11*
62	7	11	11	36	8	11	32*	7	10	-1	27	4
63	7	11	13	47	18*	11	38*	10	13	0	45	19*

References			Existing Conditions (No Project)			Cumulative Conditions (No Project)			Cumulative-Plus-Project			
Measurement Location	Comfort criterion for seating areas (mph)	Comfort criterion for pedestrian areas (mph)	Wind Speed exceeded 10% of time (mph)	Percentage of time wind speed exceeds comfort criterion for seating areas	Percentage of time wind speed exceeds comfort criterion for pedestrian areas	Wind Speed exceeded 10% of time (mph)	Percentage of time wind speed exceeds comfort criterion for seating areas	Percentage of time wind speed exceeds comfort criterion for pedestrian areas	Wind Speed exceeded 10% of time (mph)	Speed Change Relative to Existing (mph)	Percentage of time wind speed exceeds comfort criterion for seating areas	Percentage of time wind speed exceeds comfort criterion for pedestrian areas
Average	--	--	11.6	35	11.5	11.0	32.4	9.5	12.3	1.2	39.0	13.8
No. of Exceedances	--	--	--	61	34	--	60	27	--	--	62	35

Source: ARUP 2020

Notes:

* = exceeds

Figure 22: Wind Comfort and Hazard Results – Existing-Plus-Project Conditions

Figure 23: Wind Comfort and Hazard Results – Cumulative Conditions

Figure 24: Wind Comfort and Hazard Results – Cumulative-Plus-Project Conditions

4.4 SHADOW

4.4.1 Introduction

This section discusses the shadow impacts of the proposed project on public open spaces and recreation facilities near the project site. This section is based on the results of the shadow analysis report prepared for the proposed project by Prevision Design, included in this EIR as Appendix D.[95] The "Environmental Setting" discussion that follows describes the existing publicly accessible open spaces and recreation facilities near the project site that could potentially be affected by the proposed project. The "Regulatory Framework" section discusses regulations related to shadow that are applicable to proposed development projects. The "Impacts and Mitigation Measures" discussion describes the criteria for determining whether the proposed project would cast shadow on public open spaces near the project site; the shadow impacts of the proposed project; the cumulative shadow effects of the proposed project, combined with past, present, and reasonably foreseeable future projects; and applicable mitigation measures.

4.4.2 Environmental Setting

Existing Open Space Near the Project Site

There are no existing public or private open space facilities located on the project site. The nearest parks or public open spaces include the following:

- Mint Plaza, about 0.1-mile to the northeast;
- Father Alfred E. Boeddeker Park, about 0.3-mile to the northwest;
- Gene Friend Recreation Center, about 0.3-mile to the southeast;
- Turk-Hyde Mini Park, about 0.4-mile to the north;
- Tenderloin Recreation Center, about 0.4-mile to the north;
- UN Plaza, about 0.4-mile to the northwest;
- Victoria Manalo Draves Park, about 0.5-mile to the south;
- Joseph L. Alioto Performing Arts Piazza, about 0.5-mile to the northwest;
- Union Square, about 0.7-mile to the north; and
- Yerba Buena Gardens, about 0.5-mile to the northeast.

As discussed in the shadow analysis report, the UN Plaza and Mint Plaza are the only public open space areas that could be affected by shadow casted by the proposed project. The characteristics of these two open space areas are described in the following paragraphs.

UN Plaza

UN Plaza is a 2.35-acre (102,227 square feet) urban plaza about 0.4-mile northwest of the project site. The UN Plaza is under the jurisdiction of San Francisco Public Works and located in the Downtown/Civic Center neighborhood of San Francisco. The plaza is bounded by McAllister Street to the north, Market Street to the south, Charles J. Brenham Place to the east, and Hyde Street to the

[95] Prevision Design. 2020. Shadow Analysis Report for the Proposed 469 Stevenson Street Project

west. The plaza fills the space between three groups of buildings on the northwest, southwest and northeast corners of the block (Assessor's Block 0351 / Lots 022, 033, 035, 037, 041, 043, 046, 049, 050, 051, and 052-113).

UN Plaza is irregularly shaped but has two principal axes: the east-west axis visually connects San Francisco City Hall with Market Street, while a shorter north-south axis connects Leavenworth Street to Market Street. The plaza is not fenced and consists of a wide brick-paved area which is punctuated by raised planting areas with mature trees. On the western edge of the plaza near Hyde Street, there is a large bronze equestrian statue. Near the center of the plaza, there is a terraced area with a sculptural fountain. On the western corner of the plaza as well on the southern side are entrances to the underground Civic Center BART and Muni stations.

Prevision Design visited UN Plaza on September 29 and October 3 through 5, 2019 and conducted 30-minute observations during the morning (7:30 a.m.-8:00 a.m.), midday (11:30 a.m.-12:00 p.m.), and afternoon (2:45 p.m.-3:15 p.m.). During these times, the number of users in the plaza ranged from approximately 900 to 1,400. The observed intensity of use varied at different times of the day and days of the week, but could be characterized as high, likely due to the location of the plaza between Market Street and Civic Center and because of the two entries/exits for the Civic Center BART and Muni Stations. It was observed that approximately 90 to 95 percent of the users were passing through the plaza.[96] There were several scheduled events occurring during the site visits, including an arts and crafts fair, farmer's market, and rally. During the events, it was observed that the number of total users passing through the plaza dropped, with about 75 percent of users engaging in the event (e.g., buying food at the farmer's market).[97]

Mint Plaza

Mint Plaza is a 0.36-acre (15,496 square feet) urban plaza about 0.1-mile northeast of the project site. Mint Plaza is owned by the City and County of San Francisco but maintained and programmed by the Friends of Mint Plaza, a non-profit organization. The plaza is in the SoMa neighborhood of San Francisco. The "L" shaped plaza is bounded by existing development (the former U.S. Mint, 2 Mint Plaza, 6 Mint Plaza, 10 Mint Plaza, and 14-54 Mint Plaza) to the north, south, and west, with public entries on Fifth Street, along the eastern edge of the plaza, and on Jessie Street at the southwest portion of the plaza.

Completed in 2009, the plaza is comprised primarily of stone paving hardscape, along with fixed bench seating areas and landscape plantings, a vine trellis canopy running along the northern edge, and several areas for movable café seating serving several cafés and restaurants as well as mobile food vendors. The plaza also serves as a stormwater collection area, with a large sub-grade water infiltration zone in the center of the plaza.

[96] Prevision Design. 2020. Shadow Analysis Report for the Proposed 469 Stevenson Street Project.

[97] Ibid.

Prevision Design visited Mint Plaza on September 29 and October 3 through 5, 2019 and conducted 30-minute observations during the morning (9:00 a.m.-9:30 a.m.), midday (12:15 p.m.-12:45 p.m. and 12:30 p.m.-1:00 p.m.), and afternoon (2:45 p.m.-3:15 p.m. and 3:30 p.m.-4:00 p.m.). During these times, the number of users in the plaza ranged from approximately 200 to 575. It was observed that approximately 75 to 90 percent of users utilized the plaza to cut through to other destinations, or as a destination for a cup of coffee or food truck item that was taken to go.[98] ~~It was observed that a~~Approximately 10 to 25 percent of users remained in the plaza for longer than a few minutes, with those users utilizing the fixed seating wall areas or the movable chairs. Overall, the observed intensity of use varied but could be characterized as moderate to high, and ~~but~~ was largely observed to be used as a pass-though, or a destination to buy café goods then leave.[99]

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4.4.3 Regulatory Framework

While there are no specific federal or state regulations which deal with solar access or shadow effects on publicly accessible open spaces, San Francisco has established several provisions, policies, and procedures that provide the framework by which shadow cast from projects is evaluated.

Local Regulations

San Francisco General Plan

Recreation and Open Space Element

Policy 1.9 in the Recreation and Open Space Element (2014) of the general plan states that sunlight should be preserved in public open spaces. The policy promotes protection of solar access and avoiding shade to maintain the usability of public open space. To determine whether a new shadow cast by a development is adverse to the use of a particular property, the City considers several quantitative and qualitative criteria, including the size of the park property, the amount of existing shadow, and the timing, size, location, and duration of the new shadow and the public good served by the building. The proposed project would be subject to this review under the general plan.

Urban Design Element

Policy 3.4 in the Urban Design Element of the general plan calls for the promotion of building forms that will respect and improve the integrity of open spaces and other public areas. Buildings to the south, east, and west of parks and plazas are to be limited in height or effectively oriented so as not to prevent the penetration of sunlight to such parks and plazas. Where feasible, large buildings and developments are to have ground-level open space, well situated for public access and sunlight penetration.

[98] Prevision Design. 2020. Shadow Analysis Report for the Proposed 469 Stevenson Street Project.

[99] Ibid.

Downtown Area Plan

Policy 14.1 in the Downtown Plan states that new development should promote building forms that will maximize the sun access to open spaces and other public areas. As such, buildings to the south, east, and west of parks and plazas should be limited in height or effectively oriented so as not to prevent the penetration of sunlight to such parks and plazas. There are also certain locations in downtown where direct sunlight is very important. This includes shopping streets in the retail district, and alleys with a high concentration of eating and drinking establishments and a high volume of lunchtime pedestrian use. New buildings adjacent to these spaces should be shaped to minimize the shadow that is cast by the building on the public space.[100]

San Francisco Planning Code

Planning Code Section 101.1/Proposition M

Section 101.1 of the San Francisco Planning Code establishes eight priority policies. These priority policies are the basis upon which inconsistencies with the General Plan are resolved. Priority policy No. 8 calls for the protection of parks and open space and their access to sunlight and vistas.

Prior to issuing a permit for any project that requires an initial study under CEQA; prior to issuing a permit for any demolition, conversion, or change of use; and prior to taking any action that requires a finding of consistency with the General Plan, the City is required to find that the proposed project or legislation would be consistent with the priority policies.

Planning Code Section 295/Proposition K

Section 295 of the San Francisco Planning Code prohibits the issuance of building permits for structures over 40 feet in height that would cast net new shadow on properties under the jurisdiction of, or designated to be acquired by, the Recreation and Park Commission between one hour after sunrise to one hour before sunset at any time of year, unless the planning commission determines that the net new shadow (1) would not have an adverse impact on the use of the property or (2) the impact would not be significant.

The shadow analysis determined net new shadow cast by the proposed project would not affect any open space under the jurisdiction of, or designated for acquisition by, the Recreation and Park Commission, so these specific provisions do not apply to the proposed project.

Other Local Regulations

Planning code sections 146 and 147 establish additional design guidelines for buildings in C-3 Downtown Commercial, South of Market Mixed Use, and Eastern Neighborhoods Mixed Use

[100] City and County of San Francisco. 1989. Downtown Area Plan. Available at: https://generalplan.sfplanning.org/Downtown.htm. Accessed October 23, 2019.

Districts for the purpose of limiting shadow on public sidewalks, public plazas, and other publicly accessible spaces other than those protected under section 295.

The proposed project is not located in an area subject to section 146 regulations; however, would be subject to the provisions of section 147. Accordingly, the proposed project is required to comply with section 147 through the section 309 process to establish that the project has been shaped, consistent with the dictates of good design and without unduly restricting the development potential of the site in question, to reduce substantial shadow impacts on public plazas and other publicly accessible spaces.

4.4.4 Impacts and Mitigation Measures

Significance Criteria

The following significance criterion is from the planning department's initial study checklist and is used to determine the level of impact related to shadow. Implementation of the proposed project would have a significant effect related to shadow if the project would:

- Create new shadow that substantially and adversely affects the use and enjoyment of publicly accessible open spaces

Approach to Analysis

As there are no broadly established or accepted methodologies for technical evaluation of shadow effects under the San Francisco General Plan or CEQA, for review of shadow impacts on open spaces not subject to section 295, the planning department typically adapts many of the section 295 technical standards. This analysis uses many of the standards for review of shadow under section 295.

Although the proposed project would not shade any section 295 open space, the shadow fan analysis[101] prepared by Prevision Design follows the criteria adopted by the Recreation and Parks Commission and the planning commission in 1987 and 1989, as stated below:

> *Shadow is quantitatively measured by multiplying the area of the shadow by the amount of time the shadow is present on the open space, in units called square foot-hours (sfh). Determining the annual net new shadow load generated by a project begins with a calculation of the number of square foot-hours that would theoretically fall on a qualifying publicly accessible open space each day from an hour after sunrise to an hour before sunset summed over the course of a year, ignoring all shadow from any source. This total is referred to as the Theoretical Annual Available Sunlight (TAAS) for that park. The second step is the calculation of the baseline (or current) shading conditions, which factors in the square foot-hours of shadow cast by existing buildings and other structures on the open space. Lastly, the shadow effects of the project are calculated, with the difference between the baseline shadow condition and project shadow condition considered being net new project shadow. The amount of shadow is defined as the shadow in square foot-hours cast by the project divided by the TAAS, expressed as a percentage.*

[101] Prevision Design. 2020. Shadow Analysis Report for the Proposed 469 Stevenson Street Project.

Further, in addition to quantitative criteria, the adopted criteria set forth qualitative criteria for evaluation of shadow. Those criteria for assessing net new shadow are based on existing shadow profiles [graphics], important times of day, important seasons in the year, location of the net new shadow, size, and duration of net new shadows and the public good served by buildings casting net new shadow.

Methodology

To evaluate the shadow impacts of the proposed project, a 3D computer model of the project was prepared. The model includes the project site, potentially affected open spaces, the surrounding urban environment, and cumulative development projects that would have the potential to generate additional net new shadow on the same publicly accessible open spaces as the proposed project. The purpose of this analysis is to inform decision-makers of the potential effects of the proposed project's shadow on public and private open space areas, and to determine whether the project would create new shadow that would substantially affect the use and enjoyment of these facilities.

For the purposes of this analysis, Prevision Design has built a 3D computer model reflecting representation of the local San Francisco urban building context and landform surrounding the project generated by Light Intensity Distance and Ranging [or Laser Imaging Detection and Ranging]. This model is reflective of actual building massing and articulation circa 2010. For new buildings built[102] after that date, Prevision Design has generated individual building models using available architectural plans and records. Prevision Design also obtained or generated 3D models of reasonably foreseeable future projects[103] that would have the potential to generate additional net new shadow on the same publicly accessible open spaces that were shown to be affected by the project (cumulative scenario). Precise locations, boundaries, and sizes of the affected open spaces are input using geographic information systems data provided by the planning department. The shadow model considers the proposed project at full buildout.

To determine the area and features that would be affected by net new project shadow, Prevision Design used the 3D computer context model to generate a full-year shadow fan diagram, which depicts all areas that would receive net new shadow (factoring in the presence of current and intervening shadow from existing buildings) between one hour after sunrise through one hour before sunset ("the daily analysis period") throughout the year. The shadow fan analysis identified that UN Plaza and Mint Plaza would receive net new shadow from the project, as shown by Figure 25.

Quantitative Calculations

Using the 3D project and urban context model, Prevision Design performed snapshot shadow measurements at 15-minute intervals within the daily analysis period, repeating these daily measurements every seven days between the Summer Solstice (June 21) and Winter Solstice (December 20), with interim times and dates extrapolated to approximate shadow conditions on

[102] The final form of buildings currently under construction are included as if they are complete for the purposes of this study.
[103] Qualifying cumulative projects are those that are currently in some stage of the planning or permitting process but have not yet been approved or have been approved but are not yet under construction.

other days and times. This half-year period (between the Summer and Winter Solstices) is referred to by the planning department as a "solar year." As the path of the sun is roughly mirrored over the second half of the year (December 21 through June 20), analysis of this half-year period allows for a reasonable

Figure 25: Net New Shadow Fan and Affected Open Spaces

extrapolation to arrive at a full year estimated calculation of the areas and durations of existing (baseline) shadow that currently falls on the affected open spaces.

