University of California
San Francisco

UCSF Real Estate

654 Minnesota Street, 2nd Floor
San Francisco, CA 94143

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July 2024

RE: UCSF Benioff Children's Hospital Oakland New Hospital Building Project,
State Clearinghouse No. 2023050540

Thank you for your interest in the UCSF Benioff Children's Hospital Oakland New Hospital Building (NHB) Project. The Final Environmental Impact Report (Final EIR) consists of two documents:

- The previously published Draft EIR and associated appendices
- This Final EIR document, which contains:
    - a list of agencies, organizations and persons that commented on the Draft EIR,
    - copies of comments received on the Draft EIR; and written responses to those comments,
    - a description of refinements made to the design of the NHB Project,
    - revisions to the Draft EIR to clarify or correct information in the Draft EIR,
    - the mitigation monitoring and reporting program, and
    - associated appendices.

The Regents of the University of California will consider whether to certify the Final EIR and approve the NHB Project, as well as an amendment to the UCSF 2014 Long Range Development Plan to include the UCSF BCH Oakland campus site, at their meeting on July 16-18, 2024. Please see the UC Regents meeting website for more information:

https://regents.universityofcalifornia.edu/meetings/

Sincerely,

Diane C. Wong

Diane Wong, Environmental Coordinator
UCSF Campus Planning
654 Minnesota Street
San Francisco, CA 94143

REGENTS' FINAL

JULY 2024

UCSF BENIOFF CHILDREN'S HOSPITAL OAKLAND NEW HOSPITAL BUILDING PROJECT

Environmental Impact Report

State Clearinghouse Number 2023050540

Artist's Rendering

REGENTS' FINAL

JULY 2024

UCSF BENIOFF CHILDREN'S HOSPITAL OAKLAND NEW HOSPITAL BUILDING PROJECT

Environmental Impact Report

State Clearinghouse Number 2023050540

Prepared for
University of California, San Francisco
Real Estate - Campus Planning
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CHAPTER 8
Final EIR

8.1 Introduction

8.1.1 Purpose of the Final EIR Document

The University of California, San Francisco (UC San Francisco or UCSF) is proposing to construct a new hospital building and associated improvements at the UCSF Benioff Children's Hospital (BCH) Oakland campus site, collectively known as the New Hospital Building (NHB) Project. The NHB Project would address seismic safety requirements, other regulatory requirements, and industry standards for contemporary hospitals; increase inpatient beds; accommodate modern technologies; and enhance functionality and efficiency at the campus site. Construction of the NHB Project would begin in summer 2024 and be completed by early 2031, with the exception of renovations to existing buildings which would extend into early 2033. As the UCSF BCH Oakland campus site is controlled by the University, UCSF proposes to amend the UCSF 2014 Long Range Development Plan (LRDP) to incorporate the UCSF BCH Oakland campus site and other smaller BCH Oakland-owned properties into the LRDP.

As required by the California Environmental Quality Act (CEQA), this EIR: (1) assesses the potentially significant direct and indirect environmental impacts, as well as the potentially significant cumulative impacts, associated with implementation of the NHB Project; (2) identifies feasible means of avoiding or substantially lessening significant adverse impacts; and (3) evaluates a range of reasonable alternatives to the proposed NHB Project, including the required No Project Alternative.

The University of California (University or UC) is the "lead agency" for the environmental review of the NHB Project and the related amendment to the UCSF 2014 LRDP to include the UCSF BCH Oakland campus site. UC is governed by the Board of Regents of UC (UC Regents), which under Article IX, Section 9, of the California Constitution, has "full powers of organization and government" subject only to very specific areas of legislative control. The UC Regents has the responsibility for certifying this Final EIR and approving the UCSF 2014 LRDP amendment.

As described in greater detail in Section 8.1.2, *Environmental Review Process*, below, UCSF published a Draft EIR on the proposed NHB Project on January 16, 2024, and the public review period for that document ended on March 1, 2024. The Draft EIR, together with this Final EIR document, including appendices to both documents fulfill the requirements of CEQA consistent with CEQA Guidelines Section 15132. The Final EIR will be considered by the UC Regents before deciding whether to adopt the proposed LRDP amendment, as well as approve the proposed NHB Project. Upon finding that the Final EIR reflects the Lead Agency's independent judgment and analysis of the significant impacts of the project on the environment (CEQA Guidelines Section 15090), the Final EIR will be certified and the proposed NHB Project and LRDP amendment will be considered for approval.

This Final EIR provides written responses to comments received on the Draft EIR during the public review period. It contains a list of agencies, organizations and persons that commented on the Draft EIR; copies of comments received on the Draft EIR; and written responses to those comments. It also contains a description of refinements made to the design of the proposed new hospital, parking garage, and other site development, and revisions to the Draft EIR to clarify or correct information in the Draft EIR. Section 8.1.3, *Document Organization*, below, provides a description of the overall contents and organization of this Final EIR document.

8.1.2 Environmental Review Process

Notice of Preparation and Public Scoping

On May 22, 2023, a Notice of Preparation (NOP) was published for the NHB Project EIR. A 30-day public comment period was provided which ended on June 21, 2023. A copy of the NOP is included in **Appendix A** to the Draft EIR. A scoping meeting was held on June 6, 2023, via Zoom to accept public input on environmental topics to be analyzed in the EIR and approaches to the impact analyses. Written comments received on the NOP, and a transcript of the scoping meeting, are included in **Appendix B** to the Draft EIR.

Draft EIR Public Review

On January 16, 2024, UCSF released for public review the NHB Project Draft EIR. A 45-day public review and comment period for the Draft EIR began on January 16 and closed on March 1, 2024. During the public review period, UCSF received three comment letters from governmental agencies, two comments letters from organizations, and two comment letters from members of the public. UCSF also held a Draft EIR public hearing on February 15, 2024, via Zoom to receive oral comments on the Draft EIR.

Final EIR

The Final EIR consists of two documents:

- The previously published Draft EIR and associated appendices
- This Final EIR document, as described under Section 8.1.1, above, and Section 8.1.3, below, and associated appendices

The UC Regents will hold a public hearing to consider whether to certify the Final EIR as complying with the requirements of CEQA, and whether to approve the design of the New Hospital and LRDP amendment. UCSF will notify all public agencies that submitted comments on the Draft EIR of the availability of the Final EIR at least 10 days prior to the UC Regents meeting on the Final EIR (CEQA Guidelines Section 15088(b)). Additionally, as a courtesy, UCSF will also notify all others who submitted comments on the Draft EIR of the availability of the Final EIR at least 10 days prior to the UC Regents meeting on the Final EIR.

The UC Regents must certify the Final EIR before deciding whether to approve the proposed LRDP amendment and proposed NHB Project. Prior to approval of a project for which the EIR identifies significant environmental effects, CEQA requires the adoption of Findings of Fact (CEQA Guidelines Sections 15091 and 15092). If the Findings of Fact identify significant adverse impacts that cannot be avoided or substantially lessened, the UC Regents must adopt a statement of overriding considerations for those impacts (CEQA Guidelines Section 15093(b)).

8.1.3 Document Organization

This Final EIR document is organized as follows:

- Chapter 8, *Final EIR*, organized as follows:
  - Section 8.1, *Introduction*, describes the purpose of the Final EIR document, the environmental review process, and the organization of this document.
  - Section 8.2, *Summary*, summarizes the environmental impacts that would result from implementation of the proposed NHB Project, lists proposed mitigation measures, and indicates the level of significance of the impacts after mitigation.
  - Section 8.3, *Project Refinements*, contains a description of refinements made by UCSF to the proposed NHB Project.
  - Section 8.4, *Agencies, Organizations, and Individuals Commenting on the Draft EIR*, lists all agencies, organizations, and persons that submitted written and/or oral comments on the Draft EIR during the public review period.
  - Section 8.5, *Written and Oral Comments on the Draft EIR, and Responses to Comments*, contains all comment letters received, and a copy of the transcript of the public hearing held during the public review period for the Draft EIR, and UCSF's responses to environmental issues raised in these letters and at the public hearing.
  - Section 8.6, *Revisions to the Draft EIR*, presents changes and revisions to the Draft EIR. These changes and revisions to the Draft EIR were made either in response to comments received on the document, or as necessary to clarify statements and conclusions made in the document. None of the changes and revisions in Section 8.6 substantially affect the prior impact analysis or change the impact conclusions presented in the Draft EIR.
- Chapter 9, *Mitigation Monitoring and Reporting Program*, presents the Mitigation Monitoring and Reporting Program (MMRP) required under CEQA, which identifies the specific timing and roles and responsibilities for implementation of the adopted mitigation measures.

8.1.4 Draft EIR Recirculation Not Required

CEQA Guidelines Section 15088.5 requires Draft EIR recirculation when "significant new information" is added to an EIR because the EIR is changed in a way that deprives the public of a meaningful opportunity to comment on a project's significant environmental effects or feasible mitigation measures or alternatives to reduce or avoid such effects that are not proposed for adoption. The comments, responses, project refinements, and Draft EIR revisions presented in this document do not constitute such "significant new information;" instead, they clarify, amplify, or make insignificant modifications to the Draft EIR. None of the comments, responses, project refinements, and Draft EIR revisions involves new or substantially more severe significant environmental effects of the proposed NHB Project or sets forth new feasible mitigation measures or alternatives considerably different than those analyzed in the Draft EIR that would clearly lessen the proposed NHB Project's significant effects which UC declines to adopt. Recirculation of the NHB Project Draft EIR is, therefore, not required.

8.2 Summary

8.2.1 Introduction

This EIR assesses the potentially significant environmental effects that could result from the implementation of the proposed University of California, San Francisco (UC San Francisco or UCSF) Benioff Children Hospital (BCH) Oakland New Hospital Building (NHB) Project.

The University of California (University or UC) is the "lead agency" for the environmental review of the NHB Project under the California Environmental Quality Act (CEQA) and a related proposed amendment to the UCSF 2014 Long Range Development Plan (LRDP) to incorporate the BCH Oakland campus site into the LRDP.

This summary highlights the major areas of importance in the environmental analysis for the proposed NHB Project, as required by Section 15123 of the *CEQA Guidelines*. It provides a brief description of the NHB Project, the project objectives, the significant and unavoidable environmental effects, alternatives to the NHB Project, and areas of controversy known to the University. In addition, this chapter summarizes (1) all potential environmental impacts that would occur as a result of implementation of the NHB Project; (2) the recommended mitigation measures that would avoid or reduce significant environmental impacts; and (3) the level of impact significance after mitigation measures are implemented.

8.2.2 Project Description

In 2014, UCSF entered into an affiliation agreement with Children's Hospital & Research Center Oakland (CHRCO), to align the two institutions. At that time, a Campus Master Plan (CMP) for the 11-acre campus, which provided for the development of new and replacement facilities within the existing campus, was already under review by the City of Oakland, which maintained land use jurisdiction and CEQA lead agency status for the site as CHRCO was then a solely private institution. In 2015, the City of Oakland certified the *Children's Hospital and Research Center Oakland Campus Master Plan Project Final EIR* (CHRCO CMP Project FEIR) and approved the CMP.

The entitlements for the CMP included a Planned Unit Development (PUD) permit, which consisted of two phases. The Preliminary Development Plan (PDP) and Final Development Plan (FDP) for Phase 1 were approved consisting of various improvements in the northern half of the campus site (north of 52nd Street); construction of the improvements is still in progress. Phase 2 included additional development in the northern half of the campus site, and development in the southern half of the campus site (south of 52nd Street), including an Acute Care Patient Pavilion/Hospital, a Link Building with a helistop on the roof, new parking structure, and demolition of several buildings. The PDP for Phase 2 was approved in 2015.

Following the 2014 agreement between CHRCO and UCSF, the hospital was renamed UCSF BCH Oakland. The hospital is still under the management control of UCSF BCH Oakland, a nonprofit public benefit corporation, and the UC Regents are the sole member of the nonprofit.

As the UCSF BCH Oakland campus site is now controlled by the University, UCSF has revised its approach to the modernization of the campus site, and the proposed NHB Project represents the next stage of modernization on the campus site south of 52nd Street. Although the proposed NHB Project is conceptually the same as the Phase 2 development analyzed in the 2015 CHRCO CMP Project FEIR for the portion of the campus site south of 52nd Street, there are some differences in the proposed improvements. As such, the University, acting as the lead agency under CEQA, determined that it will prepare a project EIR that analyzes and discloses the environmental impacts of the proposed NHB Project.

The NHB Project consists of a new hospital building and associated improvements on the campus site. The Project would address seismic safety requirements, other regulatory requirements, and industry standards for contemporary hospitals; increase inpatient beds; accommodate modern technologies; and enhance functionality and efficiency on the campus site. The Project would include a 282,000 gsf new hospital building, consisting of 7 stories with rooftop helistop, and a full basement; a 5-story 270-space parking structure; a 5,000 gsf site support structure; renovation and/or structural retrofitting of existing buildings within the Project site; and a variety of transportation, infrastructure, and landscape improvements. A new helistop structure would be constructed on top of the new hospital building. The Project would also involve demolition or relocation of approximately 110,700 gsf of existing buildings, and renovation of approximately 12,000 gsf of existing building space.

Under the Project, the new hospital building would house 104 inpatient beds, of which 71 beds would be relocated from the existing facilities on the Project site, and 104 beds would remain in the existing inpatient facilities, for a total of 210 inpatient beds on the campus site (a net increase of 33 inpatient beds over existing conditions).

The Project would shift the Emergency Department (ED) access to the east side of the Project site while maintaining the main front entry access and passenger drop-off as-is at the northwest corner of the hospital complex. The principal vehicular ingress/egress point to the Project site for the public, emergency, and delivery vehicles would be via the Dover Street extension at 52nd Street. In addition, a new driveway on MLK Jr. Way would allow right-turn access to and from the Project site for ambulances only. An internal driveway would access the ED entrance, ambulance patient drop-off, and proposed parking garage.

Approximately two-thirds of an acre of landscaping would be provided at passenger drop off areas and entrances to the new hospital building, and along internal roadways. The new hospital building would comply with the applicable UC *Policy on Sustainable Practices* and would pursue a minimum level of LEED Gold Certification; as well as meet CalGreen requirements.

A Project variant is analyzed in this EIR at an equal level of detail as the proposed Project involving a design change under which the proposed helistop structure would be constructed on top of the new parking garage instead of atop the new hospital building.

As part of the proposed 2014 LRDP amendment, the BCH Oakland facilities would be included in the UCSF 2014 LRDP space program. This would include the main UCSF BCH Oakland campus site, and smaller BCH Oakland-owned off-site properties.

8.2.3 Project Objectives

The key objectives for the proposed NHB Project are as follows:

Fundamental Objectives

- Modernize the aging UCSF BCH Oakland campus to maintain and enhance its place as a premier children's hospital, educational, research, and clinical institution.
- Modernize the aging UCSF BCH Oakland campus to maintain and enhance its place as nationally recognized teaching hospital, providing accredited residency education in general pediatrics and fellowship education to pediatricians seeking subspecialty training.
- Modernize the UCSF BCH Oakland campus to address challenges that affect the long-term viability of the institution, such as aged, functionally obsolete, undersized and inefficient facilities.
- Meet seismic requirements of California Senate Bill 1953 by redeveloping a new, seismically-sound, state-of-the-art and sustainable inpatient facility.
- Maintain UCSF BCH Oakland's designation as the Bay Area's Level I pediatric trauma center with continued emergency service access via helicopter.
- Address the existing shortage of capacity and access to pediatric care by increasing the number of inpatient beds at UCSF BCH Oakland.
- Address the current unmet need for adolescent mental health care and services by providing behavioral health inpatient beds that meet code requirements, including required outdoor space, at UCSF BCH Oakland and providing such services.
- Address the current unmet need for ED patient services by increasing the size of the ED.
- Site and develop a new inpatient facility in a way that optimizes operational activities and maintains critical adjacencies with other clinical facilities on the site, such as the existing Patient Tower, the Ford D&T Center and Cardiac Catheterization Lab, and critical support functions.
- Develop a new inpatient facility that is optimized in its spatial layout for functionality in terms of workflow and wayfinding, and efficiency so as not to increase operational costs.

Development Objectives

- Develop a new inpatient facility that has sufficient space to accommodate modern regulatory requirements and industry standards of contemporary hospitals, such as construction codes, sizes of operating rooms, ratio of operating rooms to pre-and post-recovery areas, space for privacy and infection control issues.
- Develop a new inpatient facility that has sufficient space to accommodate patient satisfaction requirements of contemporary hospitals such as private patient rooms, patient rooms of sufficient size to accommodate family overnight stays, and outdoor space for children.
- Develop a new inpatient facility that has sufficient space to accommodate modern technology, including telemedicine, and new diagnostic, imaging, testing, treatment, surgery and laboratory equipment, all requiring substantial infrastructure and space.

- Optimize the existing Patient Tower by making non-structural performance improvements and renovating it to continue to provide inpatient beds and necessary clinical and support functions.
- Develop a parking structure to meet the needs of essential healthcare providers and other staff, at a location that provides direct and safe access to patient facilities.
- Develop parking facilities to address patient parking needs, in particular ED patient parking.
- Maintain existing hospital operations throughout construction.

8.2.4 Significant and Unavoidable Environmental Effects

Throughout this EIR, significant environmental impacts are identified, and mitigation measures are set forth that would eliminate the impacts or reduce them to a less-than significant level. Similarly, many impacts are identified that would be less than significant without the need for mitigation measures. There are, however, a few impacts that cannot be eliminated or cannot be reduced to a level of insignificance even with the implementation of feasible mitigation measures. The significant and unavoidable environmental impacts of the NHB Project are listed in **Table 8.2-1**, below.

TABLE 8.2-1
SIGNIFICANT AND UNAVOIDABLE IMPACTS OF THE NHB PROJECT

Impacts
Impact C-AIR-1: The health risk from the NHB Project combined with health risk impacts from other sources in the Project vicinity could result in significant cumulative health risk impacts.
Impact CUL-1: Implementation of the NHB Project would result in a substantial adverse change in the significance of known historical resources.
Impact NOI-1: Construction activities under the NHB Project would generate a substantial temporary increase in ambient noise levels in the vicinity of the Project site in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

8.2.5 Alternatives to the Proposed Project

The following alternatives were analyzed in detail in this EIR and compared to the proposed NHB Project. The objective of the alternatives analysis is to determine whether an alternative would feasibly obtain most of the project objectives, while avoiding or substantially lessening some of the significant effects of the proposed NHB Project.

Alternative 1: No Project

Alternative 2: New Hospital Project per the 2015 CHRCO CMP

Alternative 3: Modified Hospital Design Project

Alternative 4: Reduced Project

8.2.6 Areas of Controversy

Areas of controversy known to the lead agencies, including issues raised by agencies and the public, must be identified in the Summary of an EIR (14 Cal. Code Regs. Section 15123).

On May 22, 2023, a Notice of Preparation (NOP) was published for the NHB Project EIR. A 30-day public comment period ended on June 21, 2023. A copy of the NOP is included in **Appendix A** of the Draft EIR. A scoping meeting was held on June 6, 2023, via Zoom to accept public input on environmental topics to be analyzed in the EIR and approaches to the impact analyses. Written comments received on the NOP, and a transcript of verbal comments received during the scoping meeting, are included in **Appendix B** of the Draft EIR.

Based on the comments received during the public scoping period, issues of concern for the proposed NHB Project include the following:

- Address liquefaction as a potential seismic hazard
- Conduct tribal consultation outreach per Assembly Bill 52
- Analyze VMT pursuant to the City of Oakland guidelines
- Describe pedestrian, bicycle and vehicle conditions at the Project site and study area roadways
- Disclose safety issues to the State Transportation Network
- Address project construction related impacts, including staging and traffic
- Analyze project operational traffic
- Mitigate significant Project construction and noise impacts
- Maintain bicycle and pedestrian access during construction
- Describe Project community benefits
- Distinguish private properties from the UCSF BCH Oakland campus site
- Analyze project impacts on migrating birds, and traffic in general (not just during construction)

Draft EIR Section 4.0.2, *Scope of Analysis*, presents a discussion of the approach for determining which of the issues listed above are within the purview of CEQA and therefore included in the scope of this EIR.

8.2.7 Summary of Impacts and Mitigation Measures

Table 8.2-2 summarizes the impacts of the proposed NHB Project, identifies the significance determination of each impact before and after mitigation, and presents the full text of the identified mitigation measures.

TABLE 8.2-2
SUMMARY OF NHB PROJECT IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.1 Air Quality			
Impact AIR-1: Implementation of the NHB Project would not conflict with or obstruct implementation of the 2017 Clean Air Plan.	LTS	None required.	NA
Impact AIR-2: Implementation of the NHB Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.	LTS	None required.	NA
Impact AIR-3: Implementation of the NHB Project would not expose sensitive receptors to substantial pollutant concentrations.	LTS	None required.	NA
Impact C-AIR-1: The health risk from the NHB Project combined with health risk impacts from other sources in the Project vicinity would result in significant cumulative health risk impacts.	S	**Mitigation Measure C-AIR-1: Clean Construction Equipment** a. Electric engines shall be used for all equipment that is commercially available as plug-in or battery-electric equipment during each construction phase and activity. Portable equipment shall be powered by grid electricity if available. Electric equipment shall include, but not be limited to, concrete/industrial saws, sweepers/scrubbers, aerial lifts, welders, air compressors, fixed cranes, forklifts, and cement and mortar mixers, pressure washers, and pumps. To qualify for an exception, UCSF shall require construction contractors to provide evidence supporting the conclusion that electric equipment is not commercially available and shall use the next cleanest piece of off-road equipment in terms of DPM and $PM_{2.5}$. “Commercially available” is defined as either: (1) being used for other large-scale projects in the region occurring at the same time; (2) can be obtained without significant delays to critical-path timing of construction; or (3) available within the larger northern California region. UCSF shall be responsible for the final determination of commercial availability, based on all the facts and circumstances at the time the determination is made. For UCSF to make a determination that such equipment is commercially unavailable, the operator must submit documentation from a minimum of three (3) electric off-road equipment dealers demonstrating the inability to obtain the required electric equipment needed within 6 months. b. The construction contractor shall ensure that all diesel off-road equipment shall have engines that meet the Tier 4 Final off-road emission standards, as certified by CARB, except as provided for in this section. This requirement shall be verified through submittal of an equipment inventory that includes the following information: (1) Type of Equipment, (2) Engine Year and Age, (3) Number of Years Since Rebuild of Engine (if applicable), (4) Type of Fuel Used, (5) Engine HP, (6) Verified Diesel Emission Control Strategy (VDECS) information if applicable and other related equipment data. A Certification Statement is also required to be made by the contractor for documentation of compliance and for future review by the BAAQMD as necessary. The Certification Statement shall state that the contractor agrees to compliance and acknowledges that a violation of this requirement shall constitute a material breach of contract.	SU

S = Significant Impact
SU = Significant and Unavoidable with Mitigation
LTS = Less than Significant impact
NA = Not applicable

TABLE 8.2-2 (CONTINUED)
SUMMARY OF NHB PROJECT IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.1 Air Quality (cont.)			
Impact C-AIR-1 (cont.)		The requirement for Tier 4 Final equipment may be waived only under the following unusual circumstances: if a particular piece of off-road equipment with Tier 4 Final standards is technically not feasible or not commercially available; 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 other alternate off-road equipment. For purposes of this mitigation measure, “commercially available” shall mean the availability of Tier 4 Final engines similar to the availability for other large-scale construction projects in the region occurring at the same time and taking into consideration factors such as (i) potential significant delays to critical-path timing of construction for the project and (ii) geographic proximity to the project site of Tier 4 Final equipment. Sufficient documentation must be provided when seeking any waiver described above. If the waiver is granted, the contractor must use the next cleanest piece of off-road equipment that is commercially available, or another alternative that results in comparable reductions of DPM and $PM_{2.5}$ emissions.	
EIR Section 4.2 Biological Resources			
Impact BIO-1: Implementation of the NHB Project would not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.	S	**Measure BIO-1a: Protection of Nesting Birds** • To the extent feasible, removal of any tree and/or other vegetation suitable for nesting of birds shall not occur during the bird breeding season of February 1 to August 15. If tree removal must occur during the bird breeding season, all trees to be removed shall be surveyed by a qualified biologist to verify the presence or absence of nesting raptors or other birds. Pre-removal surveys shall be conducted within 15 days prior to the start of work and shall be submitted to UCSF for review and approval. • If the survey indicates the potential presence of nesting raptors or other birds, the biologist shall determine an appropriately sized buffer around the nest in which no work will be allowed until the young have successfully fledged. The size of the nest buffer will be determined by the biologist in consultation with the California Department of Fish and Wildlife and will be based to a large extent on the nesting species and its sensitivity to disturbance. In general, buffer sizes of 200 feet for raptors and 50 feet for other birds should suffice to prevent disturbance to birds nesting in the urban environment, but these buffers may be increased or decreased, as appropriate, depending on the bird species and the level of disturbance anticipated near the nest. **Mitigation Measure BIO-1b: Protection of Roosting Bats** • Prior to project construction, a qualified bat biologist shall conduct a pre-construction survey for roosting bats in trees to be removed or pruned and structures to be demolished within the work area and within a 50-foot radius of the work area. If no roosting bats are found, no further action is required.	LTS