In addition to the quantitative analysis of existing shadow conditions, calculations were generated to reflect the addition of the project, with the difference between the baseline conditions and those with the project representing the net new shadow effect.

Lastly, 3D models of the cumulative development projects (listed in Table 4.4-1) were added to the model in order to generate the cumulative scenario, depicting the effect of reasonably foreseeable shadow from projects that are currently under review by the planning department or a building permit is on file or has been approved by the building department. Cumulative projects for this resource topic were identified by determining which projects in the planning department's development pipeline could shade the same open spaces (UN Plaza and Mint Plaza) as the proposed project. Therefore, the list of cumulative projects for this topic includes projects outside of a 0.25-mile radius of the project site (Table 4.4-1).

Table 4.4-1: Cumulative Development Projects

Cumulative Project Address	Building Height
1125 Market Street (Case No. 2013.0511E)	119'-3"+22' parapet
1055 Market Street (Case No. 2014.0408E)	94'+12' parapet
457-475 Minna Street (Case No. 2018-016055ENV)	173'-6"+12' parapet
57 Taylor Street aka 111 Turk Street (Case No. 2015-007525ENV)	118'+10' parapet
921 Howard Street (Case No. 2017-000275ENV)	180'+10' parapet
996 Mission Street (Case No. 2015-015253ENV)	85'+10'-8.25' parapet
30 Van Ness Avenue (Case No. 2017-008051PRJ)	520'+20' parapet
10 South Van Ness Avenue (Case No. 2015-004568ENV)	400'+20' parapet
95 Hawthorne Street (Case No. 2016-001794PRJ)	320'+38' parapet
101 Hyde Street (Case No. 2012.0086PRJ)	80'

Source: Prevision Design 2020

Qualitative Analysis

To gain an understanding of how net new shadow may affect existing patterns of use, Prevision Design conducted six 30-minute site visits to each open space to observe the nature and intensity of uses. Two site visits were performed in the morning, two at midday, and two late in the day, with one visit from each pair on a weekday and one on a weekend.

The qualitative effects of net new shadow on the affected open spaces are discussed based on the size, timing, and duration of net new shadow and how such shadow might potentially affect observed patterns of use.

Shadow Diagrams

To provide a spatial and contextual understanding of the location, size, and features affected by net new shadow, Prevision Design prepared the following shadow profile graphics:

- **Sweep Shadow diagrams**. Graphics showing "snapshot" shadow profiles at hourly intervals over the entire area affected by the project. Graphics differentiate between existing shadow, net new project shadow, and cumulative condition shadow within the daily analysis period on the Summer Solstice (June 21), the approximate equinoxes (March 22/September 20), and the Winter Solstice (December 20). These graphics are provided in Exhibit E and F in the shadow analysis report, Appendix D of this EIR.
- **Detail Shadow diagrams**. Additional graphics are produced showing existing, project and cumulative shadow profiles at each affected open space at hourly intervals within the daily analysis period on the date with the greatest quantitative net new shadow. At times when the project is casting net new shadow on an open space, additional graphics are provided at 15-minute intervals. These graphics are provided in Exhibit E and F in the shadow analysis report, Appendix D of this EIR.

Impact Evaluation

The following analysis evaluates potential shadow impacts that could result from the proposed project.

Impact SD-1: The proposed project would create new shadow that could substantially and adversely affect the use and enjoyment of publicly accessible open spaces (*Significant and Unavoidable*).

Introduction

The project would increase shadow cast near the project site. Existing open space within potential reach of project shadow include UN Plaza and Mint Plaza. As can be seen in Figure 25, the proposed project does not have the potential to affect any public open spaces that are under the jurisdiction of the Recreation and Park Commission, or any other public parks or privately-owned open spaces, including several in the vicinity of the project, such as Boedekker Park, Hallidie Plaza, the Westfield public roof terrace, the public Intercontinental roof terrace, or Yerba Buena Gardens. Net new project shadow would not affect these properties due to the distance and location of these spaces relative to the project site, the design of the proposed project, and/or due to shadow cast by existing intervening buildings.

UN Plaza

UN Plaza experiences 140,940,789 annual sfh of shadow under current conditions. Based on a TAAS of 380,427,255 sfh, the UN Plaza's annual shadow load is 37.048 percent. The highest amount of

shadow cast under current conditions occurs in the early morning and late afternoon hours, with the midday hours being the least shaded. This pattern occurs year-round; however, overall shading is greater over the winter months as compared to the summer months.[104]

The proposed project would result in net new shadow falling on UN Plaza, adding approximately 9,693 net new annual sfh of shadow and increasing sfh of shadow by 0.003 percent above current levels from 37.048 percent to 37.051 percent. Net new shadow on UN Plaza that would be cast by the proposed project would occur between approximately May 4th through August 8th and would be present for up to 22 minutes in the early morning (no net new shadow would be present later than 7:30 a.m. on any date). Specifically, the day of maximum net new shadow on UN Plaza would occur on June 21st starting at 6:46 a.m. and lasting for approximately 10 minutes. During this time, the area of net new shadow cast would be 1,649 square feet in size, representing 1.6 percent of the total plaza area. The size and duration of proposed project-generated net new shadow would vary on other dates within the affected period, with net new shadow lasting between 0 and 22 minutes. Figure 26 depicts the size and location of the largest shadow cast on UN Plaza by the project.

The areas affected by net new shadow include areas that were not observed to be the most used by visitors, such as small portions of the plaza hardscape area, the McAllister point of public entry, and portions of the water feature.

Furthermore, the date which has the maximum amount of net new shadow throughout the day would occur at a time early in the day when shadows are shortening and all net new shadow would leave the plaza prior to 7 a.m., prior to the start of the types of events~~, such as the farmer's market and arts and crafts fair, which~~ that were observed to increase user activity in UN Plaza, such as the farmer's market and arts and crafts fair.[105] Therefore, project shadow would not be expected to substantially and adversely affect the use and enjoyment of UN Plaza and shadow impacts on UN Plaza would be less than significant.

Mint Plaza

Mint Plaza experiences 38,441,767 annual sfh of shadow under current conditions. Based on a TAAS of 57,665,807 sfh, Mint Plaza's annual shadow load is 66.66 percent. Mint Plaza is surrounded on most sides by multi-story development which generates substantial shading on the plaza during the morning and mid- to late afternoon hours, and throughout the day over the winter months. Midday and early afternoon hours are the least shaded under current conditions, with the greatest sunlight availability occurring over the summer months.[106]

The proposed project would result in net new shadow falling on Mint Plaza, adding approximately 325,407 net new annual sfh of shadow and increasing sfh of shadow by 0.56 percent above current levels from 66.66 percent to 67.22 percent.

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[104] Prevision Design. 2020. Shadow Analysis Report for the Proposed 469 Stevenson Street Project.
[105] Ibid.
[106] Ibid.

Figure 26: Date with Most Net New Shadow from the Proposed Project on UN Plaza

Net new shadow on Mint Plaza that would be cast by the proposed project would occur between approximately September 21st through March 21st and would be present for up to 90 minutes in the mid- to late afternoon (no net new shadow would be present just before 2 p.m. or later than 4:30 p.m. on any date). The largest area of net new shadow cast would be 5,811 square feet and occur on November 1st and February 8th at 2:30 p.m. Figure 27 depicts the size and location of the largest shadow cast on Mint Plaza by the project.

The longest duration of net new shadow on Mint Plaza due to the proposed project would occur on February 15th and October 25th when the proposed project would generate new shadow over the northwestern half of the plaza starting just prior to 2 p.m. and be present for approximately 90 minutes. The size and duration of proposed project-generated net new shadow would vary on other dates within the affected period, with net new shadow lasting between zero and 90 minutes. Net new shadow generated by the proposed project would have an average duration of approximately 60 minutes.

While the observed uses of Mint Plaza were largely transitory in nature, portions of Mint Plaza that would likely be more sensitive to the addition of net new shadow would be features that are fixed in location, conducive to more stationary activities (where users remain rather than pass through) or are observed to be currently well used by the public. The seating wall areas in Mint Plaza would likely qualify as the most sensitive areas as would the areas where ~~freestanding~~ movable seating is typically placed. The sensitivity of these areas would likely be increased if net new shadow were to occur at times of the day when the plaza is typically more unshaded and when such features would typically receive higher levels of use, such as around the midday hours.

Throughout the year, net new shadow due to the proposed project would occur in the mid- to late afternoon. The largest net new shadow profile would cover about one-third of the plaza area and would occur on the northeastern side fronting Fifth Street. Plaza users occupying the seating wall areas in the late afternoon would experience shadow falling on that area approximately one hour earlier in the afternoon than under current conditions. This may affect use of this feature which was observed to be occupied by 10 to 15 people over the course of both afternoon site observation visits. The net new shadow would additionally shade an area adjacent to the Mint building an hour earlier than under current conditions. This is an area where users were observed using movable chairs. Other areas of the plaza would either be unaffected due to the presence of existing shadow or observed to be areas of predominantly transitory uses. Due to the size, duration and location of shadow cast on Mint Plaza from the proposed project, the time of day the net new shadow would occur, and the number of users observed in the open space areas identified as most sensitive areas, the new shadow cast by the proposed project could substantially affect the use and enjoyment of Mint Plaza and result in a significant shadow impact.

Other than a reduction in building height or a change in building mass, no further modification of the proposed project would eliminate the net new shadow on Mint Plaza. Reducing the building height or changing the building mass would reduce the development program of the proposed projects. Therefore, there is no feasible mitigation to reduce this impact to a less-than-significant level and this impact is significant and unavoidable.

Figure 27: Date with Most Net New Shadow from the Proposed Project on Mint Plaza

Nearby Streets and Sidewalks

The proposed project would create new shadow on nearby streets and sidewalks at times of day and throughout the year when these areas would not already be shaded by existing buildings in the area. At certain times of day and year, the proposed project would cast net new shadow on nearby sidewalks, including those along Stevenson Street, Jessie Street, Fifth Street, and Sixth Street. Most of the sidewalks in this area are already shaded by existing buildings and, given that sidewalks are typically used by pedestrians traveling between destinations and not as a recreational resource, the additional project-related shadow would not substantially affect the use of the sidewalks.

Shadow from the proposed project on nearby sidewalks would be transitory in nature. Overall, the proposed project would not increase the amount of shadow on the sidewalks above levels that are common and generally expected in developed urban environments. Therefore, the proposed project would have a less than significant shadow impact on the use of streets and sidewalks.

Summary

As described above, the proposed project would cast new shadow on UN Plaza and Mint Plaza. Implementation of the proposed project would increase shadow on UN Plaza by approximately 0.003 percent and would therefore not adversely affect the use and enjoyment of this public open space area. However, due to the extent, duration, and location of the increased shadow coverage from the proposed project on Mint Plaza and the number of users that were observed in this open space area, the proposed project could adversely affect the use and enjoyment of this public open space area, resulting in a significant impact. No feasible mitigation measures to reduce shadow impacts on Mint Plaza have been identified. Therefore, the proposed project could result in a significant and unavoidable impact to Mint Plaza.

Cumulative Impacts

This section discusses cumulative shadow impacts that could result from the proposed project in combination with reasonably foreseeable future projects. As described above under Approach to Analysis, the cumulative context includes the proposed project and the development projects listed in Table 4.4-1, which were determined to potentially shade UN Plaza and Mint Plaza.

Impact C-SD-1: The proposed project, in combination with reasonably foreseeable projects, could create new shadow in a manner that substantially and adversely affects the use and enjoyment of publicly accessible open spaces. (*Significant and Unavoidable*)

The proposed project would not cast net new shadow on any public open spaces that are under the jurisdiction of the Recreation and Park Commission. For this reason, the proposed project would not have the potential to result in cumulative shadow impacts to public open spaces that are under the jurisdiction of the Recreation and Park Commission.

As discussed under Impact SD-1, UN Plaza and Mint Plaza are the only public open spaces that would be shadowed by the proposed project. Therefore, these are the only public open spaces that the project has the potential to contribute to cumulative shadow impacts.

UN Plaza

Shadow cast from cumulative development projects would affect UN Plaza year-round during both the early mornings as well as midday hours from fall through spring. The daily duration of net new shadow would be between approximately 46 and 148 minutes, with areas of shadow ranging from 0 to 15,080 square feet.

The days of maximum quantitative net new shadow on UN Plaza under the cumulative scenario would occur on April 26th and August 16th, when the proposed project and cumulative projects would shadow two of the southern planting/seat wall areas, the Civic Center BART/Muni entry, and portions of the plaza hardscape areas starting at 7:25 a.m. and lasting for approximately 2.5 hours. The largest area of net new shadow cast would be 14,282 square feet, representing 14.75 percent of the total plaza area, particularly along the southern edge of the plaza which contains seating walls that were observed to be well used by visitors.

The cumulative net new shadow from the proposed project and the cumulative development projects would result in an increase of 838,530 sfh of net new shadow on UN Plaza, compared to an increase of 9,693 sfh in net new shadow from the proposed project alone. This increase in sfh would result in a cumulative condition shadow load increase of 0.220 percent.

Due to the location of net new shadow on seating walls that were observed to be well used by visitors, the size of maximum net new shadow at 14.75 percent of the plaza, and up to 2.5 hour duration of cumulative shadow on UN Plaza, the proposed project in combination with cumulative projects could result in a significant cumulative shadow impact. However, as the proposed project would only increase sfh of shadow by 0.003 percent above current levels ~~, only~~ in the early morning, and because the areas of net new shadow from the project were not observed to be areas well used or particularly sensitive to shadow, the project's incremental shadow contribution on UN Plaza would not be cumulatively considerable.

Mint Plaza

As discussed under Impact SD-1, shadow cast from the proposed project would have a significant and unavoidable impact on Mint Plaza. Under the cumulative scenario, the only cumulative project that would shade Mint Plaza is the 921 Howard Street project. The 921 Howard Street project would generate a small amount of early morning shadow (prior to 8:30 a.m.) lasting less than 15 minutes over the western section of the plaza between November 16th and January 24th. While short in duration (less than 15 minutes), this cumulative shadow would cast shadow in a portion of the plaza that is currently unshaded (plaza is 75 to 85 percent shaded) and was observed to be occupied by 10 to 15 people during the morning.

The days of maximum net new shadow on Mint Plaza under cumulative conditions would occur on February 15th and October 25th, the same days as the maximum net new shadow on the plaza under existing plus project conditions. This is because the 921 Howard Street project would not shade the plaza on the same dates as the proposed project.

Although the proposed project and the 921 Howard Street project would not shade the plaza on the same dates, both projects would contribute new shadow on Mint Plaza. As such, the proposed project

in combination with cumulative development projects could result in a significant cumulative impact on Mint Plaza. As cumulative shadow on Mint Plaza would be mostly from the proposed project, the proposed project's contribution to this significant cumulative shadow impact would be cumulatively considerable. Therefore, the proposed project in combination with reasonably foreseeable projects would result in a significant cumulative shadow impact on Mint Plaza.

There is no feasible mitigation for the proposed project's contribution to the significant cumulative shadow impact. Any theoretical mitigation would fundamentally alter the basic design and programming parameters of the proposed project. Other than a reduction in building height or a change in building mass, no further modification of the proposed project would eliminate the net new shadow on Mint Plaza. Reducing the building height or changing the building mass would reduce the development program of the proposed project. Therefore, there is no feasible mitigation to reduce this impact to a less-than-significant level and this impact is significant and unavoidable.