S = Significant Impact
SU = Significant and Unavoidable with Mitigation
LTS = Less than Significant impact
NA = Not applicable

Table 8.2-2 (continued)
Summary of NHB Project Impacts and Mitigation Measures

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.2 Biological Resources (cont.)			
Impact BIO-1 (cont.)		• If a non-maternal roost of bats is found in a tree or structure to be removed or demolished as part of project construction, the individuals shall be safely evicted, under the direction of a qualified bat biologist, by opening the roosting area to allow airflow through the cavity. Removal or demolition should occur no sooner than at least two nights after the initial minor site modification (to alter airflow). This action allows bats to leave during darkness, thus increasing their chance of finding new roosts with a minimum of disturbance. Departure of the bats from the construction area shall be confirmed with a follow-up survey by a qualified bat biologist prior to start of construction. • If active maternity roosts are found in trees or structures that will be removed or demolished as part of project construction, tree removal or demolition of that tree or structure shall commence and be completed before maternity roosting colonies form (generally before March 1), or shall not commence until after young are flying (generally after July 31). Active maternity roosts shall not be disturbed between March 1 and July 31.	
Impact BIO-2: Implementation of the NHB Project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.	S	**Mitigation Measure BIO-2: Bird Collision Reduction Measures** Bird safe measures would be developed in consultation with a qualified expert based on site-specific conditions. Preliminary construction and operational bird safe measures may include, but not limited to, the following: • Construction areas requiring lights shall implement the following measures to the extent feasible: – Construction-related lighting shall be fully shielded and focused down to ensure no significant illumination passes beyond the immediate work area. – Yellow or orange light shall be used where possible. – Construction personnel shall reduce the amount of lighting to the minimum necessary to safely accomplish the work. Building design shall: • Avoid installation of lighting in areas where not required for public safety. • Consider alternatives to all-night, floor-wide lighting when interior lights would be visible from the exterior or when exterior lights must be left on at night, including: – Installing motion-sensitive lighting – Installing task lighting – Installing programmable timers	LTS

S = Significant Impact
SU = Significant and Unavoidable with Mitigation
LTS = Less than Significant impact
NA = Not applicable

TABLE 8.2-2 (CONTINUED)
SUMMARY OF NHB PROJECT IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.2 Biological Resources (cont.)			
Impact BIO-2 (cont.)		• Installing lower-wattage, sodium, and yellow-red spectrum lighting fixtures (if compatible with personnel safety requirements) • Use fully shielded exterior safety lights to contain and direct light away from the sky. • Employ glazing options, such as use of either fritted glass, Dichroic glass, etched glass, translucent glass, or glass that reflects ultraviolet light in appropriate portions of the building façades.	
Impact C-BIO-1: Implementation of the NHB Project would not result in cumulatively considerable impacts on biological resources, in combination with past, present and reasonably foreseeable future projects in the vicinity of the Project site	S	Implement Mitigation Measures BIO-1a, BIO-1b, and BIO-2.	LTS
EIR Section 4.3 Cultural Resources and Tribal Cultural Resources			
Impact CUL-1: Implementation of the NHB Project would result in a substantial adverse change in the significance of known historical resources.	S	**Mitigation Measure CUL-1a: Documentation of the A/B Wing** Prior to any demolition work initiated at the A/B Wing, UCSF shall ensure that a qualified architectural historian who meets the Secretary of the Interior's Professional Qualification Standards thoroughly documents the building and associated landscaping and setting. Documentation shall include still photography and a written documentary record of the building to the National Park Service's standards of the Historic American Buildings Survey (HABS), including accurate scaled mapping and architectural descriptions. If available, scaled architectural plans will also be included. Photographs include large-format (4"x5") black-and-white negatives and 8"x10" enlargements. Digital photography may be substituted for large-format negative photography if archived locally. The record shall be accompanied by a report containing site-specific history and appropriate contextual information relying as much as possible on previous documentation. Copies of the records, including photographs, shall be submitted to the Northwest Information Center at Sonoma State University, and the Oakland History Center, the Temescal Branch, and the proposed Hoover Branch of the Oakland Public Library. In addition, a complete documentation package will be offered to the Bancroft Library on the University of California, Berkeley Campus for inclusion in their digital repository. **Mitigation Measure CUL-1b: Public Interpretation and Salvage Plan for the A/B Wing** Prior to any demolition work that would remove character-defining features of the A/B Wing, UCSF shall prepare a Salvage Plan for those components of the building suitable for salvage and/or reuse. A Salvage Plan shall be prepared by a qualified architectural historian or historic architect who meets the Secretary of the Interior's Professional Qualification Standards and presented to UCSF Planning staff. This would be a feasibility study to determine the structural integrity of the character-	SU

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NA = Not applicable

TABLE 8.2-2 (CONTINUED)
SUMMARY OF NHB PROJECT IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.3 Cultural Resources and Tribal Cultural Resources (cont.)			
Impact CUL-1 (cont.)		defining features associated with the A/B Wing, identify environmental factors that may require remediation prior to salvage (e.g., lead paint, chemicals, etc.), and present potential new uses of the salvaged features. The Salvage Plan will identify opportunities for UCSF to reuse character-defining features in the NHB. Prior to any demolition activities that would remove character-defining features of, or demolish, an individual historical resource on the project site, UCSF shall prepare a plan for interpretive displays. The specific location, media, and other characteristics of such interpretive display(s) shall be included in this proposal. The historic interpretation plan shall be prepared in coordination with an architectural historian or historian who meets the Secretary of the Interior's Professional Qualification Standards and an exhibit designer or landscape architect with historical interpretation design experience. Interpretive display(s) shall document the individually eligible resource to be demolished. The interpretative plan should also explore contributing to digital platforms that are publicly accessible. A proposal describing the general parameters of the interpretive program and the substance, media, and other elements of such interpretive display shall be approved by UCSF Planning staff prior to commencement of any demolition activities. Following any demolition activities within the project site, UCSF shall provide within publicly accessible areas of the project site a permanent display(s) of interpretive materials concerning the history and architectural features of the individual historical resources. All materials will be made accessible to patients and visitors and to the greatest extent possible, these materials will also be made accessible to the general public and passers-by.	
Impact CUL-2: Implementation of the NHB Project would not result in significant impacts to the 55th and Dover Residential District.	LTS	None required.	NA
Impact CUL-3: Implementation of the NHB Project could cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5.	S	**Mitigation Measure CUL-3: Inadvertent Discovery of Archaeological Resources and Tribal Cultural Resources** Prior to commencement of construction activities, all on-site personnel shall attend a mandatory pre-project training to outline the general archaeological and tribal cultural sensitivity of the project area. The training will include a description of the types of resources that could be encountered and the procedures to follow in the event of an inadvertent discovery of resources. If pre-contact or historic-era cultural materials are encountered by construction personnel during ground-disturbing activities, all construction activities within 100 feet shall halt and the contractor shall notify the UCSF Environmental Coordinator (EC). The UCSF EC shall retain a qualified archaeologist who meets the Secretary of the Interior's Professional Qualification Standards to inspect the find within 24 hours of discovery. If it is determined that the project could damage a historical resource or a unique archaeological resource, construction shall cease in an area determined by the qualified archaeologist until a mitigation plan has been prepared and implemented [CEQA Guidelines	LTS

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TABLE 8.2-2 (CONTINUED)
SUMMARY OF NHB PROJECT IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.3 Cultural Resources and Tribal Cultural Resources (cont.)			
Impact CUL-3 (cont.)		15064.5(b)(4)]. If the find is a potential tribal cultural resource, the UCSF EC shall contact a Native American representative or representatives (as provided by the Native American Heritage Commission) [PRC 21074(2)(c)]. The qualified archaeologist, in consultation with the UCSF EC and the Native American representative(s), shall determine when construction can resume. If the resource is determined to be a historical resource or a unique archaeological resource, the preferred mitigation shall be preservation in place. In accordance with PRC Section 21083.2(b), preservation in place shall be accomplished through: (1) modifying the construction plan to avoid the resource; (2) incorporating the resource within open space; (3) capping and covering the resource; or (4) deeding the resource site into a permanent conservation easement. If preservation in place is not feasible, the qualified archaeologist, in consultation with the UCSF EC and the Native American representative(s) (if the resource is pre-contact), shall prepare and implement a detailed treatment plan. In all cases treatment will be carried out with dignity and respect (including protecting the cultural character, traditional use, and confidentiality of the resource). For pre-contact Native American resources, the Native American representative(s) will be consulted on the research approach, methods, and whether burial or data recovery or alternative mitigation is appropriate for the find. Treatment for most resources could consist of (but shall not be limited to) sample excavation, site documentation, and historical research, as appropriate to the discovered resource. The treatment plan shall include provisions for analysis of data in a regional context as appropriate to the discovered resource, reporting of results within a timely manner, and dissemination of reports to local and state repositories, libraries, and interested professionals.	
Impact CUL-4: Implementation of the NHB Project could disturb human remains, including those interred outside of dedicated cemeteries.	S	**Mitigation Measure CUL-4: Inadvertent Discovery of Human Remains** In the event of discovery or recognition of any human remains during ground-disturbing activities, treatment shall comply with all applicable state and federal laws. All construction activities within 100 feet shall halt and the contractor shall notify the UCSF Environmental Coordinator (EC). In accordance with PRC 5097.98, the UCSF EC shall contact the Alameda County Coroner to determine that no investigation of the cause of death is required. The County Coroner shall contact the Native American Heritage Commission (NAHC) within 24 hours if it is determined that the remains are Native American. The NAHC will then identify the person or persons it believes to be the most likely descendant (MLD) from the deceased Native American. Within 48 hours, the MLD shall make recommendations to the UCSF EC of the appropriate means of treating the human remains and any grave goods. Whenever the NAHC is unable to identify an MLD, the MLD fails to make a recommendation, or the parties are unable to agree on the appropriate treatment measures, the human remains shall be reinterred with appropriate dignity on the property in a location not subject to further and future subsurface disturbance.	LTS

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TABLE 8.2-2 (CONTINUED)
SUMMARY OF NHB PROJECT IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.3 Cultural Resources and Tribal Cultural Resources (cont.)			
Impact CUL-5: Implementation of the NHB Project could cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe.	S	**Mitigation Measure CUL-5a: Cultural Resources Awareness Training** UCSF shall provide a cultural resources and tribal cultural resources sensitivity and awareness training program for all personnel involved in project construction, including field consultants and construction workers. UCSF shall invite affiliated Native American tribal representatives to participate. The training program shall include relevant information regarding sensitive cultural resources and tribal cultural resources, including applicable regulations, protocols for avoidance, and consequences of violating State laws and regulations. The training program shall also describe appropriate avoidance and minimization measures for resources that have the potential to be located in the Project site and shall outline what to do and who to contact if any potential cultural resources or tribal cultural resources are encountered. The training program shall emphasize the requirement for confidentiality and culturally appropriate treatment of any discovery of significance to Native Americans. **Mitigation Measure CUL-5b: Cultural Resources Monitoring Plan** Prior to authorization to proceed, a Secretary of the Interior-qualified archaeologist shall prepare a cultural resources monitoring plan. The plan shall be reviewed by the affiliated Native American tribe(s) and UCSF. The plan shall include (but not be limited to) the following components: • Monitoring locations and circumstances based on soil types, geology, distance to known sites, and other factors; • Person(s) responsible for conducting monitoring activities, including a request to the culturally-affiliated Native American tribe(s) for a tribal monitor; • Person(s) responsible for overseeing and directing the monitors; • How the monitoring shall be conducted and the required format and content of monitoring reports; • Schedule for submittal of monitoring reports and person(s) responsible for review and approval of monitoring reports; • Protocol for notifications in case of encountering cultural resources, as well as methods of dealing with the encountered resources (e.g., collection, identification, curation); • Methods to ensure security of cultural resources if identified; • Protocol for notifying local authorities (i.e. Sheriff, Police) should site looting and other illegal activities occur during construction. During the course of the monitoring, the archaeologist and tribal monitor may adjust the frequency—from continuous to intermittent—of the monitoring based on the conditions and professional judgment regarding the potential to impact resources.	LTS

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TABLE 8.2-2 (CONTINUED)
SUMMARY OF NHB PROJECT IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.3 Cultural Resources and Tribal Cultural Resources (cont.)			
Impact C-CUL-1: Implementation of the NHB Project would result in cumulatively considerable impacts on cultural and/or tribal cultural resources, in combination with past, present and reasonably foreseeable future projects.	LTS for Historical Resources S for Archaeological Resources, Human Remains and Tribal Cultural Resources	Implement Mitigation Measures CUL-3 and CUL-4.	LTS
EIR Section 4.4 Energy			
Impact ENE-1: Implementation of the NHB Project would not result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.	LTS	None required.	NA
Impact ENE-2: Implementation of the NHB Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency.	LTS	None required.	NA
Impact C-ENE-1: The NHB Project, combined with cumulative development in the BCH Oakland campus site vicinity and citywide, would not result in significant cumulative energy impacts.	LTS	None required.	NA
EIR Section 4.5 Geology and Soils			
Impact GEO-1: Construction and operation of the NHB Project would not directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking.	LTS	None required.	NA
Impact GEO-2: Construction and operation of the NHB Project would not directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death involving strong seismic related ground failure, including liquefaction.	LTS	None required.	NA
Impact GEO-3: Construction and operation of the NHB Project would not have the potential to result in substantial erosion or the loss of topsoil.	LTS	None required.	NA

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TABLE 8.2-2 (CONTINUED)
SUMMARY OF NHB PROJECT IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.5 Geology and Soils (cont.)			
Impact GEO-4: The NHB Project would not be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.	LTS	None required.	NA
Impact GEO-5: The NHB Project would be located on expansive soils, but would not cause substantial direct or indirect risks to life or property.	LTS	None required.	NA
Impact GEO-6: The NHB Project would not directly or indirectly destroy a unique paleontological resource or site or unique geological feature.	S	**Mitigation Measure GEO-6:** Prior to commencement of construction activities, all on-site personnel shall attend a mandatory pre-project training to outline the general paleontological sensitivity of the project area. The training will include a description of the types of resources that could be encountered and the procedures to follow in the event of an inadvertent discovery of resources. If paleontological resources, such as fossilized bone, teeth, shell, tracks, trails, casts, molds, or impressions are discovered during ground-disturbing activities, work shall stop in that area and within 100 feet of the find until a qualified paleontologist meeting the Society of Vertebrate Paleontology (SVP) Standards can assess the nature and importance of the find and, if necessary, develop appropriate salvage measures in conformance with SVP standards (2010). If the discovery can be avoided and no further impacts will occur, no further effort shall be required. If the resource cannot be avoided and may be subject to further impact, a qualified paleontologist shall evaluate the resource and determine whether it is “unique” under CEQA. Any discovered paleontological resources that are determined by the qualified paleontologist to be “unique” in accordance with CEQA shall be subjected to appropriate salvage measures in conformance with SVP standards (2010).	LTS
Impact C-GEO-1: Implementation of the NHB Project, in combination with past, present and reasonably foreseeable future projects, would not result in significant cumulative impacts related to geology and soils.	LTS	None required.	NA
EIR Section 4.6 Greenhouse Gas Emissions			
Impact GHG-1: Construction and operation of the NHB Project would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	LTS	None required.	NA

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TABLE 8.2-2 (CONTINUED)
SUMMARY OF NHB PROJECT IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.6 Greenhouse Gas Emissions (cont.)			
Impact GHG-2: Construction and operation of the NHB Project would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	LTS	None required.	NA
EIR Section 4.7 Hazards and Hazardous Materials			
Impact HAZ-1: Construction and operation of the NHB Project could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	LTS	None required.	NA
Impact HAZ-2: Construction and operation of the NHB Project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.	LTS	None required.	NA
Impact HAZ-3: Construction and operation of the NHB Project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.	LTS	None required.	NA
Impact HAZ-4: The UCSF BCH Oakland campus site is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Contamination at the NHB Project site could be encountered during construction and could have the potential to create a significant hazard to the public or the environment.	S	**Mitigation Measure HAZ-4a:Soil and Groundwater Management Plan (SGMP)** Prior to development on the campus site, a SGMP shall be prepared by a qualified environmental consulting firm to reflect current regulatory requirements and risk management protocols that are in accordance with ACDEH oversight. The SGMP shall include measures to address protocols for identifying, handling, and characterizing suspect contaminated soils and/or groundwater, if encountered, as summarized below: • Site description, including the hazardous materials that may be encountered. • Roles and responsibilities of onsite workers, supervisors, and the regulatory agency (ACDEH). Onsite personnel shall attend mandatory pre-project training regarding the SGMP. • Training for construction workers focused on the recognition of and response to encountering hazardous materials. • Protocols for the materials (soil and/or dewatering effluent) testing, handling, removing, transporting, and disposing of all excavated materials and dewatering effluent in a safe, appropriate, and lawful manner. • Specified personal protective equipment and decontamination procedures, if needed. • A requirement specifying that any construction worker who identifies hazardous materials has the authority to stop work and notify the site supervisor.	LTS

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**TABLE 8.2-2 (CONTINUED)
SUMMARY OF NHB PROJECT IMPACTS AND MITIGATION MEASURES**

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.7 Hazards and Hazardous Materials (cont.)			
Impact HAZ-4 (cont.)		• Procedures to follow if evidence of potential soil and/or groundwater contamination is encountered (such as soil staining, unusual odors, debris or buried storage containers). These procedures shall be followed in accordance with hazardous waste operations regulations and specifically include, but not be limited to, immediately stopping work in the vicinity of the unknown hazardous materials release; notifying the ACDEH; and retaining a qualified environmental firm to perform sampling and remediation. Notification and sampling requirements for adequate characterization shall be in accordance with ACDEH requirements and any required removal or remediation work shall be completed to the overseeing agency's standards prior to occupancy of the new structure. **Mitigation Measure HAZ-4b: Vapor Mitigation** To mitigate potential exceedances of indoor air standards, the Project shall incorporate at least one or more of the vapor mitigation methods listed below in areas determined to have soil gas concentrations above soil gas screening levels. The proposed work-specific vapor mitigation must be in accordance with vapor mitigation guidance provided by the Department of Toxic Substances Control (DTSC), which provides vapor guidance information at https://dtsc.ca.gov/vapor-intrusion/. • Excavate and remove contaminated materials (soil and, if needed, groundwater), to levels where subsequent testing verifies that soil gas levels are below screening levels. • Install a physical vapor barrier beneath the structure foundation that prevents soil gas from seeping into breathing spaces inside the structure, or • Install a passive or powered vapor mitigation system that draws soil gas out of the under-foundation base rock and directs that soil gas to a treatment system to prevent people from being exposed outdoors to the extracted soil gas. Upon completion, UCSF BCH Oakland shall prepare a report documenting the testing results and installed vapor mitigation method and submit the report to the regulatory agency with jurisdiction (i.e., ACDEH). A copy of the report shall be provided to the UCSF Mitigation Monitor to inform them of compliance with this requirement. The implemented mitigation measure shall result in indoor air concentrations that do not exceed the screening levels provided in the DTSC Human Health Risk Assessment (HHRA) Note Number 3.	
Impact C-HAZ-1: Construction and operation of the NHB Project, in conjunction with other cumulative development within the City of Oakland, would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or from risk of upset and accident conditions involving hazardous materials.	LTS	None required.	NA

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TABLE 8.2-2 (CONTINUED)
SUMMARY OF NHB PROJECT IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.8 Hydrology and Water Quality			
Impact HYD-1: Implementation of the NHB Project would not have the potential to violate water quality standards or waste discharge requirements, or otherwise substantially degrade surface or groundwater quality.	S	Implement Mitigation Measure HAZ-4.	LTS
Impact HYD-2: Implementation of the NHB Project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.	LTS	None required.	NA
Impact HYD-3: Construction and operation of the NHB Project would not substantially alter the existing drainage patterns of the site or area, in a manner that has the potential to result in substantial erosion or siltation on- or off- site; would not substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site; and would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or impede or redirect flow.	LTS	None required.	NA
Impact HYD-4: Implementation of the Project would not create a risk of release of pollutants due to project inundation in flood hazard, tsunami, or seiche zones.	LTS	None required.	NA
Impact HYD-5: Implementation of the NHB Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.	S	Implement Mitigation Measure HAZ-4.	LTS
Impact C-HYD-1: Construction and operation of the NHB Project, in conjunction with other cumulative development, would not cumulatively violate water quality standards or waste discharge requirements, or otherwise substantially degrade water quality.	S	Implement Mitigation Measure HAZ-4.	LTS

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**TABLE 8.2-2 (CONTINUED)
SUMMARY OF NHB PROJECT IMPACTS AND MITIGATION MEASURES**

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.8 Hydrology and Water Quality (cont.)			
Impact C-HYD-2: Construction and operation of the NHB Project, in conjunction with other cumulative development, would not cumulatively alter the drainage pattern of the site or area, through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on or off site; would not substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site; would not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or impede or redirect flow.	LTS	None required.	NA
EIR Section 4.9 Land Use and Planning			
Impact LU-1: Implementation of the proposed NHB Project would not cause a significant environmental impact due to a conflict with land use plans, policies and regulations adopted for the purpose of avoiding or mitigating an environmental effect.	LTS	None required.	NA
Impact LU-2: Development under the proposed NHB would not conflict with local land use regulations such that a significant incompatibility with adjacent land uses is created.	LTS	None required.	NA
Impact C-LU-1: The proposed NHB Project, in combination with past, present, and reasonably foreseeable future projects, would not result in a conflict with land use plans, policies, and regulations adopted for the purpose of avoiding or mitigating an environmental effect or a conflict with local land use regulations such that a significant incompatibility with adjacent land uses is created.	LTS	None required.	NA

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TABLE 8.2-2 (CONTINUED)
SUMMARY OF NHB PROJECT IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.10 Noise and Vibration			
Impact NOI-1: Construction activities under the NHB Project would generate a substantial temporary increase in ambient noise levels in the vicinity of the Project site in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	S	**Mitigation Measure NOI-1a: Construction Noise Control Measures** UCSF contractors shall employ site-specific noise attenuation measures during construction of the Project to reduce the generation of construction noise. These measures shall be included in a Noise Control Plan that shall be submitted for review and approval by UCSF to ensure that construction noise is consistent with the standards set forth in the City's Noise Ordinance. Measures specified in the Noise Control Plan and implemented during project construction shall include, at a minimum, the following noise control strategies: • Equipment and trucks used for construction shall use 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). • Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for construction shall be 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; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves shall be used where feasible; this could achieve a reduction of 5 dBA. Quieter procedures, such as the use of drills rather than impact tools, shall be used where feasible. • Stationary noise sources shall be located as far from adjacent receptors as possible, and they shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or include other measures. • Shield staging areas where adjacent sensitive receptors have direct line-of-sight and are within 200 feet of loading and delivery activities. Shielding may consist of plywood fencing with no gaps or acoustical paneling erected in K-rails. **Mitigation Measure NOI-1b: Construction Hours** Construction hours shall be restricted to the hours listed in the table below. However, in rare circumstances, work may need to occur outside of these work hour limits. For example, there may be times when heavy machinery must be delivered outside the extended hours (during times of low traffic); or concrete pours must occur outside the extended hours. In such cases, UCSF Community and Government Relations will receive advance notice from the project manager, at least one week in advance as feasible, and will engage the community to identify measures to minimize potential impacts. These measures may include, but not be limited to, restricting work to smaller time windows, condensing the overall duration of nighttime work to the degree feasible, and erecting temporary barriers to shield the short-term nighttime activity.	SU

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TABLE 8.2-2 (CONTINUED)
SUMMARY OF NHB PROJECT IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.10 Noise and Vibration (cont.)			
Impact NOI-1 (cont.)		(see construction hours table below)	

Construction Hours

	"Not Noisy" Work[1]		Noisy Work	
	Regular hours	Extended hours[2]	Regular hours	Extended hours[1]
Monday - Friday	7:00 AM to 5:00 PM	5:00 PM to 8:00 PM	8:00 AM to 5:00 PM	
Saturday		8:00 AM to 5:00 PM		9:00 AM to 4:00 PM
Sunday		8:00 AM to 5:00 PM		

NOTES:

1 "Not Noisy" work = 80 decibels or less at 100 feet; "Noisy" work = more than 80 decibels at 100 feet.