Nearby Streets and Sidewalks

The proposed project in combination with reasonably foreseeable cumulative projects would create new shadow on nearby streets and sidewalks at times of day and throughout the year when these areas would not already be shaded by existing buildings in the area. At certain times of day and year, cumulative shadow would be cast by the proposed project and cumulative projects on nearby sidewalks, including those along Stevenson Street, Jessie Street, Fifth Street, and Sixth Street. Most of the sidewalks in this area are already shaded by existing buildings and, given that sidewalks are typically used by pedestrians traveling between destinations and not as a recreational resource, the additional cumulative shadow would not substantially affect the use of the sidewalks. Therefore, cumulative shadow on streets and sidewalks would be less than significant.

4.5 INITIAL STUDY TOPICS

4.5.1 Introduction

The planning department prepared an initial study to evaluate the physical environmental effects of the proposed project. The initial study assessed both project-specific and cumulative impacts for all topics required under CEQA and identified which environmental topic areas may be significantly impacted by the proposed project.

The initial study determined the proposed project's potential project-level and cumulative environmental effects would be less than significant, or reduced to less than significant with mitigation measures for the following topics: land use and planning, population and housing, cultural resources, tribal cultural resources, transportation and circulation, noise, odors, greenhouse gas emissions, recreation, utilities and service systems, public services, biological resources, geology and soils, hydrology and water quality, hazards and hazardous materials, mineral resources, energy resources, agriculture and forestry resources, and wildfire. Mitigation measures to reduce significant impacts to less than significant levels were identified for the following topics: cultural resources, tribal cultural resources, and noise.

As demonstrated below, the changes made to the project description since publication of the initial study would not result in any new significant environmental impacts, substantial increases in the significance of previously identified effects, or necessitate implementation of additional or considerably different mitigation measures than those identified in the initial study. The effects of the proposed project would be substantially the same as those reported in the initial study.

4.5.2 Population and Housing

The population and housing analysis for the project is presented in Section E.2 of the initial study (Appendix A). The project sponsor has increased the number of residential units from 462 residential units to 495 residential units. Based on the average household size in the City and County of San Francisco of 2.35 people per household,[107] the initial study determined that 462 new residential units would generate approximately 1,086 residents.[108] With the addition of 33 dwelling units, the number of residents generated by the proposed project would increase from 1,086 to 1,163.[109]

According to the U.S. Census Bureau's most recent American Community Survey,[110] the City and County of San Francisco had an estimated population of about 883,305 residents and 397,550 housing units in 2018. The project site is within Census Tract 176.01, which has a population of 8,432 and a

[107] U.S. Census Bureau, San Francisco County, California, Families and Living Arrangements, Persons per households, 2013-2017. Available online at: https://www.census.gov/quickfacts/sanfranciscocountycalifornia. Accessed June 12, 2019.

[108] 462 residential units x 2.35 people per household = 1,086 new residents.

[109] 495 residential units x 2.35 people per household = 1,163 new residents.

[110] U.S. Census Bureau, San Francisco County, California, Families and Living Arrangements, Households, 2013-2017. Available online at: https://www.census.gov/quickfacts/sanfranciscocountycalifornia. Accessed May 20, 2019.

total of 5,931 housing units.[111] The growth projections prepared by ABAG for Plan Bay Area 2040 for San Francisco County anticipate 483,700 households in 2040 (an increase of 137,800 households between 2010 and 2040) and 872,500 jobs in 2040 (an increase of 295,700 jobs between 2010 and 2040).[112] Additionally, the housing element projects a population of 1,085,700 by 2040.[113]

The proposed project's construction of 495 dwelling units would represent a residential population increase of approximately 14 percent over the existing census tract population and approximately 0.13 percent citywide. In addition, the 495 residential units would represent a fraction of the expected increase in citywide households and population, as projected in Plan Bay Area 2040 and the housing element. As such, the development of 495 dwelling units would be consistent with the findings identified in the initial study and would not induce population growth but rather accommodate the need for housing within the city.

The proposed project would still include 4,000 square feet of commercial retail space and employ approximately 11 staff.[114] As discussed in the initial study, this amount of retail is not anticipated to attract new employees to San Francisco; therefore, the proposed project would not generate demand for new housing for the potential commercial employees. The number of residents and employees associated with the proposed project would have a less-than-significant impact related to population growth, both directly and indirectly, consistent with the determination in the initial study.

The proposed project would not result in any new or substantially more severe project-level effects than the previously proposed project. Therefore, the proposed project would also not result in any new or substantially more severe cumulative population and housing impacts than what was analyzed in the initial study.

4.5.3 Cultural and Tribal Cultural Resources

The cultural resources analysis is presented in Section E.3 of the initial study and the tribal cultural resources analysis is presented in Section E.4 of the initial study (Appendix A). There were no changes made to the overall building footprint, construction activities, depth of excavation, or construction schedule. The proposed project would still excavate the project site approximately 55 feet bgs and would remove approximately 55,800 cubic yards of soil for construction of the below grade garage and foundation work. The proposed project would still implement Mitigation Measure M-CR-3: Archeological Testing, and Mitigation Measure M-TCR-1: Tribal Cultural Resources Interpretive Program to reduce potential impacts on archeological and tribal cultural resources to a less-than-significant level. Implementation of M-CR-3 and M-TCR-1 would also ensure that the

[111] Census Reporter, Census Tract 176.01, San Francisco, California, 2017. Available online at: https://censusreporter.org/profiles/14000US06075017601-census-tract-17601-san-francisco-ca/. Accessed June 14, 2019.

[112] Metropolitan Transportation Commission and Association of Bay Area Government, Plan Bay Area 2010 Final Supplemental Report: Land Use and Modeling Report. July 2017. This document is available online at: http://2040.planbayarea.org/reports. Accessed November 7, 2018.

[113] San Francisco Planning Department, 2014 Housing Element, San Francisco General Plan, adopted April 27, 2015, http://www.sfplanning.org/ftp/General_Plan/2014HousingElement-AllParts_ADOPTED_web.pdf, accessed February 5, 2019.

[114] San Francisco Planning Department, Transportation Impact Analysis Guidelines for Environmental Review (Guidelines), February 2019. The estimated number of employees is based on the Guidelines which assumes an average of 1 employee per 350 square feet of retail (4,000 square feet of retail ÷ 350 = 11 employees).

proposed project's contribution to any potential cumulative impacts related to archeological resources or human remains would not be cumulatively considerable. As such, revisions made to the project description would not change any of the cultural resources impacts or tribal cultural resources impacts than what was previously identified in the initial study.

4.5.4 Transportation and Circulation

The transportation and circulation analysis is presented in Section E.5 of the initial study (Appendix A). The following summary is based on the information provided in Appendix E, which addresses any changes to the project's transportation and circulation impacts that would result from the revised project description.

As discussed in Section 2.7, Changes to the Proposed Project Since Publication, the project sponsor has increased the number of residential units from 462 dwelling units to 495 dwelling units, resulting in an additional 33 dwelling units. The project sponsor has also increased the number of parking spaces from 171 to 200 and the number of class 1 bicycle parking spaces from 192 to 200. The proposed project would still include 4,000 square feet of commercial retail space.

The addition of 33 dwelling units would not change the anticipated construction activities for the proposed project. Construction of the proposed project is still expected to last for 36 months and the same road and sidewalk closures discussed in the initial study (Appendix A) and in Section 2 of this EIR would occur. Additionally, the number of construction-related trucks and construction worker trips for the proposed project are expected to be similar to those anticipated for the previously proposed project. Therefore, the proposed project would not result in any new or more-severe construction-related transportation impacts than were identified in the initial study.

Comment [MM12]: Do we have a number for the trips with the revised project versus prior project that we can use versus simply stating "similar"? And can we then show the impacts would the about the same?

Table 4.5-1 summarizes the travel demand changes between the previously proposed project and the proposed project for both daily and PM peak hour trips.

Table 4.5-1: Project Travel Demand Comparison

Land Use		Person Trips by Mode					Vehicle Trips[2]			Transit Trips	
		Auto	Transit	Other[1]	Walk	Total	In	Out	Total	In	Out
Daily – Previously Proposed Project											
Retail[3]	4,000 sf	95	152	22	329	600	28	31	59	82	71
Residential	462 DU	854	776	80	1,045	2,772	318	251	570	308	468
Total		**949**	**929**	**103**	**1,374**	**3,355**	**347**	**282**	**628**	**390**	**539**
Daily – Proposed Project											
Retail[3]	4,000 sf	95	152	22	329	600	28	31	59	82	71
Residential	495 DU	980	891	92	1,199	3,162	365	288	653	353	537
Total		**1,075**	**1,043**	**114**	**1,528**	**3,760**	**393**	**319**	**712**	**435**	**608**

Net Change		***+126***	***+114***	***+11***	***+154***	***+405***	***+46***	***+37***	***+84***	***+45***	***+69***
PM Peak Hour – Previously Proposed Project											
Retail	4,000 sf	8	14	2	30	54	2	3	5	6	8
Residential	462 DU	76	69	7	93	245	39	11	50	50	19
Total		**84**	**83**	**9**	**123**	**299**	**41**	**15**	**55**	**56**	**27**
PM Peak Hour – Proposed Project											
Retail	4,000 sf	8	14	2	30	54	2	3	5	6	8
Residential	495 DU	87	79	8	107	281	44	13	57	58	22
Total		**95**	**93**	**10**	**137**	**335**	**46**	**16**	**62**	**64**	**30**
Net Change		***+11***	***+10***	***+1***	***+14***	***+36***	***+5***	***+1***	***+7***	***+8***	***+3***

Notes:

Due to rounding, numbers may not add up to 100 percent

1. Other includes biking, skateboarding, etc.
2. Vehicle trips accounts for average vehicle occupancy of private auto trips and vehicles operating as Transportation Network Companies (TNCs) and taxis.
3. Includes internal/linked trip reductions as appropriate.

Source: SF Guidelines, Fehr & Peers, 2019

As shown in Table 4.5-1, the proposed project would generate an additional 7 vehicle trips during the p.m. peak hour beyond those evaluated in the initial study. The additional 7 p.m. peak hour vehicle trips would be dispersed among multiple streets surrounding the project site and are minimal compared to existing vehicle volumes. Therefore, the proposed project would not have any new or substantially more severe effects than those identified in the initial study related to vehicle trips.

The increase in residential units and corresponding vehicle trips would result in an increase in total VMT; however, the VMT per capita analysis would remain unchanged as transportation analysis zone 667 (the zone in which the project site is located) is 15 percent below the existing regional average. Therefore, the proposed project would not have any new or substantially more severe effects than those identified in the initial study related to VMT.

Table 4.5-1 also shows that the proposed project would generate 114 additional daily transit trips and 10 additional peak hour transit trips beyond those analyzed in the initial study. These additional transit trips would be distributed among the multiple transit lines serving the project vicinity. Like the previously proposed project, the proposed project is estimated to result in fewer than 300 inbound project vehicle trips during the peak hour which represents the planning department's screening criteria for a quantitative transit delay analysis. With the increase in project-generated vehicle trips, there would still be relatively few added trips to streets with transit (Market Street, Mission Street, and Fifth Street) and no substantial queuing that could impact transit because the

Comment [MM13]: Why are we focusing just on the PM peak trips and not also the 84 additional daily trips?

Comment [MM14]: Suggest adding this b/c this is a different issue than VMT so if going to bring it up, should have a conclusion for why this isn't a new/more severe impact.

Comment [MM15]: Is this what trying to say?

proposed project is not expected on those streets. Therefore, the proposed project would not have any new or substantially more severe effects than those identified in the initial study related to transit.

The project site plan is the same as that which was analyzed in the initial study. The proposed project does not include any new design features that would interfere with accessibility of people walking or bicycling to and from the project site, and adjoining areas, or result in inadequate emergency access. The proposed project would also ~~meet its freight loading demand such that vehicles loading on site~~ not create hazardous conditions for ~~would not block~~ people walking or bicycling to/from the site due to vehicles loading since the project would meet its freight loading demand on-site. Therefore, the proposed project would not have any new or substantially more severe effects than those identified in the initial study related to accessibility, emergency access, and hazardous conditions.

Given that the proposed project would not result in any new or substantially more severe project-level effects than the previously proposed project, the proposed project would also not result in any new or substantially more severe cumulative transportation impacts than what was disclosed in the initial study.

4.5.5 Noise

The noise analysis is presented in Section E.6 of the initial study (Appendix A). The following summary is based on the information provided in Appendix F, which addresses any changes to the project's noise impacts that would result from the revised project description.

The project sponsor has increased the number of residential units from 462 dwelling units to 495 dwelling units, resulting in an additional 33 dwelling units. The proposed project would still include 4,000 square feet of commercial retail space. No changes were made to the overall building footprint or construction activities from what was analyzed in the final noise report. Therefore, impacts associated with daytime construction noise, nighttime construction noise, and construction vibration would still be less than significant or less than significant with implementation of Mitigation Measure M-NO-1: Construction Noise. Mitigation Measure M-NO-1 would reduce the daytime construction noise levels at nearby noise sensitive receptors. A reduction in construction noise levels would be achieved by locating stationary noise-producing equipment as far away from the noise-sensitive receptors on Sixth Street as possible. In addition, Mitigation Measure M-NO-1 would require the project sponsor and their construction contractors to use noise attenuation barriers and/or blankets and utilize blockades from construction trailers as much as possible, and all equipment would be attenuated with mufflers as much as possible.

As discussed above in Section 4.5.3, Transportation and Circulation, the additional 33 dwelling units would result in an additional 7 vehicle trips during the p.m. peak hour for a total of 62 p.m. peak hour vehicle trips. With the addition of 7 vehicle trips, the proposed project is still expected to minimally increase overall traffic volumes along Sixth Street (a 1 percent increase), Market Street (a 1 percent increase), and Fifth Street (approximately a 2 percent increase). Project-generated traffic would ~~therefore~~ increase noise on these streets by less than 1-dB(A). Peak traffic volumes are expected to increase approximately 47 percent along Stevenson Street between Fifth and Sixth Streets with implementation of the proposed project. Traffic increases of 47 percent only raise noise levels approximately 1.9-dB(A), which is imperceptible. Traffic noise increases of less than 3 dBA are barely

perceptible to people, while a 5-dBA increase is readily noticeable. In areas where the existing or existing plus project environmental noise is conditionally acceptable or normally unacceptable per the general plan land use compatibility chart, any noise increases greater than 3-dBA is considered a significant noise impact. As project-generated traffic would increase noise on adjacent roadways by a maximum of 1.9-dBA, permanent noise increases due to project-related traffic with development of 495 dwelling units would still be less than significant, consistent with the determination in the initial study.

Comment [MM16]: I don't think this was in the noise memo. If not, should it be included?

The main pieces of mechanical equipment would not change from what was analyzed in the final noise report and would still also be located on the roof. The additional 33 dwelling units would add to the overall number of water-source heat pumps within the units and their associated condensing units on the roof. Therefore, the proposed project would still exceed the property plane noise requirements in section 2909(a) of the police code and would result in a substantial increase in ambient noise levels in excess of standard established in the noise ordinance. The initial study identified Mitigation Measure M-NO-2: HVAC and Mechanical Equipment Exterior Noise to reduce noise levels from the source equipment and achieve compliance with the police code. The proposed project would still implement M-NO-2 and have a qualified acoustical consultant conduct a property plane noise analysis to confirm the HVAC and mechanical equipment package selected for the proposed project complies with the operational noise limits in the police code. Thus, with implementation of M-NO-2, noise impacts from the exterior mechanical system would be less than significant, consistent with the determination in the initial study.