2 Extended hours to be considered by UCSF Community and Government Relations with advance notice from the project manager.

Mitigation Measure NOI-1c: Construction Noise Complaints

UCSF shall establish a formal set of procedures for responding to and tracking complaints received pertaining to construction noise and shall implement the procedures during construction. Procedures shall be established prior to commencement of construction. At a minimum, the procedures shall include:

- Designation of an on-site construction complaint and enforcement manager for the project;
- A large on-site sign near the public right-of-way containing permitted construction days/hours, complaint procedures, and phone numbers for the project complaint manager;
- Protocols for receiving, responding to, and tracking received complaints; and
- Maintenance of a complaint log that records received complaints and how complaints were addressed.

Mitigation Measure NOI-1d: Pile-Installation Noise-Reducing Techniques

Noise-reducing pile-installation techniques shall be employed during project construction. These techniques shall include:

- Installing cast-in-place concrete piles. Noise from auger drilling is 17 dBA less than an impact pile driver.

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Table 8.2-2 (continued)
Summary of NHB Project Impacts and Mitigation Measures

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.10 Noise and Vibration (cont.)			
Impact NOI-1 (cont.)		• Vibrating piles into place where feasible. • Implement “quiet” pile-installation technology (such as pre-drilling of piles). Implement Mitigation Measure TRANS-5: Construction Coordination and Monitoring Measures.	
Impact NOI-2: Implementation of the NHB Project would not generate a substantial permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	LTS	None required.	NA
Impact NOI-3: Construction activities for the NHB Project and related improvements could result in generation of excessive groundborne vibration or groundborne noise levels.	S	**Mitigation Measure NOI-3: Assessment and Relocation/Retrofitting of Vibration-Sensitive Equipment** UCSF shall evaluate the presence of vibration-sensitive equipment within 150 feet of construction and demolition areas. Any sensitive equipment shall be evaluated for the existing extent of vibration isolation and relocated, or vibration isolation shall be further embellished, as warranted. Based on available guidance (FTA, 2018), a performance standard of 65 VdB shall be implemented in lieu of any other available equipment-specific criterion.	LTS
Impact NOI-4: Operation of the NHB Project would not exceed an LRDP EIR operational standard of significance by contributing to an increase in average daily noise levels (L_{dn}) of 3 dB(A) or more at property lines, where ambient noise levels already exceed local noise levels set forth in local general plans or ordinances for such areas based on their use.	LTS	None required.	NA
Impact C-NOI-1: Implementation of the NHB Project, combined with other concurrent construction projects in the project area, would not generate a substantial temporary increase in ambient noise levels from construction activity in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	S	Implement Mitigation Measures NOI-1a, NOI-1b, and TRANS-5	LTS

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TABLE 8.2-2 (CONTINUED)
SUMMARY OF NHB PROJECT IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.10 Noise and Vibration (cont.)			
Impact C-NOI-2: Implementation of the NHB Project, combined with cumulative development in the project area, would not generate substantial permanent increases in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	LTS	None required.	NA
Impact C-NOI-3: Implementation of the NHB Project, combined with cumulative construction in the project area, would result in generation of excessive groundborne vibration or groundborne noise levels.	S	Implement Mitigation Measure NOI-3.	LTS
Impact C-NOI-4: Implementation of the NHB Project, combined with cumulative development in the project area, would not exceed an LRDP EIR operational standard of significance by contributing to an increase in average daily noise levels (L_{dn}) of 3 dB(A) or more at property lines, if ambient noise levels in areas adjacent to proposed development already exceed local noise levels set forth in local general plans or ordinances for such areas based on their use.	LTS	None required.	NA
EIR Section 4.11 Transportation			
Impact TRANS-1: Implementation of the NHB Project would not conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.	LTS	None required.	NA
Impact TRANS-2: Implementation of the NHB Project would not conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).	LTS	None required.	NA
Impact TRANS-3: Implementation of the NHB Project would not substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	LTS	None required.	NA

S = Significant Impact
SU = Significant and Unavoidable with Mitigation
LTS = Less than Significant impact
NA = Not applicable

TABLE 8.2-2 (CONTINUED)
SUMMARY OF NHB PROJECT IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.11 Transportation (cont.)			
Impact TRANS-4: Implementation of the NHB Project would not result in inadequate emergency access.	LTS	None required.	NA
Impact TRANS-5: Construction of the NHB Project could temporarily impact travel conditions along sidewalks and roadways serving the campus site.	S	**Mitigation Measure TRANS-5: Construction Coordination and Monitoring Measures** In order to reduce potential conflicts between construction activities and pedestrians, bikes, buses, and autos during construction activities at the NHB Project site, UCSF shall require construction contractor(s) to coordinate with the relevant City of Oakland agencies to prepare Construction Transportation Management Plan to address the following during the major phases of project construction (e.g., demolition, construction of new building, or renovation of existing buildings): • Construction Traffic Control Plan to identify construction truck routes, coordinate feasible measures to reduce traffic congestion, reduce potential traffic, bicycle, and transit disruption and pedestrian circulation effects, potential detours for motor vehicles, bicycles, and pedestrians if necessary, and location of off-site construction staging areas for materials and equipment if necessary. • Construction Worker Parking and Travel Management Plan to minimize parking demand and motor vehicle trips generated by construction workers and ensure that construction workers do not use the on-street parking in the nearby residential neighborhood. If parking demand for construction workers cannot be accommodated on-site, the Plan shall identify off-site parking facilities and if necessary, provide a shuttle service between the parking facility and the construction site. • Notification procedures for nearby residences and businesses and public safety personnel regarding construction activities, peak construction vehicle activities (e.g., concrete pours, excavation), and travel lane closures, via a newsletter, website, and/or regular construction update meetings with neighbors. • Coordination with the City of Oakland Department of Transportation to ensure that the final design and construction of the NHB Project and the City's MLK Jr. Way Complete Streets Paving Project, which are expected to overlap, do not conflict with each other, and minimize the potential combined effects of the two construction projects on circulation for various travel modes. • If necessary, make repair to damages to the public right-of way, including streets and sidewalks, caused by project construction within one week of the occurrence of the damage (or excessive wear), unless further damage/excessive wear may continue; in such case, repair shall occur prior to the completion of construction.	LTS

S = Significant Impact
SU = Significant and Unavoidable with Mitigation
LTS = Less than Significant impact
NA = Not applicable

Table 8.2-2 (continued)
Summary of NHB Project Impacts and Mitigation Measures

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.11 Transportation (cont.)			
Impact C-TRANS-1: Implementation of the NHB Project, in combination with past, present, and reasonably foreseeable future projects, would not result in a cumulatively considerable contribution to significant transportation impacts.	LTS	None required.	NA
EIR Section 4.12 Utilities and Service Systems			
Impact UTIL-1: Implementation of the proposed NHB Project would require or result in the construction of new or expanded water, wastewater treatment or storm water drainage, electric power, or telecommunications facilities, the construction or relocation of which would not cause significant environmental effects.	LTS	None required.	NA
Impact UTIL-2: Sufficient water supply would be available from the EBMUD to serve the NHB Project and reasonably foreseeable future development under normal, dry and multi-dry years. EBMUD would address the anticipated shortfalls through rationing and conservation programs and/or develop new or expanded water supply facilities to address shortfalls during multiple dry years.	LTS	None required.	NA
Impact UTIL-3: The wastewater treatment provider would have adequate wastewater treatment capacity to serve the NHB Project.	LTS	None required.	NA
Impact UTIL-4: The NHB Project would not generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.	LTS	None required.	NA
Impact UTIL-5: The NHB Project would comply with applicable management and reduction statutes and regulations related to solid waste.	LTS	None required.	NA

S = Significant Impact
SU = Significant and Unavoidable with Mitigation
LTS = Less than Significant impact
NA = Not applicable

TABLE 8.2-2 (CONTINUED)
SUMMARY OF NHB PROJECT IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.12 Utilities and Service Systems			
Impact C-UTIL-1: The proposed NHB Project, in combination with past, present, and reasonably foreseeable future projects in the vicinity of the UCSF BCH Oakland campus site, would not result in significant cumulative impacts related to utilities and service systems.	LTS	None required.	NA

S = Significant Impact
SU = Significant and Unavoidable with Mitigation
LTS = Less than Significant impact
NA = Not applicable

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8.3 NHB Project Refinements

8.3.1 Introduction

Since publication of the Draft EIR on January 16, 2024, UCSF BCH Oakland has refined certain aspects of the proposed Project, as part of the ongoing planning, development, design, and cost alignment process. This includes the development of a smaller, shorter and redesigned new hospital building; a reshaped, slightly taller parking garage; a change from a site support building to a slightly smaller site support structure; and a proposed new surface utility yard. In addition, information is now available on UCSF's proposed potential installation and use of a temporary helistop on a former parking lot owned by the Peralta Community College District while NHB Project construction, including the construction of a new helistop at the UCSF BCH Oakland campus site is occurring.

This chapter presents a description of these refinements, and an environmental analysis that demonstrates that the revised NHB Project would not result in any new or substantially more severe significant environmental impacts than previously disclosed in the Draft EIR, nor would the revised NHB Project require modifications to previously proposed mitigation measures or new mitigation measures. These changes would also not require consideration of new alternatives.

8.3.2 Summary of Refinements to the Proposed NHB Project

The proposed NHB Project refinements are summarized in **Table 8.3-1**, below. **Figure 8.3-1** presents the site plan showing the revised NHB Project with these refinements. Please see Section 8.6, *Revisions to the Draft EIR,* for additional graphics, including a conceptual massing diagram and elevation drawings of the new hospital building under the revised NHB Project.

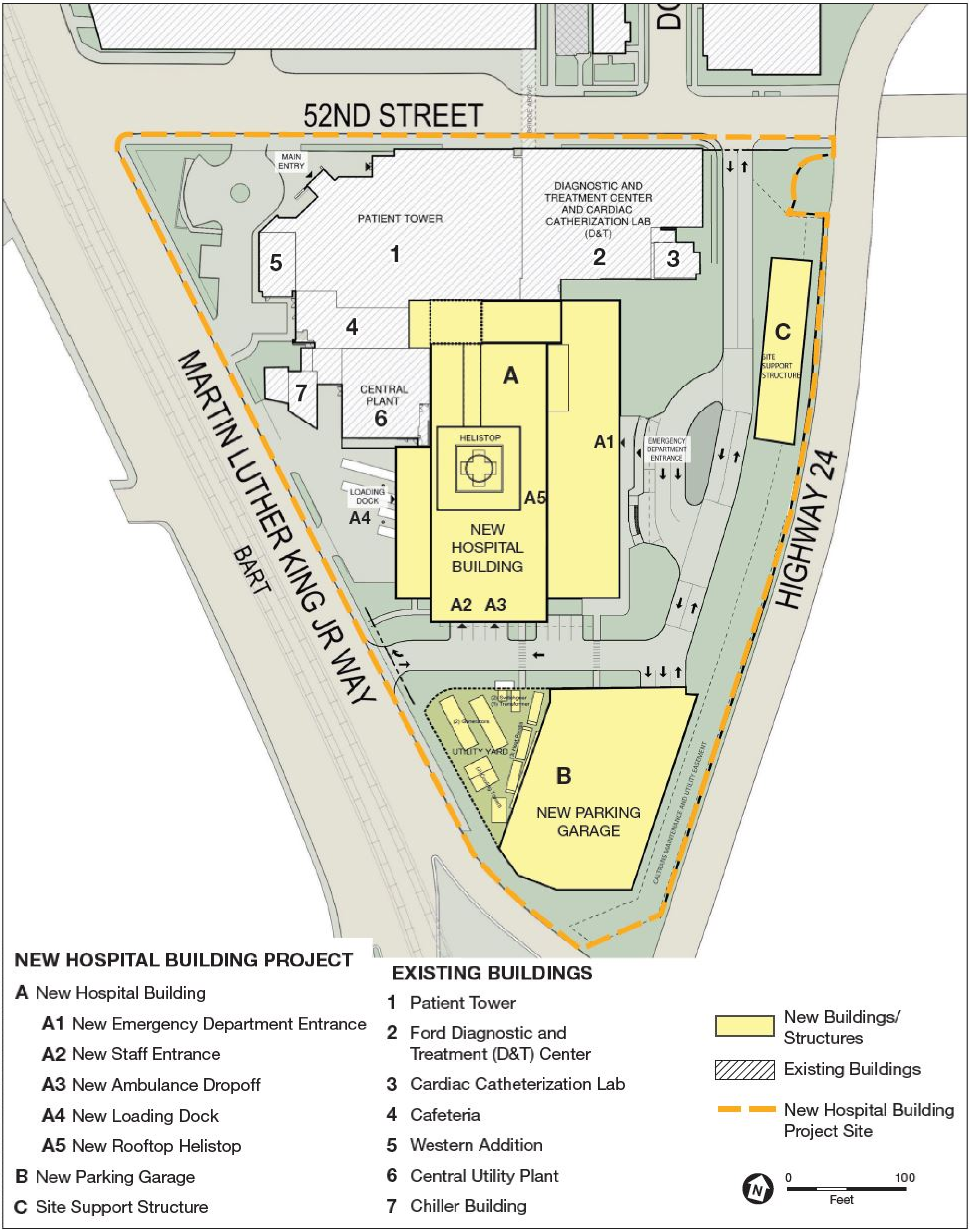
Under the revised NHB Project, the existing buildings on the Project site that were proposed to remain under the NHB Project would remain in place and would not change [i.e., Patient Tower, Ford Diagnostic and Treatment Center (D&T) Center, Cardiac Catheterization Lab, Cafeteria, Western Addition, Central Utility Plant and Chiller Building]. Furthermore, the buildings that were proposed to be demolished under the NHB Project [i.e., Hospital Loading Dock, B/C Wing, A/B Wing, Bruce Lyon Memorial Research Laboratory and Addition, four trailers (Nos. 14, 15, 16 and 17), and helistop structure] or relocated (MRI trailer)] would also be demolished under the revised NHB Project.[1,2] The amount of building renovation in the existing buildings would decrease from 30,000 gsf as originally proposed to 12,000 gsf under the revised NHB Project, a net decrease of 18,000 gsf.

1 Refer to Figure 3-5 in the Draft EIR for location of existing buildings to be demolished on the Project site.

2 In addition, as addressed in the Draft EIR, existing temporary trailers No. 18 (Education/HIS), and No. 19 (Offices) would be demolished (refer to Figure 3-5 in the Draft EIR).

TABLE 8.3-1
SUMMARY COMPARISON OF THE REVISED NHB PROJECT TO NHB PROJECT ADDRESSED IN THE DRAFT EIR

Characteristic	NHB Project Addressed in Draft EIR	Revised NHB Project
New Hospital Building (w/ Helistop)		
Size (gross square feet [gsf])	332,523 gsf	282,000 gsf
Stories	8 stories above grade 1 full basement level	7 stories above grade 1 full basement level
Height (feet above ground level [agl])	116 feet agl to building rooftop 136 feet agl to helistop deck	101 feet agl to building rooftop 121 feet agl to helistop deck
Licensed Bed Program at UCSF BCH Oakland Campus site at NHB Project Buildout		
New Hospital Building	128	104
Patient Tower and D&T Building	82	106
Total Number of Licensed Beds	210	210
Projected Population at UCSF BCH Oakland Campus Site		
Projected Population	4,513	4,513
Site Support Structure		
Size (gsf)	6,100 gsf building	5,000 gsf structure
Parking Garage		
Size (gross square feet)	96,912 gsf	103,180 gsf
Stories	4 levels	5 levels
Height (feet above ground level)	32 feet agl to 4th level deck	45 feet agl to 5th level deck
Parking Spaces	270 spaces	270 spaces
Renovation of Existing Building Space		
Size (gross square feet)	30,000 gsf	12,000 gsf
Ground-Level Utility Yard		
Ground-Level Utility Yard	—	An approximately 9,000-square-foot utility yard would be established in the area west of the new parking garage. The yard would provide space for the installation of up to 3 generators (originally proposed on the east side of the Project site), 3 heat pumps and cooling towers (originally proposed on the new hospital building rooftop), and switchgear and transformer (originally proposed within the parking garage).
Project Variant (Helistop on Parking Garage)		
Garage Height (feet above ground level)	32 feet agl to 4th level deck 42 feet agl to helistop deck	45 feet agl to 5th level deck 57 feet agl to helistop deck



2022/D202201057.00 - UCSF BCH Oakland/02 Graphics/Illustrator

SOURCE: SmithGroup, 2024; ESA, 2024

UCSF BCH Oakland NHB Project EIR

Figure 8.3-1
Revised New Hospital Building Project Site Plan

New Hospital Building Refinements

Revised Building Space and Dimensions

As shown in Figure 8.3-1, the revised new hospital building would be at the same location within the Project site as previously proposed, south of, and adjacent to, the existing Patient Tower and D&T Building. Further, the footprint of the hospital building would remain unchanged from before, and as before, the new hospital building, the renovated Patient Tower, and the D&T Building would effectively function as one hospital.

As shown in Table 8.3-1, with the Project refinements, the proposed new hospital building would be approximately 282,000 gross square feet in size, a reduction of about 50,523 gsf from the 332,523 gsf new hospital building addressed in the Draft EIR. The revised new hospital building would be 7 stories above grade plus full basement, a reduction in one story from the 8-story above grade plus full basement hospital building addressed in the Draft EIR. As refined, the height of the new hospital building above ground level to the building roof would be approximately 101 feet above ground level (agl), 15 feet lower than that previously proposed under the Project.

For informational purposes, renderings of the revised new hospital building are presented in **Figure 8.3-2** through **Figure 8.3-6.**

Revised Building Design

There would be no changes to Levels 1 through 3 of the hospital building from the previous design. The proposed design changes involve a reshaping of the patient tower on Levels 4 through 7 from an L-shaped building to a Bar-shaped building. This building redesign is intended to achieve a more efficient floor plan and building exterior in the new hospital building. With this Project refinement, the proposed patient rooms would set back further away from both the SR 24 freeway and BART tracks. Elevated building outdoor open space would be maintained, although under the redesign, some outdoor space previously proposed for Level 4 would be relocated to Level 5.

Please see Section 8.6, *Revisions to the Draft EIR,* for additional graphics, including elevation drawings depicting the west, north, east and south elevations, respectively of the new hospital building under the revised NHB Project.

Rooftop Helistop

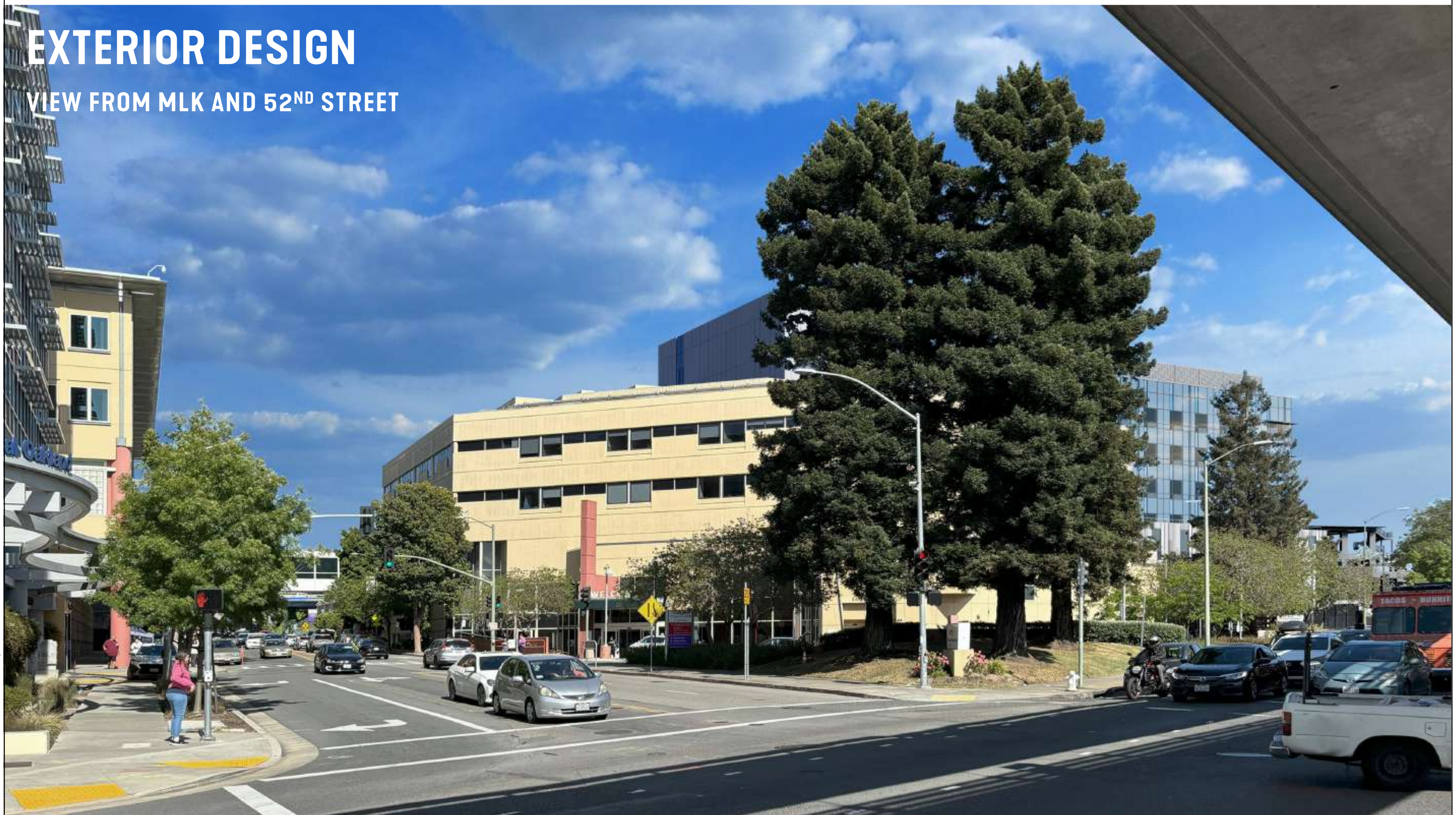
Similar to the previously proposed new hospital building, the revised new hospital building would include a helistop structure atop the building roof in approximately the same geographic location as was previously proposed. The helistop deck would be located at 121 feet agl, which is 15 feet lower than that previously proposed under the Project. As under the original design, under the revised NHB Project, a trauma elevator on the building roof serving the helistop deck would provide for the transport of patients from the helistop to hospital floors. Similar to the original design, all supporting systems required for safe operation of the helistop, including lighting, fuel oil separation, and fire suppression would be provided under the revised NHB Project.