As stated above, the additional 33 dwelling units would add to the overall number of water-source heat pumps and their associated condensing units on the roof. A standard HVAC unit would produce sound pressure levels in the range of 70 to 75-dBA at 50 feet.[115] A typical residential condensing unit produces noise levels between 50 to 58-dBA at 3 feet or about 29 to 37-dBA at 50 feet.[116] The logarithmic addition of noise generated from 33 additional condensing units to the noise generated from the standard HVAC unit would result in a total noise level in the range between 70.1 to 75-dBA, which is the same noise level as previously disclosed in the initial study. Therefore, interior noise impacts from exterior mechanical noise generated by the proposed project would still be less than significant. The proposed project would not change the location or use of the emergency generator and noise impacts from the generator would be less than significant.

The initial study found that construction of the previously proposed project would contribute to a cumulative impact and identified Mitigation Measure M-NO-1 to reduce cumulative construction noise impacts to a less than significant level. The proposed project would still implement M-NO-1 to reduce cumulative construction noise impacts to a less than significant level. As such, the proposed project would not result in any new or substantially more severe cumulative noise impacts than what was disclosed in the initial study.

Overall, noise generation associated with the proposed project would still primarily be attributed to the project construction activities, including site grading, construction of the building, and

[115] Hoover and Keith, Noise Control for Buildings, Manufacturing Plants, Equipment, and Products, 2000, Houston, TX.

[116] Noise levels taken from published data from Daikin RX##RMVJU outdoor condensing units.

apparatuses, and the increase in traffic related to facility use. Operational noise generation would still be attributed to the slight increase in traffic volumes from residents as well as from typical commercial and residential fixed mechanical equipment. As such, revisions made to the project description would not change any of the noise impacts that were previously disclosed in the initial study.

4.5.6 Utilities and Service Systems

The utilities and service systems analysis is presented in Section E.12 of the initial study (Appendix A) As discussed above in Section 4.5.2, Population and Housing, the proposed project would develop 495 units and add 1,163 residents to the project site. BKF Engineers has revised their sewer calculations for the proposed project to account for changes to the project description, which would result in an additional 77 residents.[117]

The proposed project is estimated to produce approximately 46,205 gallons of wastewater per day (45,800 gallons per day [gpd] for residential use and 405 gpd for the commercial retail use). The sewer calculations were based on a 95 percent return on water use.[118] The estimated amount of wastewater generated by the proposed project would remain the same as what was determined in the initial study and represent less than 1 percent of the 60 mgd of wastewater treated at the Southeast Water Pollution Control Plant. As discussed in the initial study, the proposed project would also incorporate water-efficient fixtures, as required by Title 24 of the California Code of Regulations and the city's Green Building Ordinance. Compliance with these regulations would reduce wastewater flows generated by the project. In addition, separate from the proposed project, the SFPUC is upgrading the existing infrastructure at the Southeast Water Pollution Control Plant as part of its Sewer System Improvement Program to ensure reliability and performance of the city's sewer system.[119] Therefore, the proposed project's wastewater would be accommodated by the existing wastewater system and this impact would remain less than significant.

The proposed project does not require a water supply assessment under the California Water Code. Under sections 10910 through 10915 of the California Water Code, urban water suppliers, such as the SFPUC, must prepare water supply assessments for certain "large water demand" projects, as defined in CEQA Guidelines section 15155.[120] The proposed project would result in 495 new dwelling

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[117] BKF Engineers. 2019. Revised Water Supply Assessment Calculations.

[118] Personal Communication BKF Engineers on August 2, 2019.

[119] SFPUC. 2014. SFPUC Sewer System Improvement Program. Available online at: https://sfwater.org/modules/showdocument.aspx?documentid=5801. Accessed: February 10, 2019.

[120] Pursuant to CEQA Guidelines section 15155, The following definitions are applicable to this section.

1. A "water-demand project" means:

A. A residential development of more than 500 dwelling units.

B. A shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.

C. A commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor area.

D. A hotel or motel, or both, having more than 500 rooms.

units and approximately 4,000 square feet of commercial retail. As such, it does not qualify as a "large water demand" project, as defined by CEQA Guidelines section 15155(a)(1). Further, based on guidance from the California Department of Water Resources and a citywide demand analysis, the SFPUC established 50,000 gpd as the equivalent project demand for projects that do not meet the definitions provided in CEQA Guidelines section 15155(a)(1).[121] The proposed project would require 46,959 gpd of water and therefore does not exceed the 50,000 gpd equivalent water demand. As discussed in the initial study, no single development project alone in San Francisco would require the development of new or expanded water supply facilities or require the SFPUC to take other actions, such as imposing a higher level of rationing across the city in the event of a water supply shortage in dry years. Therefore, a separate project-only analysis is not provided for this topic.

The analysis provided in the initial study instead considers whether the proposed project, in combination with both existing development and projected growth through 2040, would require new or expanded water supply facilities, the construction or relocation of which could have significant cumulative impacts on the environment. It also considers whether a high level of rationing would be required that could have significant cumulative impacts. It is only under this cumulative context that development in San Francisco could have the potential to require new or expanded water supply facilities, or require the SFPUC to take other actions, which, in turn, could result in significant physical environmental impacts related to water supply. If significant cumulative impacts could result, then the analysis considers whether the project would make a considerable contribution to the cumulative impact.

The proposed project would incorporate water-efficient fixtures, as required by Title 24 of the California Code of Regulations and the city's Green Building Ordinance. As such, for the reasons described in the initial study, the project's water demand is not substantial enough to require or result in the relocation or construction of new or expanded water facilities, the construction or relocation of which could cause significant environmental effects. Furthermore, the proposed project would not make a considerable contribution to a cumulative environmental impact caused by implementation of the Bay-Delta Plan Amendment and no mitigation measures are required. In sum, revisions made to the project description would not change any of the utilities and service systems impacts or result and in any new or substantially more severe cumulative impacts on utilities than previously identified in the initial study.

4.5.7 Energy Resources

The energy analysis is presented in Section E.19 of the initial study (Appendix A). The following summary is based on the information provided in Appendix G, which addresses any changes to the

E. An industrial, manufacturing, or processing plant or industrial park for more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.

F. A mixed-use project that includes one or more of the projects specified in subdivisions (a)(1)(A), (a)(1)(B), (a)(1)(C), (a)(1)(D), (a)(1)(E), and (a)(1)(G) of this section.

G. A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a project with 500 dwelling units.

[121] Memorandum from Steven R. Ritchie, assistant general manager, Water Enterprise, San Francisco Public Utilities Commission, to Lisa Gibson, Environmental Review Officer, San Francisco Planning Department- Environmental Planning, May 31, 2019.

project's energy impacts that would result from the revised project description. The project sponsor has increased the number of residential units from 462 dwelling units to 495 dwelling units, resulting in an additional 33 dwelling units. No changes were made to the overall building footprint, commercial retail square footage, construction activities, construction equipment, or number of construction workers from what was disclosed in the initial study. Therefore, there would be no changes to the project's construction energy use and this impact would remain less than significant as identified in the initial study.

As shown in Table 4.5-2, the addition of 33 dwelling units would result in a slight increase in the project's operational energy use from what was determined in the initial study.

Table 4.5-2: Energy Use During Project Operation

Phase	Scenario	Diesel (gallons)	Gasoline (gallons)	Electricity (KWhr/year)	Natural Gas (kBTU/year)
Operation	Previously Proposed Project	17,317	22,920	2,068,157	4,096,431
	Proposed Project	17,317	25,831	2,184,276	4,339,963
Change		No Change	+ 2,911	+ 116,119	+ 243,532
Percentage Increase		--	12.7	5.6	5.9

These changes to the project's energy use would be minimal, ranging from a 5.6 percent to 12.7 percent increase. As discussed in the initial study, compliance with the Title 24 energy conservation standards of the California Code of Regulations would ensure that operation of the proposed project would not have a measurable effect on regional energy supplies or on peak energy demand resulting in a need for additional capacity. Natural gas and electric service would be provided to meet the needs of the project, as required by the California Public Utilities Commission, which obligates PG&E and the SFPUC to provide service to its existing and potential customers. PG&E and the SFPUC update their service projections in order to meet regional energy demand. Energy conservation measures incorporated into the proposed project would decrease energy consumption, decrease reliance on non-renewable energy sources, and increase reliance on renewable energy sources. The proposed project would also be consistent with San Francisco's GHG reduction strategy (see Section E.8, Greenhouse Gas Emissions of the initial study [Appendix A]). Energy consumption associated with operation of the proposed project would not occur in an inefficient or wasteful manner, and this impact would remain less than significant as identified in the initial study.

Like the proposed project, all new development in the city would be required to comply with the standards of Title 24 and the San Francisco Green Building Code, thereby minimizing the amount of fuel, water, and energy used. Therefore, the proposed project would not result in any new or substantially more severe cumulative impacts on energy resources than previously identified in the initial study.

4.5.8 Other Initial Study Topics

In addition to the topics discussed above (population and housing, cultural resources, tribal cultural resources, transportation and circulation, noise, utilities and service systems, and energy), the initial study concluded that the proposed project would have no impacts or less than significant impacts for the following environmental topics: Land Use and Land Use Planning, Odors, Greenhouse Gas Emissions, Recreation, Public Services, Biological Resources, Geology and Soils, Hydrology and Water Quality, Hazards/Hazardous Materials, Mineral Resources, Agriculture and Forestry Resources, and Wildfire (Appendix A).

The revisions made to the project description include the addition of 33 dwelling units, increase in vehicle and bicycle parking spaces, and slight reduction in building square footage. The proposed project would still include 4,000 square feet of commercial retail space. There were no changes made to the overall building footprint, site plan, building height, or construction activities from what was disclosed in the initial study.

The proposed project would have less than significant land use and land use planning impacts because the site plan, building height and massing, and mix of uses would be the same as that analyzed in the initial study.

The proposed project would have less than significant odor impacts because it would still consist of a mixed-use residential project and would not include any land uses known to generate substantial odors. Diesel exhaust from construction equipment would generate odors; however, would be temporary and would not persist upon project completion. The proposed project would have less than significant GHG impacts because it would be consistent with the city's GHG Reduction Strategy and would comply with applicable regulations and programs to reduce GHG emissions related to transportation, energy efficiency, water conservation, and waste disposal. The proposed project's compliance with the city's Greenhouse Gas Checklist has been revised to reflect the revised project description and is provided in Appendix H.

As described in Section 4.5.2, Population and Housing, the addition of 33 dwelling units would increase the number of residents from 1,086 to 1,163[122], resulting in additional 77 residents. The proposed project would provide the same mix of uses and amount of common and private open space as analyzed in the initial study. The proposed project would increase use of park facilities and demand for public services. However, this increase would not be substantial given the overall demand for such services on a citywide basis and would not require the construction of new, or alteration of existing facilities.

The proposed project would have less than significant geology and soils impacts because the construction activities, excavation depth of 55 feet bgs, and removal of 55,850 cubic yards of soil from the project site would remain the same as that analyzed in the initial study. The proposed project would also be required to comply with the provisions of the San Francisco Building Code, California Building Code, and the recommendations of the design-level geotechnical study to reduce geology and soils impacts to a less than significant level.

[122] 495 residential units x 2.35 people per household = 1,163 new residents.

The proposed project would have less than significant hydrology and water quality impacts because the construction and dewatering activities would be the same as that analyzed in the initial study and be required to implement an erosion and sediment control plan and BMPs in accordance with the San Francisco Public Works Code. Operation of the proposed project would result in the same amount of impervious and pervious surfaces on the project site as that analyzed in the initial study and required to comply with the city's Stormwater Management Ordinance and Stormwater Management Requirements and Design Guidelines to reduce hydrology and water quality impacts to a less than significant level.

The proposed project would have less than significant hazards and hazardous materials impacts because the construction activities, site location, and mix of uses would be the same as that analyzed in the initial study and required to comply with the Maher Ordinance and applicable regulations related to the transport, use, or disposal of hazardous materials, as overseen by the Department of Toxic and Substance Control.

The proposed project would either have a less than significant or no impact related to biological resources, mineral resources, agricultural and forestry resources, and wildfire because the location of the project site would be the same as what was analyzed in the initial study. Overall, impacts of the proposed project for these topics would remain the same as what was evaluated in the initial study and either result in a less than significant impact or no impact for the same reasons as disclosed in the initial study; therefore, would not result in any new or substantially more severe cumulative impacts than what was disclosed in the initial study.

5.0 OTHER CEQA ISSUES

This chapter discusses the following topics in relation to the proposed project: growth inducement potential, significant environmental effects that cannot be avoided if the project is implemented, significant irreversible environmental changes that would result if the proposed project is implemented, and areas of known controversy and issues to be resolved.

5.1 GROWTH INDUCEMENT

This section analyzes the growth-inducement potential of the proposed project, as required by CEQA Guidelines section 15126.2(d). A project is considered growth inducing if it would directly or indirectly foster substantial employment or population growth, or the construction of a substantial number of additional housing units. Examples of projects that would be likely to result in significant adverse growth inducement include extensions or expansions of infrastructure systems beyond what is needed to serve planned growth, and development of new residential subdivisions in areas that are sparsely developed or undeveloped.

The proposed project would construct a mixed-use infill development consisting of approximately 4,000 square feet of commercial space on the ground floor with 495 residential dwelling units above. The project would be located on an infill site in an urbanized area and would not be expected to substantially alter existing development patterns in the SoMa neighborhood in which it is located, or in San Francisco as a whole. Furthermore, the project site is in an established urban neighborhood and would not require, or create new demand for, the extension of municipal infrastructure.

According to the U.S. Census Bureau's most recent American Community Survey,[123] the City and County of San Francisco had an estimated population of about 883,305 residents, and 397,550 housing units in 2018. The project site is within Census Tract 176.01, which has a population of 8,432 and a total of 5,931 housing units.[124]

ABAG prepares projections of employment and housing growth for the Bay Area. The latest projections were prepared as part of Plan Bay Area 2040, which is the current long-range Regional Transportation Plan and Sustainable Communities Strategy adopted by the Metropolitan Transportation Commission and ABAG in March 2018. Plan Bay Area 2040 identifies an increasing percentage of Bay Area growth that is expected to occur as infill development in areas with access to transit. To facilitate that, Plan Bay Area 2040 focuses growth and development in nearly 200 priority development areas, or PDAs. These existing neighborhoods are served by public transit and have been identified as appropriate for additional development. The project site is located within the Downtown/Van Ness/Geary PDA. The growth projections prepared by ABAG for Plan Bay Area 2040 for San Francisco County anticipate 483,700 households in 2040 (an increase of 137,800 households

[123] U.S. Census Bureau, San Francisco County, California, Families and Living Arrangements, Households, 2013-2017. Available online at: https://www.census.gov/quickfacts/sanfranciscocountycalifornia. Accessed May 20, 2019.