SOURCE: SmithGroup, 2024

UCSF BCH Oakland NHB Project EIR

Figure 8.3-2
Rendering of Revised New Hospital Building

ESA



2022/D202201057.00 - UCSF BCH Oakland/02 Graphics/Illustrator

SOURCE: SmithGroup, 2024

UCSF BCH Oakland NHB Project EIR

Figure 8.3-3
Rendering of Revised New Hospital Building

ESA

2022/D202201057.00 - UCSF BCH Oakland/02 Graphics/Illustrator

SOURCE: SmithGroup, 2024

UCSF BCH Oakland NHB Project EIR

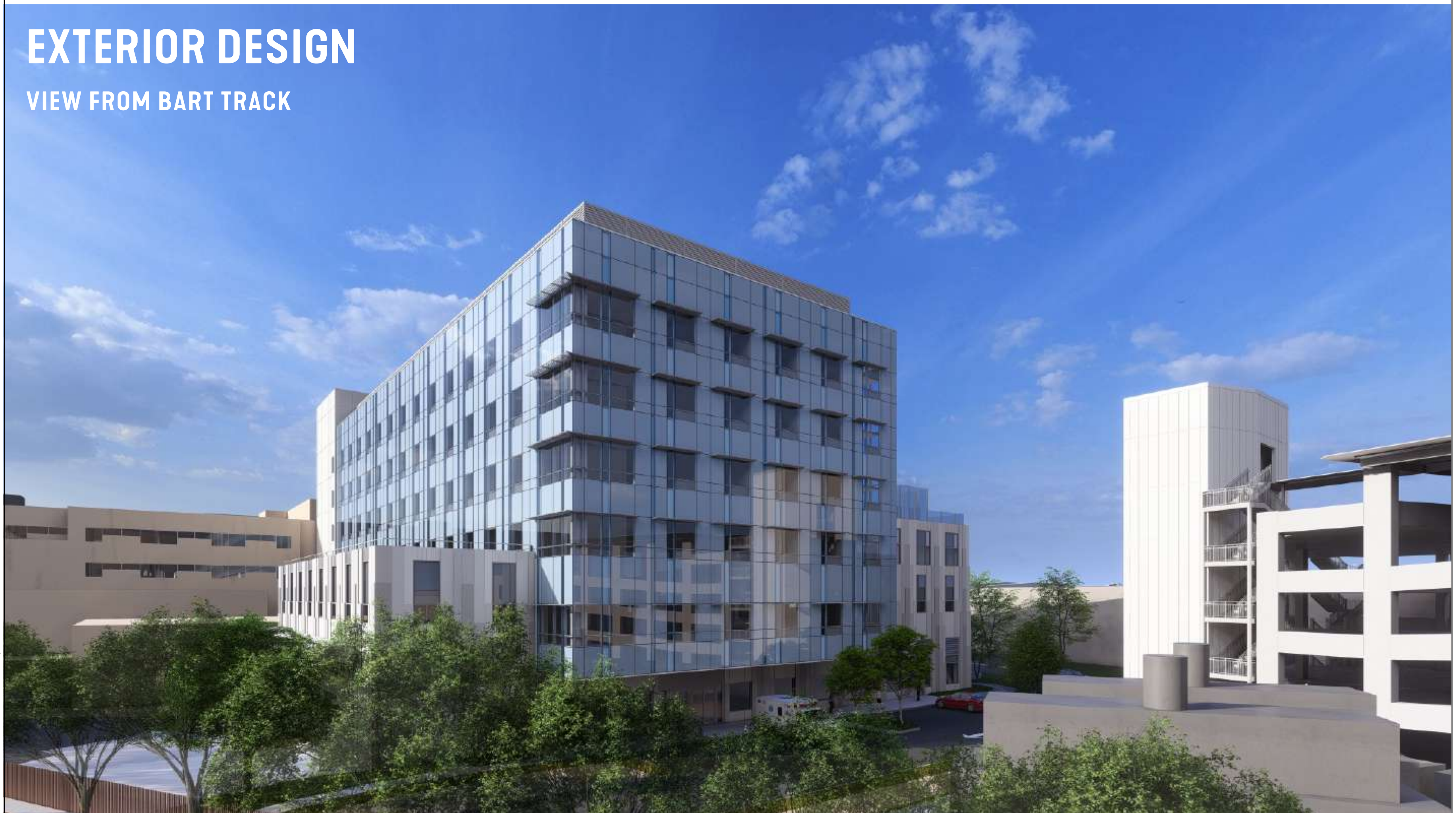
Figure 8.3-4
Rendering of Revised New Hospital Building

ESA

SOURCE: SmithGroup, 2024

Figure 8.3-5
Rendering of Revised New Hospital Building

ESA



SOURCE: SmithGroup, 2024

UCSF BCH Oakland NHB Project EIR

Figure 8.3-6
Rendering of Revised New Hospital Building

Patient Beds

As reported in the Draft EIR Chapter 3, *Project Description*, there are currently 177 licensed inpatient beds in the Patient Tower and D&T Building. Under the revised NHB Project, the refined new hospital building would contain 104 licensed inpatient beds (24 fewer licensed beds than the number proposed under the original new hospital building design), and 106 licensed inpatient beds in the Patient Tower and D&T Building would be maintained (24 more licensed beds than the number proposed under the original design). When combined, the revised NHB Project would provide a total of 210 licensed beds at the UCSF BCH Oakland campus site, which is the same number of beds under the previously analyzed NHB Project addressed in the Draft EIR. As with the previously proposed hospital building design, compared to existing conditions, there would be a net increase of 33 licensed beds at the campus site under the revised NHB Project.

Parking Garage Refinements

As shown on the proposed site plan in Figure 8.3-1, with the Project refinements, the proposed parking garage has been redesigned from an originally proposed roughly triangular shape to a trapezoidal shape. The revised garage would be located within the eastern portion of the footprint of the previously proposed parking garage. In terms of size of the garage structure, the revised parking garage would be slightly larger (increased from 96,912 gsf under the previously proposed Project to 103,180 gsf under the revised NHB Project).

The revised parking garage would be slightly taller with the addition of a proposed half-parking level [i.e., increasing the parking garage from 4 levels (32 feet agl) under the previous design to 5 levels (45 feet agl) with the Project refinements]. As under the previously proposed parking garage, the revised parking garage would provide up to 270 vehicle parking spaces. In addition, all vehicular ingress/egress for the revised parking garage would continue to occur near the northeast corner of the garage, as with the previously proposed garage.

Site Support Structure

A proposed Site Support Structure consisting of a trailer(s) would be sited at the same location as the previously analyzed Site Support Building, and would be slightly reduced in size (from a 6,100 gsf building proposed as part of the previously proposed NHB Project to a 5,000 gsf structure proposed under the revised NHB Project). The functions and uses in the Site Support Structure would remain unchanged.

Proposed Utility Yard

As shown on the proposed site plan in Figure 8.3-1, a paved surface level utility yard would be developed at the south end of the Project site, between Martin Luther King (MLK) Jr. Way and the proposed parking garage. The utility yard would be accessed from the north via the Project site internal roadway.

The utility yard would contain up to three emergency generators (previously proposed to be located on the east side of Project site), three heat pumps and cooling towers (previously proposed on the new hospital building rooftop), and switchgear and transformer (previously proposed within the parking garage). As under the previously proposed NHB Project, each of these equipment pieces would be contained within enclosures that would provide weather protection and noise reduction features. An 8-foot-high fence is proposed around the perimeter of the utility yard to provide visual screening. The proposed fence would be constructed of a metal frame with polycarbonate sheets/slats.

Project Variant Refinements

As with the previously proposed NHB Project, a Project variant is still under consideration in which the proposed helistop structure would be constructed on top of the new parking garage instead of the new hospital building. **Figure 8.3-7** presents a site plan showing the revised Project variant. Please see Section 8.6, *Revisions to the Draft EIR,* for additional graphics, including a conceptual massing diagram and elevation drawings of the refined new hospital building and parking garage under the revised Project variant.

As with the previously proposed Project variant, the ground level site plan of the Project variant, including building footprints, vehicular and pedestrian access and circulation, would be identical to that of the revised NHB Project. The new hospital building under the revised Project variant would be 7 stories high and would not include a helistop structure.

Under the Project variant, the helistop would be located on the west side of the parking structure roof, in approximately the same geographic location on the Project site as was previously proposed. The rooftop helistop deck under this variant would measure approximately 12 feet above the roof of the parking structure (i.e., approximately 57 feet agl). A trauma elevator above the 5th level of the parking structure serving the helistop deck would provide for the transport of patients from the helistop to ground level.

Site Pedestrian and Vehicle Circulation

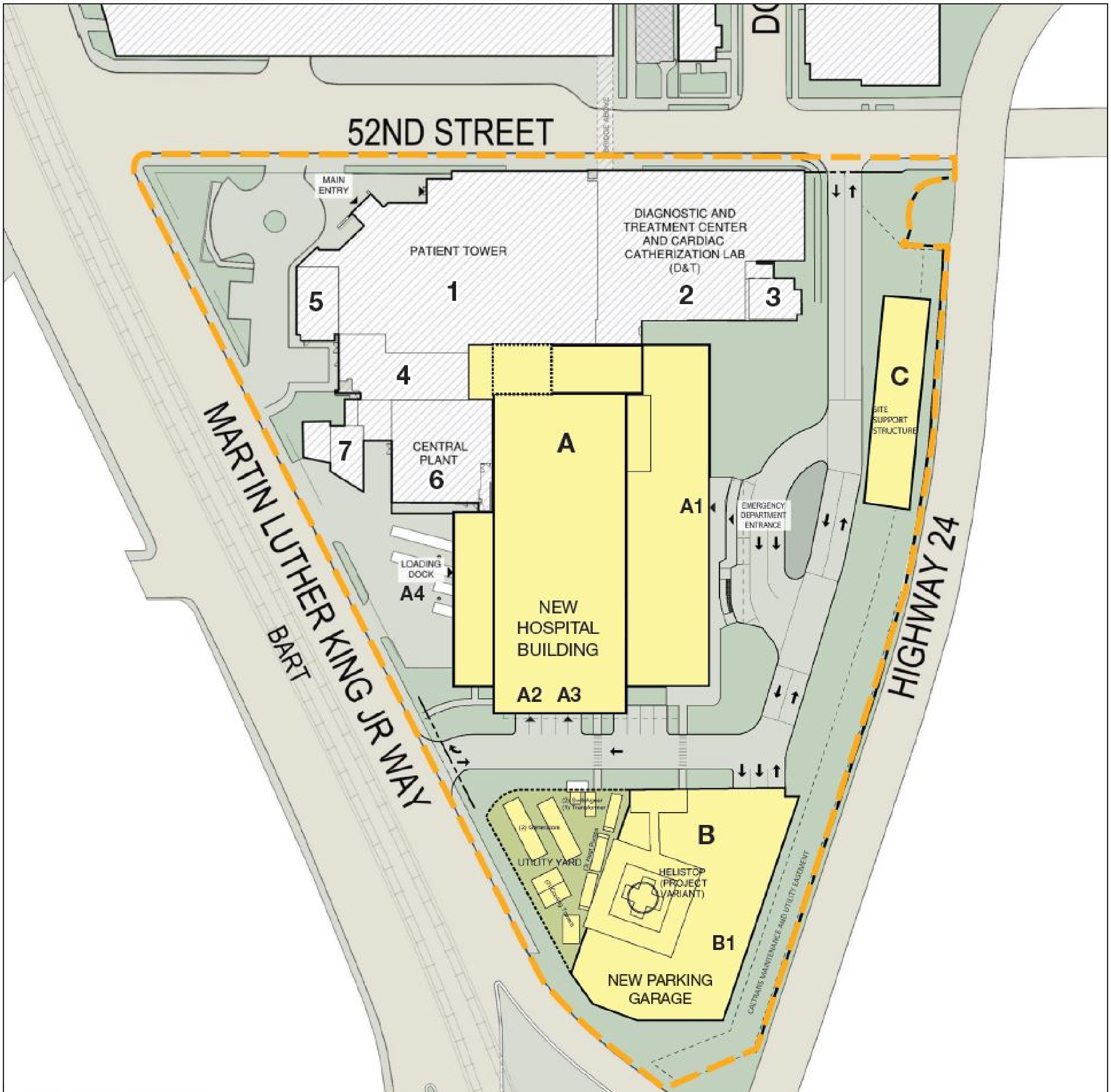
Figure 8.3-1 illustrates the internal circulation improvements proposed at the Project site under the revised NHB Project. The proposed internal circulation improvements under the revised NHB Project would be similar to those included in the previously proposed site plan described in Chapter 3, *Project Description*, of the Draft EIR.

Utility Improvements

The proposed utility improvements with the revised NHB Project, including for potable and fire water distribution, sanitary sewer collection, electrical distribution, stormwater collection and treatment, NPC-5 emergency potable water and wastewater storage tanks, fire water storage, medical gas storage, and emergency generators (with the exception of the location of the generators as described under *Proposed Utility Yard*, above) would be the same as those described in Chapter 3, *Project Description*, of the Draft EIR.

Lighting and Bird-Safe Design

The proposed lighting improvements and bird-safe measures and features included in the revised NHB Project would be the same as those proposed under the previously proposed Project described in Chapter 3, *Project Description*, of the Draft EIR.



PROJECT VARIANT

- **A** New Hospital Building
  - **A1** New Emergency Department Entrance
  - **A2** New Staff Entrance
  - **A3** New Ambulance Dropoff
  - **A4** New Loading Dock
- **B** New Parking Garage
  - **B1** New Rooftop Helistop
- **C** Site Support Structure

EXISTING BUILDINGS

1. Patient Tower
2. Ford Diagnostic and Treatment (D&T) Center
3. Cardiac Catheterization Lab
4. Cafeteria
5. Western Addition
6. Central Utility Plant
7. Chiller Building

New Buildings/ Structures

Existing Buildings

New Hospital Building Project Site

0 100
Feet

SOURCE: SmithGroup, 2024; ESA, 2024

Figure 8.3-7
Revised New Hospital Building Project Variant Site Plan

ESA

Sustainability

The proposed sustainability improvements under the revised NHB Project would be the same as those included in the previously proposed NHB Project described in Chapter 3, *Project Description* of the Draft EIR, including those required for compliance with applicable *UC Policy on Sustainable Practices*, and achieving LEED Gold Certification, as well as meeting CALGreen requirements.

NHB Project Construction

Based on the description above, there would be incrementally less overall new building construction (-44,355 gsf), and less renovation of existing buildings (-18,000 gsf) under the revised NHB Project as compared to the previously proposed NHB Project analyzed in the Draft EIR. The amount of demolition under the revised NHB Project would be the same as under the previously proposed NHB Project. The duration of construction, construction activities and equipment, and construction employment would be expected to be similar, or incrementally less, for the revised NHB Project compared to that reported for the previously proposed NHB Project in the Draft EIR.