[124] Census Reporter, Census Tract 176.01, San Francisco, California, 2017. Available online at: https://censusreporter.org/profiles/14000US06075017601-census-tract-17601-san-francisco-ca/. Accessed June 14, 2019.

between 2010 and 2040) and 872,500 jobs in 2040 (an increase of 295,700 jobs between 2010 and 2040).[125] Additionally, the housing element projects a population of 1,085,700 by 2040.[126]

Based on the average household size in the City and County of San Francisco of 2.35 people per household,[127] the addition of 495 new residential units, as the project proposes, would house approximately 1,163 residents.[128] This would represent a residential population increase of approximately 14 percent over the existing census tract population, and approximately 0.13 percent citywide. Additionally, the proposed project's 1,163 residents would represent 0.2 percent of the expected increase in citywide households and 0.1 percent of the citywide population, as projected by Plan Bay Area 2040. Based on the size of the proposed commercial space (approximately 4,000 square feet), the new businesses would employ a total of approximately 11 staff.[129] This amount of retail is not anticipated to attract new employees to San Francisco. Therefore, it can be anticipated that most of the employees would live in San Francisco (or nearby communities), and that the proposed project would not generate demand for new housing for the potential commercial employees.

The proposed project would provide housing that accommodates expected growth and would not induce substantial population growth beyond that projected by ABAG. Furthermore, the proposed project would contribute to ABAG's regional housing objectives, help meet regional goals that call for growth and development within walking distance of retail/shopping areas and transit and increase the local and regional housing supply. Therefore, implementation of the proposed project would increase population growth only to the extent already anticipated in existing regional, local, and area plans and would not have a direct or indirect growth-inducing impact.

5.2 SIGNIFICANT AND UNAVOIDABLE IMPACTS

In accordance with CEQA section 21067 and CEQA Guidelines sections 15126(b) and 15126.2(b), this section identifies significant environmental impacts that could not be eliminated or reduced to less-than-significant levels by implementation of all identified mitigation measures. As described in Chapter 4, the impacts listed below would be considered significant and unavoidable, even with implementation of feasible mitigation measures. With the exception of the impacts listed below, all other project impacts would be either less than significant or reduced to less-than significant levels by implementation of the identified mitigation measures.

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[125] Metropolitan Transportation Commission and Association of Bay Area Government, Plan Bay Area 2010 Final Supplemental Report: Land Use and Modeling Report. July 2017. This document is available online at: http://2040.planbayarea.org/reports. Accessed November 7, 2018.

[126] San Francisco Planning Department, 2014 Housing Element, San Francisco General Plan, adopted April 27, 2015, http://www.sfplanning.org/ftp/General_Plan/2014HousingElement-AllParts_ADOPTED_web.pdf, accessed February 5, 2019.

[127] U.S. Census Bureau, San Francisco County, California, Families and Living Arrangements, Persons per households, 2013-2017. Available online at: https://www.census.gov/quickfacts/sanfranciscocountycalifornia. Accessed June 12, 2019.

[128] Ibid.

[129] San Francisco Planning Department, Transportation Impact Analysis Guidelines for Environmental Review (Guidelines), February 2019. The estimated number of employees is based on the Guidelines which assumes an average of 1 employee per 350 square feet of retail (4,000 square feet of retail ÷ 350 = 11 employees).

The findings of significance in this EIR are subject to final determination by the planning commission as part of the certification process for this EIR.

Shadow

- Impact SD-1: The proposed project would create new shadow that could substantially and adversely affect the use and enjoyment of publicly accessible open spaces (*Significant and Unavoidable*).
- Impact C-SD-1: The proposed project, in combination with reasonably foreseeable projects, could create new shadow in a manner that substantially and adversely affects the use and enjoyment of publicly accessible open spaces. (*Significant and Unavoidable*).

5.3 SIGNIFICANT IRREVERSIBLE IMPACTS

In accordance with Section 21100 (b)(2)(B) of CEQA, and Section 15126.2(c) of the CEQA Guidelines, an EIR must identify any significant irreversible environmental changes that could result from implementation of the proposed project. This may include current or future uses of non-renewable resources and secondary or growth-inducing impacts that commit future generations to similar uses. According to the CEQA Guidelines, irretrievable commitments of resources should be evaluated to ensure that such current consumption is justified. The CEQA Guidelines describe three distinct categories of significant irreversible changes: 1) changes in land use that would commit future generations, 2) irreversible changes from environmental actions, and 3) consumption of nonrenewable resources. Each of these categories is discussed below in relation to the proposed project.

5.3.1 Changes In Land Uses That Would Commit Future Generations

As described throughout this EIR, the proposed project is an infill development and would be developed in an urban area. The proposed project would not substantially alter the pattern of land use or transportation in the project vicinity, and, therefore, would not commit future generations of the project site and vicinity to any particular land use or transportation pattern, nor would it mean that the project site could not be feasibly redeveloped again at some unknown date in the future.

5.3.2 Irreversible Changes From Environmental Actions

No significant environmental damage, such as that resulting from accidental spills or the explosion of a hazardous material, is anticipated with implementation of the proposed project. Compliance with federal, state, and local regulations would ensure that construction and operation activities at the project site would not result in the release of hazardous materials into the environment and that associated impacts would be less than significant (refer to Section E.17, Hazards and Hazardous Materials, of the initial study in Appendix A). The proposed project would excavate the project site approximately 55 feet bgs and remove approximately 55,850 cubic yards of soil to construct the three-level below grade parking garage. The proposed project would be constructed in accordance with the recommendations provided in the project-specific geotechnical study. No irreversible changes, such as those that may occur from construction of a large-scale mining project, a hydroelectric dam project, or other industrial project, would result from development of the proposed project.

5.3.3 Consumption of Nonrenewable Resources

Consumption of nonrenewable resources includes increased energy consumption, conversion of agricultural lands, and lost access to mining reserves. No agricultural lands would be converted and no access to mining reserves would be lost with construction of the proposed project (refer to Section E.19, Mineral Resources; and Section E.21, Agriculture and Forestry Resources in the initial study [Appendix A]).

As discussed in Section E.19 of the initial study (Appendix A) and in Section 4.5.7 of the EIR, non-renewable energy consumption would occur during the proposed project construction and operational phases. Construction activities would use the most energy-efficient equipment available to meet state and local goals for criteria air pollutants and GHG emissions reductions and would not have a measurable effect on regional energy supplies or on peak energy demand, resulting in a need for additional capacity. Therefore, as a temporary activity, construction of the proposed project would not be considered inefficient or wasteful.

Operation of the proposed project would be required to comply with the standards of Title 24 and the requirements of the San Francisco Green Building Code, thus minimizing the amount of fuel, water, and energy used. The proposed project would also incorporate transportation demand management measures into its design, such as car-share parking and bicycle parking and a repair station and be in proximity to several public transportation options. These features would minimize the amount of transportation fuel consumed. As discussed in Section E.5, Transportation and Circulation, in the initial study (see Appendix A), the project site is in an area with a comparably low level of VMT per capita, relative to the regional average, and new residents would most likely engage in vehicle use patterns similar to those of the existing population in the neighborhood and general vicinity. Given the project's features and location, it would not result in wasteful use of fuel from vehicle trips.

As discussed in Section E.8, Greenhouse Gas Emissions, of the initial study (see Appendix A), the proposed project would not result in any significant impacts associated with an increase in greenhouse gas emissions or conflict with measures adopted for the purpose of reducing such emissions because the project would comply with the regulations listed in the city's Greenhouse Gas Reduction Strategy. In addition, the proposed project would not require the construction of major new utility lines to deliver energy or natural gas because these services are already provided in the area.

Therefore, the proposed project would not result in a significant impact associated with the consumption of nonrenewable resources.

5.4 AREAS OF KNOWN CONTROVERSY AND ISSUES TO BE RESOLVED

The planning department prepared an initial study checklist and published a NOP for an EIR on October 2, 2019, thereby announcing its intent to prepare and distribute a focused EIR (the NOP and initial study checklist are presented as Appendix A to this EIR). Publication of the NOP and initial study checklist initiated a 30-day public review and comment period that began on October 3, 2019 and ended on November 1, 2019. Individuals and agencies that received these notices included owners of properties within 300 feet of the project site and potentially interested parties, and responsible agencies, including regional and state agencies. Five written communications were received during the public review period. Four of the five comments requested additional information, such as the project sponsor's email address and requests for a hard copy of the initial study document. The planning department provided such requested information to the respective commenters. The fifth comment received noted a concern with circulation to and from the project site and inquired if the proposed project would implement limitations on the use of vehicles during the morning and afternoon rush hours. Information regarding project site circulation is provided in Section E.5, Transportation and Circulation, of the initial study (refer to Appendix A). As disclosed in the initial study, impacts related to transportation and circulation would be less than significant and would not require limitations on the use of vehicles during the morning and afternoon rush hours. Potential areas of controversy for the proposed project include the potential effects of the project related to air quality, wind, shadow, and transportation and circulation.

6.0 ALTERNATIVES

6.1 INTRODUCTION

This chapter presents the alternatives analysis, as required by CEQA, for the proposed project. The chapter includes a discussion of the CEQA requirements for an alternatives analysis and the methodology used for the selection of alternatives, with the intent of developing potentially feasible alternatives that avoid or substantially lessen the significant impacts identified for the proposed project while still meeting most of the basic project objectives. This chapter identifies a reasonable range of alternatives that meet the above criteria.

The alternatives are evaluated for their comparative merits with respect to minimizing adverse environmental effects. After identifying the alternatives, the chapter evaluates the alternatives' impacts compared to existing environmental conditions and compared to the impacts of the proposed project. Based on this analysis, this chapter then identifies the environmentally superior alternative. Finally, it describes other alternative concepts that were considered but eliminated from detailed consideration and the reasons for their elimination.

6.1.1 CEQA Requirements for Alternatives Analysis

The CEQA Guidelines require the analysis of a reasonable range of alternatives to the proposed project or to the location of the project that would feasibly attain most of the basic objectives of the project and avoid or substantially lessen any of the significant effects of the project (CEQA Guidelines section 15126.6). The range of alternatives required in an EIR is governed by a "rule of reason" that requires the EIR to set forth only those potentially feasible alternatives necessary to foster informed public participation and an informed and reasoned choice by the decision-making body (CEQA Guidelines section 15126.6[f]). CEQA generally defines "feasible" to mean the ability to be accomplished in a successful manner within a reasonable timeframe, taking into account economic, environmental, social, technological, and legal factors. The following factors may also be taken into consideration when assessing the feasibility of alternatives: site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and the ability of the proponent to attain site control (CEQA Guidelines section 15126.6[f][1]). An EIR need not consider an alternative whose impact cannot be reasonably ascertained and whose implementation is remote and speculative. Furthermore, an EIR need not consider every conceivable alternative but must consider a reasonable range of alternatives that will foster informed decision-making and public participation.

CEQA also requires the evaluation of a No Project Alternative (CEQA Guidelines section 15126.6[e]). The analysis of the No Project Alternative is based on the assumption that the proposed project would not be approved. In certain instances, the No Project Alternative means "no build" wherein the existing environmental setting is maintained. However, where failure to proceed with the project would not result in preservation of existing environmental conditions, the No Project Alternative should identify the practical result of the project's non-approval rather than create and analyze a set of artificial assumptions that would be required to preserve the existing physical environment.

In addition, an environmentally superior alternative must be identified among the alternatives considered. The environmentally superior alternative is generally defined as the alternative that

would result in the least adverse environmental impacts on the project site and affected environment. If the No Project Alternative is found to be the environmentally superior alternative, the EIR must identify an environmentally superior alternative among the other alternatives (CEQA Guidelines section 15126.6[e][2]).

CEQA Guidelines section 15126.6(c) also requires an EIR to identify and briefly discuss any alternatives that were considered by the lead agency but rejected as infeasible during the scoping process. In identifying alternatives, primary consideration was given to alternatives that would reduce significant impacts while still meeting most of the basic project objectives. Those alternatives that would have impacts identical to or more severe than the proposed project or would not meet most of the basic project objectives, were rejected from further consideration.

6.1.2 Alternatives Selection

This section describes the basis for determining the range of CEQA alternatives and identifies the specific alternatives that are analyzed in this EIR.

Summary of Significant Impacts

As stated in the CEQA Guidelines, alternatives to a project selected for analysis in an EIR must substantially lessen or avoid any of the significant environmental impacts associated with the project. The following summarizes the conclusions for significant impacts resulting from the proposed project as identified in Chapter 4 of this EIR and in the initial study (see Appendix A).

Significant and Unavoidable Impacts

The proposed project was determined to have the following significant and unavoidable impacts, even with implementation of feasible mitigation measures, as described in detail in Chapter 4 of this EIR.

Shadow

- Impact SD-1: The proposed project would create new shadow that could substantially and adversely affects the use and enjoyment of publicly accessible open spaces (Significant and Unavoidable).
- Impact C-SD-1: The proposed project, in combination with reasonably foreseeable projects, could create new shadow in a manner that substantially and adversely affects the use and enjoyment of publicly accessible open spaces (Significant and Unavoidable).

Significant Impacts Mitigated to Less Than Significant

The proposed project was determined to have the following potentially significant impacts, all of which could be mitigated to a less-than-significant level with implementation of identified mitigation measures, as described in detail in Chapter 4 of this EIR and in the initial study (see Appendix A).

Cultural Resources (Initial Study Topic)

- Impact CR-3: The proposed project could result in a substantial adverse change in the significance of an archeological resource. The impact would be mitigated to a less-than-significant level with implementation of Mitigation Measure M-CR-3 (Archeological Testing).
- Impact CR-4: The project could disturb human remains, including those interred outside of formal cemeteries. The impact would be mitigated to a less-than-significant level with implementation of Mitigation Measure M-CR-3 (Archeological Testing).
- Impact C-CR-1: The proposed project, in combination with reasonably foreseeable projects in the vicinity, could result in a cumulatively considerable contribution to a significant cumulative impact related to cultural resources. The impact would be mitigated to a less-than-significant level with implementation of Mitigation Measure M-CR-3 (Archeological Testing).

Tribal Cultural Resources (Initial Study Topic)

- Impact TCR-1: Project-related activities could cause a substantial adverse change in the significance of a tribal cultural resource, as defined in Public Resources Code section 21074. The impact would be mitigated to a less-than-significant level with implementation of Mitigation Measure M-TCR-1 (Tribal Cultural Resources Interpretive Program).
- Impact C-TCR-1: The proposed project, in combination with reasonably foreseeable future projects, could result in a cumulatively considerable contribution to a cumulative tribal cultural resources impact. The impact would be mitigated to a less-than-significant level with implementation of Mitigation Measure M-TCR-1 (Tribal Cultural Resources Interpretive Program).

Noise (Initial Study Topic)

- Impact NO-1: Construction of the proposed project would result in a temporary or periodic increase in ambient noise levels. The impact would be mitigated to a less-than-significant level with implementation of Mitigation Measure M-NO-1 (Construction Noise).
- Impact NO-2: The proposed project would generate noise levels in excess of standards established in the local general plan or noise ordinance and could result in a substantial permanent increase in ambient noise levels in the project vicinity. The impact would be mitigated to a less-than-significant level with implementation of Mitigation Measure M-NO-2 (HVAC and Mechanical Equipment Exterior Noise).
- Impact C-NO-1: Construction of the proposed project, in combination with reasonably foreseeable projects, would result in a significant cumulative impact related to noise and the project's contribution would be cumulatively considerable. The impact would be mitigated to a less-than-significant level with implementation of Mitigation Measure M-NO-1 (Construction Noise).

Air Quality (EIR Topic)

- Impact AQ-3: Construction and operation of the proposed project would generate toxic air contaminants, including DPM, at levels that would expose sensitive receptors to substantial pollutant concentrations.
- Impact C-AQ-1: The proposed project, in combination with reasonably foreseeable projects, would result in significant health risk impacts to sensitive receptors.

Selected Alternatives

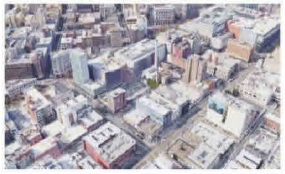
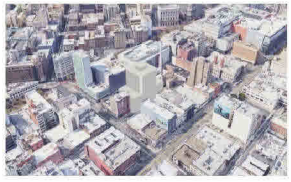
This section describes the following project alternatives that were selected and evaluated in this analysis:

- **Alternative A**: **No Project Alternative**. The No Project Alternative is based on what would reasonably be expected to occur on the project site if the proposed project is not approved, in accordance with CEQA Guidelines section 15126.6(e). The No Project Alternative assumes that physical conditions on the project site would remain the same.
- **Alternative B**: **Reduced Density Alternative**. The purpose of the Reduced Density Alternative is to consider a project that would lessen the significant and unavoidable shadow impact on Mint Plaza that would occur from construction of the proposed project. The Reduced Density Alternative would redevelop the project site with a new mixed-use residential project, similar to the proposed project, but would construct a shorter and less dense building than under the proposed project and include only two basement levels.
- **Alternative C**: **No Residential Parking, Tower Only**. The purpose of the No Residential Parking, Tower Only Alternative is to propose a project that would lessen the significant air quality, noise, archeological and tribal cultural resources impacts of the proposed project associated with the grading and excavation needed to build the three below-grade levels for parking and loading spaces. This alternative would redevelop the project site with a new mixed-use residential project, similar to the proposed project, but with 28 less residential units and would include only one basement level (as opposed to the three basement levels included in the proposed project). This alternative would result in a taller building, but with 28 less units than under the proposed project by slightly changing the design to eliminate the podium height massing along the four corners and relocate that square footage to the top of the building creating a streamlined single tower.

The selected alternatives are described in further detail below. Table 6.1-1 compares the features of each alternative.

Table 6.1-1: Comparison of Proposed Project and Alternatives

Comment [MM17]: See prior comments.

Project Component	Proposed Project	Alternative A: No Project Alternative	Alternative B: Reduced Density Alternative	Alternative C: No Residential Parking, Tower Only Alternative
				
Building Heights	274 feet (with an additional 10 feet for rooftop mechanical equipment)	--	160 feet (with an additional 10 feet for rooftop mechanical equipment)	284 feet (with an additional 10 feet for rooftop mechanical equipment)
No. of Stories	27 stories 3 below grade levels	--	17 stories 2 below grade levels	28 stories 1 below grade level
Total No. Units	495	--	346	467
Studio	192	--	42	0
Junior one-bedroom	33	--	0	0
1 Bedroom	116	--	204	349
2 Bedroom	96	--	64	60
3 Bedroom	50	--	36	58
5 Bedroom	8	--	0	0
Square Footage by Use	475,000 sf residential; 4,000 sf commercial retail	28,790 sf surface parking lot	339,000 sf residential; 6,400 sf commercial retail	456,000 sf residential; 3,700 sf of commercial retail
Total gross square feet (gsf)	35,000 gsf	28,790 gsf	259,110 gsf	537,000 gsf

Project Component	Proposed Project	Alternative A: No Project Alternative	Alternative B: Reduced Density Alternative	Alternative C: No Residential Parking, Tower Only Alternative
Open Space	11,000 sf common residential open space; 14,000 sf private residential open space:	--	24,700 sf common residential open space; no private residential open space	20,600 sf common residential open space; 580 sf of private residential open space
On-Site Vehicular Parking & Loading	1 off-street loading and 2 service vehicle parking; 178 residential vehicular parking spaces; 3 car-share spaces; 56,000 sf	176 public vehicular spaces; 28,790 sf	2 off-street loading and 2 service vehicle parking; 150 residential vehicular parking spaces; 2 car-share spaces; 57,000 sf	1off-street loading and 2 service vehicle parking; 2 accessible parking; No car-share parking
Bicycle Parking	200 class 1 27 class 2	None	192 class 1 23 class 2	193 class 1 25 class 2
Entitlements	Conditional Use Authorization; Individually Requested State Density Bonus	None	Conditional Use Authorization	Conditional Use Authorization; Individually Requested State Density Bonus
Excavation Depth	55 feet; 55,850 cubic yards	None	35 feet; 37,600 cubic yards	10 feet; 10,740 cubic yards

Notes:
All numbers rounded to the nearest thousand or hundred thousand.
Common residential open space = solariums, podium terraces/balconies, common areas.

6.2 ALTERNATIVES ANALYSIS

This analysis evaluates the impacts of each of the selected alternatives and identifies whether those impacts would be less than, similar to, or greater than the impacts of the proposed project. The alternatives analysis focuses on the topics analyzed in detail in the EIR (air quality, wind, and shadow) as well as the topics that the initial study determined would require mitigation for the project's impacts to be reduced to a less-than-significant level (cultural resources, tribal cultural resources, and noise). A brief analysis is also provided for other topics scoped out from further analysis in the initial study. Following the alternatives analysis, Table 6.2-1 compares the significant impacts of the proposed project and the alternatives.

6.2.1 Alternative A: No Project Alternative

Description

Under the No Project Alternative, the project site would remain substantially in its existing physical condition and the proposed new residential uses would not be developed. The existing onsite parking lot would remain unaltered.

Ability to Meet Project Objectives

The No Project Alternative would maintain the existing physical environment of the project site and no residential uses would be constructed. Therefore, the alternative would not meet any of the project sponsor's objectives.

Impacts

Air Quality

Under the No Project Alternative, the project site would remain substantially in its existing physical condition and the proposed new residential and commercial retail uses would not be developed. The existing onsite parking lot would remain unaltered. There would be no heavy construction activity at the project site. During operation of the No Project Alternative, no change in existing emissions would occur because the No Project Alternative would result in equivalent vehicle trips and energy use associated with vehicles accessing the parking lot and the provision of security lighting. Relative to the proposed project, the No Project Alternative would result in no increase in criteria air pollutant emissions during operation. The proposed project would result in greater emissions during construction and operations compared to the No Project Alternative. In summary, the No Project Alternative would result in no impact related to criteria air pollutant emissions and would not have the potential to contribute to cumulative criteria air pollutant impacts.

The No Project Alternative would not increase the cancer risk or localized concentrations of particulate matter 2.5 microns in diameter or less ($PM_{2.5}$) because no construction would occur, it would not require a new stationary source (emergency diesel generator), and no increase in vehicle trips to the project site would occur. Compared to the proposed project, the No Project Alternative would not increase cancer risks or $PM_{2.5}$ concentrations at nearby sensitive receptors. Further, because the No Project Alternative would have no impact with respect to health risks, the No Project

Alternative would not have the potential to combine with cumulative projects and result in a cumulative health risk impact.

The proposed project would not interfere with implementation of the 2017 Bay Area Clean Air Plan because it would include the control measures identified in the plan and would not substantially increase emissions. The No Project Alternative would continue existing operations and would not implement any of the measures included in the 2017 Bay Area Clean Air Plan, but it would not conflict with the 2017 Bay Area Clean Air Plan as no measures from that plan would apply to the No Project Alternative.

In summary, the No Project Alternative would result in no air quality impact and air quality impacts of the No Project Alternative would be lower when compared to the proposed project. No mitigation measures are necessary.

Wind

Under the No Project Alternative, the project site would remain as an existing surface parking lot and would not change the existing wind conditions on or around the project site. The No Project Alternative would not result in the construction or operation of any new buildings or structures that would alter the existing wind conditions and affect publicly accessible areas of substantial pedestrian use. Therefore, unlike the proposed project, the No Project Alternative would have no impact related to increasing wind speeds and would not have the potential to combine with cumulative projects to result in a cumulative wind hazard impact.

Shadow

Under the No Project Alternative, there would be no change in existing sunlight conditions. The project site would remain as an existing surface parking lot and no new buildings or structures would be constructed on the project site that would cast net new shadow on UN Plaza or Mint Plaza. Therefore, compared to the proposed project, which would have a significant and unavoidable project-level and cumulative shadow impact on Mint Plaza, the No Project Alternative would have no impact related to shadow.

Topics Analyzed in the Initial Study

Cultural Resources, Tribal Cultural Resources, and Noise

The No Project Alternative would not require subsurface ground disturbance that could impact undiscovered archeological resources, human remains, or tribal cultural resources. There would be no demolition or construction activities, and no new operational sources of noise on the project site; therefore, noise conditions in the area would remain the same as existing conditions. With respect to these topics, no impact would occur; Mitigation Measures M-CR-3, M-TCR-1, M-NO-1, and M-NO-2 would not apply to the No Project Alternative.

Other Initial Study Topics

The initial study concluded that the proposed project would have no impacts or less than significant impacts for the following environmental topics: Land Use and Land Use Planning, Population and Housing, Odors, Greenhouse Gas Emissions, Recreation, Utilities and Service Systems, Public

Services, Biological Resources, Geology and Soils, Hydrology and Water Quality, Hazards/Hazardous Materials, Mineral Resources, Energy Resources, Agriculture and Forestry Resources, and Wildfire. Under the No Project Alternative, the proposed project would not be constructed or operated, and the project site would continue to operate as a public surface parking lot. Therefore, the No Project Alternative would result in no impacts related to these other initial study topics.

6.2.2 Alternative B: Reduced Density Alternative

Description

The purpose of the Reduced Density Alternative is to consider a project alternative that would lessen the significant impacts on Mint Plaza that would occur from construction of the proposed project. The Reduced Density Alternative would redevelop the project site with a new mixed-use residential project, similar to the proposed project, but would construct a shorter and less dense building than under the proposed project.

The Reduced Density Alternative would include a maximum FAR of 259,110 gsf and a building height of approximately 160 feet (with an additional 10 feet for rooftop mechanical equipment). The proposed density and building height would be consistent with the planning code.

Under this alternative, the site would be redeveloped to provide 346 units comprised of 42 studios, 204 one-bedroom units, 64 two-bedroom units, and 36 three-bedroom units, compared to the 495 units that would be provided by the proposed project. On floors two through eight, 34 residential units would be provided on each floor. On the ninth floor, the building footprint would be reduced allowing for the common terraces and 12 residential units. Twelve residential units would also be provided on floors 9 through 17.

Primary access to the units would be via a 1,951 square foot residential lobby located along Jessie Street with secondary access along Stevenson Street and through the below-grade parking garage. Two retail spaces totaling 6,357 square feet would be provided along Jessie Street flanking the residential lobby, which is slightly more than the retail space provided by the proposed project (4,000 square feet). An 8,242 square foot residential amenity space would be provided along Stevenson Street.

Unlike the proposed project, the Reduced Density Alternative would only provide two levels of below grade parking (as opposed to the three levels with the proposed project). As a result, the Reduced Density Alternative only requires 37,600 cubic yards of excavation compared to 55,850 cubic yards for the proposed project.

The Reduced Density Alternative would include 150 parking spaces (a 0.43 parking ratio) below grade, which is 28 fewer total parking spaces than the proposed project, 2 service vehicle spaces, and 2 car-share spaces. One off-street freight loading space would also be provided at grade like the proposed project. All access to off-street parking and freight loading would be provided via a single curb-cut along Stevenson Street, similar to the proposed project. The Reduced Density Alternative would also provide 192 class 1 bicycle parking spaces in a bicycle storage room on the ground floor accessed via the public lobby. Twenty-three class 2 bicycle parking spaces would also be provided

along Stevenson and Jessie streets. A bicycle workshop area would be provided in the below grade parking garage, similar to the proposed project.

Open space would be provided in a series of common terraces at the podium and tower levels. A 7,141 square foot common open space would be provided on the second floor fronting Stevenson Street and two common open space terraces totaling 9,282 square feet would be provided on the ninth floor.

Construction of the Reduced Density Alternative is expected to follow a 29-month construction schedule, which would be 7 months shorter than the proposed project construction schedule.

Figure 28 provides a visual rendering and Figure 29 provides an elevation plan of the Reduced Density Alternative.

Ability to Meet Project Objectives

The Reduced Density Alternative could feasibly attain most of the project sponsor objectives. However, this alternative would provide 149 fewer residential units than the proposed project (346 units with the Reduced Density Alternative compared to 495 units with the proposed project). As a result, the Reduced Density Alternative would not maximize the opportunity to alleviate the current housing shortage and to contribute to the City's Regional Housing Needs Allocation (Objective 2). In addition, by providing fewer residential units, the Reduced Density Alternative would also provide fewer affordable units, thereby not promoting the construction of affordable units to the same extent as the proposed project (Objective 3). Finally, the reduced density could make redevelopment of the site economically infeasible (Objective 8).

Impacts

Air Quality

Under the Reduced Density Alternative, the project site would be redeveloped with a new mixed-use residential project, like the proposed project, but it would construct a shorter and less dense building than under the proposed project. The Reduced Density Alternative would only provide two levels of below-grade parking (as opposed to the three below grade levels with proposed project). As such, the Reduced Density Alternative would require only 37,600 cubic yards of excavation compared to 55,850 cubic yards of excavation required for the proposed project.

Criteria Air Pollutants

Relative to the proposed project, the Reduced Density Alternative would result in slightly fewer emissions of criteria air pollutants, fugitive dust during construction and operational emissions. This alternative would require marginally less heavy-duty diesel equipment and fewer construction vehicles, truck trips, and worker trips due to the reduced excavation activities. Additionally, the overall construction duration would be reduced from 36 months to 29 months, reducing the period for construction related emissions to occur by seven months. With reduced excavation, fugitive dust emissions would be reduced during construction compared with the proposed project. In addition, as with the proposed project, the Reduced Density Alternative would be required to comply with the construction dust control ordinance, which would ensure that fugitive dust impacts would be less

than significant. With the Reduced Density Alternative's marginally lower amounts of heavy-duty diesel equipment and construction vehicle, truck trips and worker trips, and shorter construction period, this alternative would result in lower

Figure 28: Visual Rendering of the Reduced Density Alternative

Figure 29: Building Elevation of the Reduced Density Alternative

construction period criteria air pollutant impacts than the proposed project. Like the proposed project, construction criteria air pollutant impacts resulting from the Reduced Density Alternative would be less than significant.

The Reduced Density Alternative would result in the construction of fewer residential units and parking at the project site compared with the proposed project, thereby resulting in less energy consumption, fewer vehicle trips, and fewer related air emissions. Therefore, like the proposed project, operational criteria air pollutant impacts resulting from the Reduced Density Alternative would be less than significant.

Health Risks

With respect to toxic air contaminants, compared to the proposed project, the Reduced Density Alternative would result in a lower cancer risk and lower localized $PM_{2.5}$ concentration because this alternative would require marginally less heavy-duty diesel equipment (below levels shown in Table 4.2-8 in Section 4.2, Air Quality, pp. 4-42). Because the Reduced Density Alternative would result in less construction, it would be anticipated to result in less toxic air contaminants relative to the proposed project, but it would likely still exceed the cancer risk and $PM_{2.5}$ significance thresholds for projects within an air pollutant exposure zone and require implementation of mitigation measures M-AQ-3a, Off-road Construction Equipment Emissions Minimization and M-AQ3b, Diesel Generator Specifications, like the proposed project

Overall, like the proposed project, construction and operational air quality impacts due to the Reduced Density Alternative would be less than significant or less than significant with implementation of the mitigation measures discussed above.

Consistency with the Clean Air Plan

Like the proposed project, the Reduced Density Alternative would be required to comply with various local regulations such as the Transportation Demand Management Ordinance and the Construction Dust Control Ordinance. These regulations implement the control measures in the 2017 Bay Area Clean Air Plan. Therefore, the Reduced Density Alternative would also not conflict with the 2017 Bay Area Clean Air Plan.

Cumulative Impacts

Regarding cumulative air quality impacts, the Reduced Density Alternative (like the proposed project) would make a less-than-significant contribution to cumulative regional criteria air pollutant impacts, and no mitigation measures would be necessary. Cumulatively, the Reduced Density Alternative would result in slightly lower localized health risk impacts when compared to the proposed project because it would require less construction equipment and would generate less vehicle trips resulting in lower increases in cancer risk and $PM_{2.5}$ concentrations. However, the Reduced Density Alternative would still make a considerable contribution to cumulative cancer risks and $PM_{2.5}$ concentrations, requiring implementation of mitigation measures. Like the proposed project, the Reduced Density Alternative would result in a less-than-significant-with-mitigation localized health risk impact.

Wind

Under the Reduced Density Alternative, the project site would be redeveloped with a new mixed-use development, like the proposed project, but it would construct a shorter and less dense building than the proposed project. The Reduced Density Alternative would be 160-feet tall (with an additional 10 feet for rooftop mechanical equipment, for a total height of 170 feet) and required to comply with section 148 of the planning code. This alternative consists of three volumetric elements, including a 15-foot-tall podium and a 64-foot-tall building block that support an 82-foot-tall tower. No additional design features are required for this alternative. The wind analysis for this alternative determined that none of the locations tested exceed the hazard criterion of 36 mph. Therefore, like the proposed project, the Reduced Density Alternative would not result in a significant project-level wind impact or a significant cumulative wind impact.[130]

Informational

The wind tunnel test also evaluated wind comfort speeds for the Reduced Density Alternative. With the Reduced Density Alternative, the average wind speed for all 63 test locations were measured at 11.3 mph, and would reduce wind speeds by 0.3 mph. The highest wind speed in the immediate vicinity of the site for the Reduced Density Alternative is 13 mph at location #1, #2 and #19, compared to the proposed project where the highest wind speed is 19 mph at location #12 and 17 mph at location #13. For the Reduced Density Alternative, the wind exceeds the seating comfort criterion approximately 40 to 46 percent of the time and the pedestrian comfort criterion about 16 to 18 percent of the time. This would be less than the proposed project, which exceeds the seating comfort criterion approximately 55 to 57 percent of the time and the pedestrian comfort criterion about 32 to 35 percent of the time.

Under the cumulative conditions with the Reduced Density Alternative, the average wind speed for all 63 test locations were measured at 11.1 mph, which is 0.1 mph greater than the cumulative conditions without the Reduced Density Alternative. The highest wind speed in the immediate vicinity of the site is 12 mph at locations #1, #2, #4, and #5 along Stevenson Street, and locations #12, #13, and #19 along Jessie Street, compared to the proposed project where the highest wind speed in the immediate vicinity of the site is 19 mph at locations #12 and #17 along Jessie Street. For the Reduced Density Alternative, the wind exceeds the seating comfort criterion approximately 29 to 42 percent of the time and the pedestrian comfort criterion about 10 to 14 percent of the time. This would be less than the proposed project, which under the cumulative scenario exceeds the seating comfort criterion approximately 56 to 62 percent of the time and the comfort criterion about 35 to 40 percent of the time.

Overall, the Reduced Density Alternative would exceed the wind comfort criteria like the proposed project; however, the average wind comfort speeds would be less compared to the proposed project.

[130] ARUP. 2020. Wind Study for 469 Stevenson Street Project.

Shadow

Under the Reduced Density Alternative, the project site would be developed with a 160-foot-tall mixed-use residential building (up to 170 feet tall with rooftop mechanical equipment). The proposed building would be 114 feet shorter than the proposed project and would not cast net new shadow on UN Plaza based on the shadow analysis prepared for this alternative.[131] Therefore, unlike the proposed project, the Reduced Density Alternative would have no shadow impact on UN Plaza and would also not have the potential to contribute to cumulative shadow on UN Plaza.

The shadow analysis prepared for the Reduced Density Alternative also determined that this alternative would cast less shadow on Mint Plaza compared to the proposed project. The Reduced Density Alternative would cast 4,610 sfh of shadow on Mint Plaza compared to the proposed project, which would cast 325,407 sfh. Under this alternative, net new shadow would be cast for approximately 90 days a year between November 2nd and February 7th and occur for 16 minutes in the mid- to-late afternoon. Therefore, this alternative would cast shadow for a shorter duration compared to the proposed project, which would occur for approximately 180 days a year between September 21st and March 21st and last for 90 minutes during the mid-to-late afternoon.

The largest area of net new shadow cast for this alternative would be 400 square feet and occur on January 4th and December 6th . The largest area of net new shadow created by this alternative would be less than the proposed project, which would be approximately 5,811 square feet and occur on the northeastern portion of the plaza on November 1st and February 8th.

The largest area of net new shadow for the Reduced Density Alternative would occur on approximately 2.58 percent of the northeastern portion of Mint Plaza near the Fifth Street public entry and reach one of the two landscape planter/seating wall areas. Mint Plaza users occupying the affected seating wall area in the late afternoon would experience additional net new shadow falling on that area lasting 5 minutes or less as compared to current conditions. Other areas of the plaza would either be unaffected due to the presence of existing shadow or observed to be areas of predominantly transitory uses. The Reduced Density Alternative would not shade any other public open space areas. As such, the shadow impact on Mint Plaza with the Reduced Density Alternative would be less than significant and would have less shadow impacts than the proposed project.

Under the cumulative scenario, the only cumulative project that would shade Mint Plaza is the 921 Howard Street project. The Reduced Density Alternative would cast less shadow compared to the proposed project, resulting in a less than significant shadow impact on Mint Plaza. Therefore, the Reduced Density Alternative would not contribute to a cumulative impact like the proposed project and would have a less than significant cumulative impact.

[131] Prevision Design. 2020. Shadow Analysis Report for the Proposed 469 Stevenson Street Project

Topics Analyzed in the Initial Study

Cultural Resources, Tribal Cultural Resources, and Noise

Under the Reduced Density Alternative, there would still be subsurface ground disturbance required for construction of the two-level below grade parking garage. With the reduced excavation and earth movement required for the Reduced Density Alternative, as described above, the potential for excavation activities to encounter below-ground human remains, archaeological resources, and tribal cultural resources would be lessened compared to the proposed project. Noise impacts under the Reduced Density Alternative would be similar in character to, but less than those identified for the proposed project due to the shorter duration of construction activities and the reduced intensity of land uses. However, the Reduced Density Alternative would still have the potential to result in significant impacts to archeological resources, human remains, tribal cultural resources and noise. As with the proposed project, the Reduced Density Alternative would implement Mitigation Measure M-CR-3, M-TCR-1, M-NO-1, and M-NO-2 to reduce impacts to archaeological resources, human remains, tribal cultural resources, and noise to a less than significant level.

Other Initial Study Topics

The initial study concluded that the proposed project would have no impacts or less than significant impacts for the following environmental topics: Land Use and Land Use Planning, Population and Housing, Odors, Greenhouse Gas Emissions, Recreation, Utilities and Service Systems, Public Services, Biological Resources, Geology and Soils, Hydrology and Water Quality, Hazards/Hazardous Materials, Mineral Resources, Energy Resources, Agriculture and Forestry Resources, and Wildfire. Impacts of the Reduced Density Alternative for these topics would be similar in character to, but less than those identified for the proposed project due to the shorter duration of construction activities and the reduced intensity of construction activities and land uses. The Reduced Density Alternative would not result in any new potentially significant impacts for these environmental topics evaluated in the initial study (Appendix A). As such, impacts related to these other initial study topics would be similar to those of the proposed project and either result in a less than significant impact or no impact.

6.2.3 Alternative C: No Residential Parking, Tower Only Alternative

Description

The purpose of the No Residential Parking, Tower Only Alternative is to propose a project that would lessen the significant air quality, noise, archeological and tribal cultural resources impacts of the proposed project associated with the grading and excavation needed to build the three below-grade levels for parking and loading spaces. The No Residential Parking, Tower Only Alternative would redevelop the project site with a new mixed-use residential project, similar to the proposed project, but would include only one basement level (as opposed to the three basement levels included in the proposed project). The No Residential Parking, Tower Only Alternative would result in ~~a c~~ a taller building, but with 28 less units than the proposed project by slightly changing the design to eliminate the podium height massing along the four corners and relocate that square footage to the top of the building creating a streamlined single tower.

The No Residential Parking, Tower Only Alternative would include a single tower with one basement level with a maximum FAR of 537,000 square feet. The tower would be approximately 284-feet-tall (with additional 10 feet for rooftop mechanical equipment).

This alternative would include 467 units comprised of 349 one-bedroom units, 60 two-bedroom units, and 58 three-bedroom units. Residential uses would begin at the second floor, which includes 17 units and a 11,078-square-foot common open space podium balcony. The 3rd through 28th floors would include 18 residential units per floor with the units on the 28th floor having 576 square feet (total) of private balconies.

Primary access to the residential units would be from the residential lobby located along Jessie Street with secondary access along Stevenson Street. The ground floor would include two retail spaces along Jessie Street totaling 3,669 square feet and on each site of the 1,453 square foot lobby. A 747 square foot common open space would be provided along Jessie Street and a 9,500 square foot solarium for residents would be provided along Stevenson Street.

The No Residential Parking, Tower Only Alternative would require 45,110 cubic yards less excavation (10,740 cubic yards total) than the proposed project (55,850 cubic yards) for below-grade foundation and structural work because it would only provide one basement level.

The single basement level would be for off-street loading and service vehicle parking, accessible parking, and bicycle parking. No car-share parking would be provided for this alternative pursuant section 166 of the planning code. This alternative would provide 193 class 1 bicycle parking spaces in a bicycle storage room located in the basement and accessed via the ground floor lobby. This alternative would also provide 25 class 2 bicycle parking spaces along Jessie and Stevenson streets.

Open space would include a ground floor solarium, a second story podium terrace, and private balconies at the rooftop level.

Construction of the No Residential Parking, Tower Only Alternative is expected to follow a 34-month construction schedule, which is two months shorter than the proposed project's construction schedule. The same discretionary project approvals identified for the proposed project would be required for this alternative.

Figure 30 provides a visual rendering and Figure 31 provides an elevation plan of the No Residential Parking, Tower Only Alternative.

Ability to Meet Project Objectives

The No Residential Parking, Tower Alternative could feasibly attain most of the project sponsor objectives, including providing much-needed housing. However, by not providing any residential parking, the alternative would fail to meet the objective of providing adequate off-street vehicle parking for the residential use pursuant the San Francisco Planning Code and to meet investment capital parking requirements (Objective 6). The lack of residential parking could also create financing challenges as it would render a standard construction loan unattainable and potentially make development of the site economically infeasible (Objective 8).

Impacts

Air Quality

The No Residential Parking, Tower Only Alternative would redevelop the project site with a new mixed-use residential project, similar to the proposed project, but would construct a larger building than under the proposed project by slightly changing the design to eliminate the podium height massing along the four corners and relocating that square footage to the top of the building creating a streamlined single tower. The No Residential Parking, Tower Only Alternative would require 45,110 cubic yards less excavation (10,740 cubic yards total) than the proposed project (55,850 cubic yards) for below-grade foundation and structural work since it is only providing one basement level. The No Residential Parking, Tower Only Alternative is anticipated to have a shorter construction duration and require less heavy construction equipment compared to the proposed project.

Criteria Air Pollutants

Relative to the proposed project, the No Residential Parking, Tower Only Alternative would result in fewer emissions of criteria air pollutants and fugitive dust emissions during construction and operation. The No Residential Parking, Tower Only Alternative would require less excavation and the overall construction duration would be reduced from 36 months to 34 months, reducing the period for construction related emissions to occur by two months. With reduced excavation, this alternative would require marginally less heavy-duty diesel equipment and fewer construction vehicles, truck trips, and worker trips due to the reduced excavation activities. Therefore, fugitive

Figure 30: Visual Rendering of the No Residential Parking, Tower Only Alternative

Figure 31: Building Elevation of the No Residential Parking, Tower Only Alternative

dust emissions would be reduced during construction compared with the proposed project. In addition, as with the proposed project, the No Residential Parking, Tower Only Alternative would be required to comply with the construction dust control ordinance, which would ensure that fugitive dust impacts would be less than significant. With the No Residential Parking, Tower Only Alternative's lower amount of heavy-duty diesel equipment, construction vehicles, truck and worker trips, and shorter construction period, this alternative would result in lower construction period criteria air pollutant impacts than the proposed project. Like the proposed project, construction criteria air pollutant impacts resulting from the No Residential Parking, Tower Only Alternative would be less than significant.

The No Residential Parking, Tower Only Alternative would result in the construction of fewer residential units and parking at the project site compared with the proposed project, thereby resulting in less energy consumption, fewer vehicle trips, and fewer related air emissions. Therefore, like the proposed project, operational criteria air pollutant impacts resulting from the No Residential Parking, Tower Only Alternative would be less than significant.

Health Risks

Compared to the proposed project, the No Residential Parking, Tower Only Alternative would result in a reduced cancer risk and a lower localized $PM_{2.5}$ concentration because it would require marginally less heavy-duty diesel equipment (below levels shown in Table 4.2-8 in Section 4.2, Air Quality, pp. 4.42). Because the No Residential Parking, Tower Only Alternative would result in less construction, it would be anticipated to result in less toxic air contaminants relative to the proposed project, but it would likely still exceed the cancer risk and $PM_{2.5}$ significance thresholds for projects within an air pollutant exposure zone and require implementation of- mitigation measures M-AQ-3a, Off-road Construction Equipment Emissions Minimization, and M-AQ-3b, Diesel Generator Specifications, like the proposed project. As such, air quality impacts for the No Residential Parking, Tower Only Alternative would be less than that of the proposed project and would be less than significant or less than significant with implementation of the mitigation measures discussed above.

Consistency with the Clean Air Plan

Like the proposed project, the No Residential Parking, Tower Only Alternative would be required to comply with various local regulations such as the Transportation Demand Management Ordinance and the Construction Dust Control Ordinance. These regulations implement the control measures of the 2017 Bay Area Clean Air Plan. Therefore, like the proposed project, the No Residential Parking, Tower Only Alternative would not conflict with the 2017 Bay Area Clean Air Plan.

Cumulative Impacts

The No Residential Parking, Tower Only Alternative would make a less-than-significant contribution to cumulative regional criteria air pollutant impacts, and no mitigation measures would be necessary. Cumulatively, the No Residential Parking, Tower Only Alternative would result in slightly lower localized health risk impacts when compared to the proposed project because it would require less construction equipment and would generate less vehicle trips, resulting in lower increases in cancer risk and $PM_{2.5}$ concentrations. However, the No Residential Parking, Tower Only Alternative would still make a considerable contribution to cumulative cancer risks and $PM_{2.5}$ concentrations, requiring implementation of Mitigation Measure M-AQ-3a and M-AQ-3b. Like the proposed project, the No

Residential Parking, Tower Only Alternative would result in a less-than-significant-with-mitigation localized health risk impact.

Wind

The No Residential Parking, Tower Only Alternative would redevelop the project site with a new mixed-use development, like the proposed project, but it would construct a slightly taller building compared to the proposed project. The proposed tower would be approximately 284 feet tall and required to comply with section 148 of the planning code. This alternative would incorporate similar design features as the proposed project, including a change in the position of the tower (about 26 feet away from the northeast side of the podium), 20-foot-tall solid screens on the podium along Stevenson Street, and 15-foot-tall solid screens on the northeast side of the podium. These design features have been selected to ensure that wind speeds in the vicinity of the project site would not exceed the 36 mph wind hazard criteria. As such, like the proposed project, the No Residential Parking, Tower Only Alternative would not result in a significant project-level wind impact or a significant cumulative wind impact.[132]

Informational

The wind tunnel test also evaluated wind comfort speeds for the No Residential Tower, Parking Only Alternative. Under the No Residential Parking, Tower Only Alternative, the average wind speed for all 63 test locations measured at 12.5 mph and would increase existing windiness by 1.5 mph. The highest wind speeds in the immediate vicinity of the site are 19 mph at location #12 and 17 mph at locations #4, #5, #13, and #17. This would be similar to the proposed project where the highest wind speed is 19 mph at location #12 and 17 mph at location #13.

For the No Residential Parking, Tower Only Alternative, the wind exceeds the seating comfort criterion approximately 56 to 60 percent of the time and the pedestrian comfort criterion about 30 to 35 percent of the time. This would be similar to the proposed project, which exceeds the seating comfort criterion approximately 55 to 57 percent of the time and the pedestrian comfort criterion about 32 to 35 percent of the time.

Under the cumulative conditions with the No Residential Parking, Tower Only Alternative, the average wind speed for all 63 test locations measured at 12.1 mph, which is 1.1 mph greater than the cumulative conditions without the No Residential Parking, Tower Only Alternative. The highest wind speeds in the immediate vicinity of the site are 19 mph at locations #12 along Jessie Street towards Mint Plaza and 18 mph at locations #4 and #17 along Stevenson Street and Jessie Street, respectively. This is similar to the proposed project where the highest wind speed in the immediate vicinity of the site is 19 mph at locations #12 and #17 along Jessie Street.

For the No Residential Parking, Tower Only Alternative, the wind exceeds the seating comfort criterion approximately 55 to 61 percent of the time and the pedestrian comfort criterion about 29 to 37 percent of the time. This would be ~~greater~~ less than the proposed project, which under the

[132] ARUP. 2020. Wind Study for 469 Stevenson Street Project.

cumulative conditions exceeds the seating comfort criterion approximately 56 to 62 percent of the time and the comfort criterion about 35 to 40 percent of the time.

Overall, wind comfort speeds with the No Residential Parking, Tower Only Alternative would be similar as the proposed project, but would be greater than the proposed project under the cumulative scenario.

~~*Overall, wind comfort speeds with the No Residential Parking, Tower Only Alternative would be similar as the proposed project, but would be greater than the proposed project under the cumulative scenario.*~~

Shadow

The 284-foot-tall No Residential Parking, Tower Only Alternative would be approximately 10 feet taller than the proposed project. The No Residential Parking, Tower Only Alternative would cast shadow on UN Plaza and Mint Plaza. The amount of shadow cast on UN Plaza and Mint Plaza would be comparable, if not slightly greater than the proposed project due to the increase in building height.

The shadow analysis prepared for the No Residential Parking, Tower Only Alternative determined that this alternative would cast 10,603 sfh of shadow on UN Plaza compared to the proposed project, which would cast 9,693 sfh. Under this alternative, net new shadow would be cast for approximately 85 to 97 days a year between May 4th and August 8th and occur for 10 minutes in the early morning. Therefore, this alternative would cast shadow for a 10-minute duration compared to the proposed project, which would occur for approximately 85 to 97 days a year between May 4th and August 8th and last for 22 minutes during the early morning. The largest area of net new shadow cast for this alternative would be 1,823 square feet and occur on 1.7 percent of the northeastern portion of the plaza on June 21st. The largest area of net new shadow created by this alternative would be greater than the proposed project, which would be approximately 1,649 square feet and occur on 1.6 percent of the northeastern portion of the plaza on June 21st.

With regard to Mint Plaza, given that the No Residential Parking, Tower Only Alternative would be slightly taller than the proposed project, this alternative would shade similar areas of the plaza for similar durations during similar times of the year. This alternative would cast 342,763 sfh of shadow on Mint Plaza compared to the proposed project, which would cast 325,407 sfh. The No Residential Parking, Tower Only Alternative would cast shadow on the same days as the proposed project for approximately 170 to 182 days a year between September 21st and March 21st and occur for approximately 90 minutes in the mid- to late afternoon. The largest area of net new shadow cast for the No Residential Parking, Tower Only Alternative would be 6,049 square feet and occur on October 25th and February 22nd, affecting 39.04 percent of the northeastern portion of the plaza area. The largest area of net new shadow cast by the No Residential Parking, Tower Only Alternative would be greater than the proposed project, which would be 5,811 square feet and occur on November 1st and February 8th at 2:30 p.m., and affect 37.5 percent of the northeastern portion of the plaza area. Thus, for the same reasons as the proposed project, the No Residential Parking, Tower Only Alternative would result in a significant shadow impact on Mint Plaza. Similarly, there are no feasible mitigations for the No Residential Parking, Tower Only Alternative's impact on Mint Plaza. Therefore, the impact would be significant and unavoidable.

The project at 921 Howard Street would also shade portions of Mint Plaza, similar to the proposed project, which combined with the proposed project would result in a significant cumulative shadow impact. Like the proposed project and for the same reasons as the proposed project, the No Residential Parking, Tower Only Alternative's contribution to cumulative shadow would be considerable. Therefore, the No Residential Tower, Parking Only Alternative, would result in a significant and unavoidable project-level and cumulative shadow impact that is slightly greater than the proposed project.

Topics Analyzed in the Initial Study

Cultural Resources, Tribal Cultural Resources, and Noise

Under the No Residential Parking, Tower Only Alternative there would still be subsurface ground disturbance for construction of the basement level. However, with the reduced excavation and earth movement required for the No Residential Parking, Tower Only Alternative, as described above, the potential for excavation activities to encounter below-ground human remains, archaeological resources, and tribal cultural resources would be lessened compared to the proposed project. Construction noise impacts under the No Residential Parking, Tower Only Alternative would be similar in character to, but less than those identified for the proposed project due to the shorter duration of construction activities. The No Residential Parking, Tower Only Alternative would result in 28 less residential units on the project site; however, the number of units under this alternative would be comparable to the proposed project and therefore operational noise impacts would similar. For these reasons the No Residential Parking, Tower Only Alternative would still have the potential to result in significant impacts to archeological resources, human remains, tribal cultural resources and noise. As with the proposed project, the No Residential Parking, Tower Only Alternative would implement Mitigation Measures M-CR-3, M-TCR-1, M-NO-1, and M-NO-2 to reduce impacts to archeological resources, human remains, tribal cultural resources, and noise to a less than significant level.

Other Initial Study Topics

The initial study concluded that the proposed project would have no impacts or less than significant impacts for the following environmental topics: Land Use and Land Use Planning, Population and Housing, Odors, Greenhouse Gas Emissions, Recreation, Utilities and Service Systems, Public Services, Biological Resources, Geology and Soils, Hydrology and Water Quality, Hazards/Hazardous Materials, Mineral Resources, Energy Resources, Agriculture and Forestry Resources, and Wildfire. The No Residential Parking, Tower Only Alternative would be similar in character to, but require less construction than identified for the proposed project due to the shorter duration of construction activities and less amount of excavation of the site as there would only be one basement level. The No Residential Parking, Tower Only Alternative would result in 28 less residential units on the project site, but the intensity of development under this alternative would be comparable to the proposed project. As such, the No Residential Parking, Tower Only Alternative would not result in any new potential significant impacts for these environmental topics evaluated in the initial study (Appendix A). Impacts related to these other initial study topics would be similar to those of the proposed project and either result in a less than significant impact or no impact.

6.2.4 Environmentally Superior Alternative

The CEQA Guidelines require the identification of an environmentally superior alternative (section 15126.6(e)), which is the alternative that best avoids or lessens any significant impacts of the proposed project, even if the alternative would impede to some degree attainment of the project objectives. If it is determined that the "no project" alternative would be the environmentally superior alternative, then the EIR shall also identify an environmentally superior alternative among the other project alternatives (section 15126.6(3)). Table 6.2-1, Comparison of Significant Impacts of the Proposed Project to Impacts of Alternatives after Mitigation, compares the significant impacts of the proposed project, No Project Alternative, Reduced Density Alternative, and No Residential Parking, Tower Only Alternative.

The No Project Alternative is considered the environmentally superior alternative because the significant impacts of the proposed project related to air quality, shadow, archeological resources, human remains, tribal cultural resources, and noise would not occur under the No Project Alternative. However, the No Project Alternative would not meet any of the project sponsor objectives.

Because CEQA requires selection of an environmentally superior alternative other than the No Project Alternative, the Reduced Density Alternative is identified as the environmentally superior alternative. The Reduced Density Alternative would require implementation of the same mitigation measures as the proposed project to reduce impacts related to archeological resources, human remains, tribal cultural resources, noise, and air quality. However, the severity and potential for impacts to those topic areas would be reduced compared with those of the proposed project because of the reduced amount of excavation and earth movement, shorter construction duration, and fewer residential units constructed. The Reduced Density Alternative would be 114 feet shorter than the proposed project and would not cast net new shadow on UN Plaza and would avoid the significant and unavoidable project-level and cumulative shadow impact on Mint Plaza. As discussed above, the Reduced Density Alternative could feasibly attain most of the project sponsor objectives (refer to Section 6.2.1).

Table 6.2-1: Comparison of Significant Impacts of the Proposed Project to Impacts of Alternatives After Mitigation

Impact Statement	Proposed Project	Alternative A: No Project Alternative	Alternative B: Reduced Density Alternative	Alternative C: No Residential Parking, Tower Only Alternative
Cultural Resources				
Impact CR-3: The proposed project could result in a substantial adverse change in the significance of an archeological resource.	LSM	NI	LSM =/<	LSM =/<
Impact CR-4: The project could disturb human remains, including those interred outside of formal cemeteries.	LSM	NI	LSM =/<	LSM =/<
Impact C-CR-1: The proposed project, in combination with reasonably foreseeable projects in the vicinity, could result in a	LSM	NI	LSM	LSM

Impact Statement	Proposed Project	Alternative A: No Project Alternative	Alternative B: Reduced Density Alternative	Alternative C: No Residential Parking, Tower Only Alternative
cumulatively considerable contribution to a significant cumulative impact related to cultural resources.			=/<	=/<
Tribal Cultural Resources				
Impact TCR-1: Project-related activities could cause a substantial adverse change in the significance of a tribal cultural resource, as defined in Public Resources Code section 21074.	LSM	NI	LSM =/<	LSM =/<
Impact C-TCR-1: The proposed project, in combination with reasonably foreseeable future projects, could result in a cumulatively considerable contribution to a cumulative tribal cultural resources impacts.	LSM	NI	LSM =/<	LSM =/<
Noise				
Impact NO-1: Construction of the proposed project would result in a temporary or periodic increase in ambient noise levels.	LSM	NI	LSM <	LSM <
Impact NO-2: The proposed project would generate noise levels in excess of standards established in the local general plan or noise ordinance and could result in a substantial permanent increase in ambient noise levels in the project vicinity.	LSM	NI	LSM <	LSM <
Impact C-NO-1: Construction of the proposed project, in combination with reasonably foreseeable projects, would result in a significant cumulative impact related to noise and the project's contribution would be cumulatively considerable.	LSM	NI	LSM <	LSM <
Air Quality				
Impact AQ-3: Construction and operation of the proposed project would generate toxic air contaminants, including DPM, at levels that would expose sensitive receptors to substantial pollutant concentrations.	LSM	NI	LSM <	LSM <
Impact C-AQ-1: The proposed project, in combination with reasonably foreseeable projects, would result in significant health risk impacts to sensitive receptors.	LSM	NI	LSM <	LSM <

Impact Statement	Proposed Project	Alternative A: No Project Alternative	Alternative B: Reduced Density Alternative	Alternative C: No Residential Parking, Tower Only Alternative
Shadow				
Impact SD-1: The proposed project would create new shadow that could substantially and adversely affect the use and enjoyment of publicly accessible open spaces.	SU	NI	LS <	SU >
Impact C-SD-1: The proposed project, in combination with reasonably foreseeable projects, could create new shadow in a manner that substantially and adversely affects the use and enjoyment of publicly accessible open spaces.	SU	NI	LS <	SU >

Notes:
NI (no impact); LS (less than significant); LSM (less than significant with mitigation); SU (significant and unavoidable, no feasible mitigation measures available); = (equal to); < (less than); > (greater than)

6.2.5 Alternatives Considered and Rejected

Section 15126.6(c) of the CEQA Guidelines provides that an EIR should "identify any alternatives that were considered by the lead agency but rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination." The screening process for identifying viable EIR alternatives included consideration of the following criteria: ability to meet the project objectives; potential ability to substantially lessen or avoid environmental effects associated with the proposed project; and potential feasibility.

The planning department considered the following three additional alternatives. The first alternative considered was similar to the No Residential Parking, Tower Only Alternative, but it did not include a basement level. This alternative was eliminated from further consideration as the project sponsor determined at least one level of below-grade loading and parking was desirable for the commercial retail component. The second alternative considered was a mid-height alternative that would be slightly taller than the Reduced Density Alternative and would still result in less than significant shadow impacts on Mint Plaza. However, additional shadow modeling determined that this alternative would be substantially similar (only one building floor taller) to the Reduced Density Alternative and was eliminated from further consideration. The third alternative considered was an offsite alternative that was under the project sponsor's control; however, there was already an approved project on that site and it was therefore eliminated from further consideration.

7.0 REPORT PREPARERS

Planning Department, City and County of San Francisco (Lead Agency)

Environmental Planning Division
1650 Mission Street, Suite 400
San Francisco, CA 94103

Environmental Review Officer:	Lisa Gibson
Principal Environmental Planner:	Jessica Range
Senior Environmental Planner:	Jenny Delumo
Transportation Planner:	Elizabeth White
Archeologist:	Sally Morgan
Historic Preservation Planner:	Justin Greving
Current Planner:	Nicholas Foster

Stantec Consulting Services Inc. (Environmental Planning Consultant)

1340 Treat Boulevard, Suite 300
Walnut Creek, CA 94597

Principal in Charge:	Trevor Macenski
Project Manager:	Anna Radonich
Quality Assurance/Quality Control	Christine Abraham
Senior Air Quality Analyst:	Elena Nuño
HRA Specialist:	Leland Villalvazo
Senior Noise Analyst:	Tracie Ferguson
Senior Environmental Planner:	Tina Garg
Environmental Planner/GIS Analyst:	Kaela Johnson

Fehr and Peers Transportation Consultants (Transportation Consultant)

332 Pine Street, 4th Floor
San Francisco, CA 94104

Transportation Engineer:	Mike Hawkins

AllWest Environmental (Environmental Site Assessment Consultant)

2141 Mission Street, Suite 100
San Francisco, CA 94110

President:	Marc Cunningham
Project Manager:	Glenn Aro

Langan Engineering and Environmental Services, Inc (Geotechnical Consultant)

555 Montgomery Street, Suite 1300
San Francisco, CA 94111

Principal:	Maria Flessas
Project Engineer:	Peter Brady

ARUP (Wind Consultant)

77 Water Street
New York, NY 10005

Associate Principal	Melissa Burton

BUILD (Project Sponsor)

315 Linden Street
San Francisco, CA 94102

Project Manager:	Victoria Lehman