Revisions to UCSF 2014 LRDP

As a result of the project refinements, minor revisions have been made to the existing and projected space program estimates for the UCSF BCH Oakland campus; and a minor adjustment was made to the UCSF proposed functional zone map for the UCSF BCH Oakland campus site to reflect the revised parking garage footprint. These revisions are reflected in Table 3-7 and Figure 3-7 in Section 8.6, *Revisions to the Draft EIR.*

Temporary Off-Site Helistop During NHB Project Construction

As reported in the Draft EIR Chapter 3, *Project Description*, after the existing helistop is demolished, helistop operations at the campus site would be temporarily suspended until the new helistop structure is completed. UCSF envisioned use of a temporary off-site helistop location for this interim period, to maintain air ambulance service while construction occurs at the NHB Project site, with patient transport from the temporary helistop location to UCSF BCH Oakland via ground ambulance. At the time of Draft EIR preparation, one of the potential temporary helistop locations under consideration was a vacant surface parking lot site at the terminus of 4th Street in Oakland, adjacent to the I-880 freeway. This Final EIR assesses potential environmental impacts associated with the construction and operation of this temporary helistop during NHB Project construction.

The 1.51-acre triangular-shaped site is located at 11 4th Street, on land owned by Peralta Community College District (herein referred to as the Peralta site). The site consists primarily of a former surface parking lot. A paved bike/walking path follows along the west and south edges of the parking lot, and is separated from the parking lot by a chain link fence. The site is surrounded on the north by I-880, on the south by the Oakland Fire Department Training Center, and on the west by an industrial building. Lake Meritt Channel, which connects Lake Merritt with the Oakland Estuary, is located to the east of the site. Chain link fencing surrounds the perimeter of the site.

8.3.3 Environmental Analysis of the Revised NHB Project

As described above, the revised new hospital building, site support structure, and parking garage would be located on the same sites within the larger Project site as previously analyzed, and while the utility yard was previously not analyzed, it would be located in an area that was previously within the development footprint of the previously proposed parking garage. Further, while the revised NHB Project would result in the same number of inpatient hospital beds on the campus site, the total amount of building space that would be constructed under the revised NHB Project would be less than previously analyzed. Consequently, the environmental impacts of the revised NHB Project in most environmental topic areas, including impacts on biological resources, cultural resources, hazards and hazardous materials, energy, hydrology and water quality, geology and soils, greenhouse gas emissions, public services, and utilities and service systems, would remain unchanged or would be less than those analyzed and disclosed in the Draft EIR, and the same mitigation measures would still apply to the revised NHB Project.

However, there would be a reduction in the height of the new hospital building (a reduction of one story) and there would be an increase in the height of the parking garage (an increase of one level). Further, due to the change in the shape of the parking garage, there would be a slight easterly shift in the concentration of construction activities. Lastly, the proposed emergency generators would be installed in the proposed utility yard in the southwestern portion of the Project site, as opposed to the previously proposed east side of the Project site. These changes would have the potential to alter the previously analyzed construction-phase human health risk effects, operational human health risk effects, construction noise impacts, and helicopter noise impacts of the proposed Project. The sections below present an analysis of human health risk and noise impacts associated with the revised NHB Project and demonstrate that the revised Project would not result in new or more severe air quality and noise impacts than previously disclosed and no new mitigation measures would be required.

Air Quality

Construction Health Risk Impact Associated with Changes to Parking Garage Footprint under Revised Project

As described above, under the revised NHB Project, the proposed parking garage would be redesigned from an originally proposed roughly triangular shape to a trapezoidal shape, and would be located within the eastern portion of the footprint of the previously proposed parking garage. The proposed reconfiguration of the parking garage footprint would result in a small net shift in the concentration of Project construction activities to the east, and as a result, closer to the nearest study resident and daycare maximally exposed individual receptors (MEIRs) located to the east of the Project site. Accordingly, the health risk assessment (HRA) was updated for the revised NHB Project to account for this shift.[3]

The revised footprint of the parking structure was incorporated into the American Meteorological Society/Environmental Protection Agency Regulatory Model Improvement Committee regulatory air dispersion model (AERMOD) for the assessment of health risk impacts from construction activities. The updated total construction health risks associated with the revised NHB Project are presented in **Table 8.3-2**. The change to the parking structure footprint under the revised Project would result in incrementally higher construction-related cancer risk at the study resident MEIR (increasing from 6.1 to 6.5 in one million cancer risk) and daycare MEIR (increasing from 8.2 to 8.6 in one million), compared to the previously proposed NHB Project. However, the cancer risk at both these MEIRs would continue to be below the BAAQMD's project level cancer risk threshold of 10 in one million and the impact would remain less than significant. There would be no changes to any of the assessed health risks to the study worker MEIR, compared to the risks which were disclosed for the previously proposed NHB Project. There would also be no change in the total construction-related chronic hazard index and annual average $PM_{2.5}$ concentrations at the MEIRs, compared to the previously proposed NHB Project.

TABLE 8.3-2
UNMITIGATED HEALTH RISKS FROM REVISED NHB PROJECT CONSTRUCTION

Receptor Type/Emissions Source	Cancer Risk (# in 1 million)	Chronic HI (unitless)	Annual Average $PM_{2.5}$ Concentration ($\mu g/m^3$)
Resident Infant MEIR[a]			
Revised Project Construction	6.5	0.004	0.04
Significance Threshold	10	1.0	0.3
Daycare Infant MEIR[b]			
Revised Project Construction	8.6	0.001	0.01
Significance Threshold	10	1.0	0.1
Worker MEIR[c]			
Revised Project Construction	0.6	0.003	0.03
Significance Threshold	10	1.0	0.3

NOTE(S): $\mu g/m^3$ = micrograms per cubic meter; HI = Hazard Index; MEI = Maximally Exposed Individual; $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter

a. The resident infant MEIR for cancer risk, chronic HI and annual average $PM_{2.5}$ concentration is located in the residential neighborhood between SR 24 and Shattuck Avenue to the east of the Project site. Exposure is assumed to begin at the start of the third trimester of an unborn child.
b. The daycare MEIR for cancer risk, chronic HI and annual average $PM_{2.5}$ concentration is located at the Mechita Daycare along Shattuck Avenue approximately 750 feet east of the Project site. Daycare exposure is conservatively assumed to begin at 6 weeks of age and end at 5 years of age when the children transition to school.
c. The worker MEIR for cancer risk, HI and annual average $PM_{2.5}$ concentration is located at the UCSF BCH Oakland Outpatient Center 2 (OPC 2), located north of the Project site across 52nd Street.

SOURCE(S): ESA, 2024.

[3] As described above, there would be incrementally less overall building construction square footage under the revised NHB Project as compared to the previously proposed Project. While there would therefore also be incrementally less correlating overall construction activities associated with the revised NHB Project, the revised health risk analysis conservatively makes no adjustment for that circumstance.

Thus, construction activities associated with the revised NHB Project would not result in any new or substantially more severe significant human health risk impacts than previously disclosed in the Draft EIR, and no new mitigation would be required.

Operational Health Risk Impact Associated with Relocation of Emergency Generators under Revised Project

As described above, under the revised NHB Project, a utility yard would be developed in the southern portion of the Project site (between MLK Jr. Way and the proposed parking garage) that would contain up to three emergency generators that were previously proposed to be located on the east side of Project site. As discussed in the Draft EIR, the operation of the emergency generators for maintenance and testing purposes would generate diesel particulate matter (DPM) emissions that would contribute to the operational health risks associated with the Project. Accordingly, the shift in the location of the emergency generators was modeled as part of the updated HRA.

The updated total operational health risks associated with the revised NHB Project are presented in **Table 8.3-3**, below. The relocation of the emergency generators under the revised NHB Project would slightly decrease the operational-related cancer risk at the study resident MEIR (from 5.3 to 5.1 in one million), daycare MEIR (from 7.5 to 6.9 in one million), and worker MEIR (from 1.7 to 1.1 in one million) compared to the previously proposed NHB Project.[4]

As a result, the cancer risk at these MEIRs would continue to be below the BAAQMD's project-level cancer risk threshold of 10 in one million and the impact would remain less than significant. There would also be no change in the total operational-related chronic hazard index compared to that which would occur under the previously proposed Project. The annual average $PM_{2.5}$ concentration at the MEIR would either not change (for resident and daycare MEIRs) or would be slightly reduced (from 0.007 to 0.004 ug/m^3 for worker MEIR) under the revised NHB Project, compared to the previously proposed NHB Project. Consequently, operational health risks at all MEIRs would remain less than significant under the revised NHB Project.

Thus, the operation of the revised NHB Project would not result in any new or substantially more severe significant health risk impacts than previously disclosed in the Draft EIR, and no new mitigation would be required.

[4] The resident infant, daycare infant and worker MEIRs are located east of the Project site. Please note concentrations at receptors all around the Project site, including to the west, were modeled. However, due to the meteorology, the MEIR remains to the east of the Project site, even with the proposed relocation of the generators to the west under the revised NHB Project.

TABLE 8.3-3
UNMITIGATED HEALTH RISKS FROM REVISED NHB PROJECT OPERATION

Receptor Type/Emissions Source	Cancer Risk (# in 1 million)	Chronic HI (unitless)	Annual Average $PM_{2.5}$ Concentration ($\mu g/m^3$)
Resident Infant MEIR[a]			
Revised Project Operations	5.1	0.001	0.007
Significance Threshold	10	1.0	0.3
Daycare Infant MEIR[b]			
Revised Project Operations	6.9	0.001	0.004
Significance Threshold	10	1.0	0.3
Worker MEIR[c]			
Revised Project Operations	1.1	0.001	0.004
Significance Threshold	10	1.0	0.3

NOTE(S): $\mu g/m^3$ = micrograms per cubic meter; HI = Hazard Index; MEI = Maximally Exposed Individual; $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter

a. The resident infant MEIR for cancer risk, chronic HI and annual average $PM_{2.5}$ concentration is located in the residential neighborhood between SR 24 and Shattuck Avenue east of the Project site. Exposure is assumed to begin in the third trimester of an unborn child.
b. The daycare MEIR for cancer risk, chronic HI and annual average $PM_{2.5}$ concentration is located at the Mechita Daycare along Shattuck Avenue approximately 750 feet east of the Project site. Daycare exposure is conservatively assumed to begin at 6 weeks of age and end at 5 years of age when they transition to school.
c. The worker MEIR for cancer risk, HI and annual average $PM_{2.5}$ concentration is located at a business along Shattuck Avenue east of the Project site.

SOURCE(S): ESA, 2024.

Combined Health Risk Impact under Revised Project

The updated total combined (construction and operational) health risks associated with the revised NHB Project are presented in **Table 8.3-4**, below. These updated health risks account for the above-described construction changes (i.e., shift in parking garage construction) and operational changes (i.e., relocation of emergency generators) under the revised NHB Project. There would be an incrementally higher cancer risk at the study resident MEIR (increasing from 7.5 to 8.1 in one million) and daycare MEIR (increasing from 8.2 to 8.6 in one million), compared to the previously proposed NHB Project. However, the cancer risk at both these MEIRs would continue to be below the BAAQMD's project-level cancer risk threshold and the impact would remain less than significant. There would be no changes in any of total health risks at the study worker MEIR, compared to that which would occur under the previously proposed NHB Project. There would also be no change in the total chronic hazard index and annual average $PM_{2.5}$ concentrations at the MEIRs, compared to the previously proposed NHB Project.

Thus, construction and operation of the revised NHB Project, when combined, would not result in any new or substantially more severe significant health risk impacts than previously disclosed in the Draft EIR, and no new mitigation would be required.

TABLE 8.3-4
UNMITIGATED COMBINED HEALTH RISKS FROM REVISED NHB PROJECT CONSTRUCTION AND OPERATION

Receptor Type/Emissions Source	Cancer Risk[a] (# in 1 million)	Chronic HI[b] (unitless)	Annual Average $PM_{2.5}$ Concentration[b] ($\mu g/m^3$)
Resident Infant MEIR[c]			
Revised Project Construction + Operations	8.1	0.004	0.04
Significance Threshold	10	1.0	0.3
Daycare Infant MEIR[d]			
Revised Project Construction + Operations	8.6	0.001	0.01
Significance Threshold	10	1.0	0.3
Worker MEIR[e]			
Revised Project Construction + Operations	0.6	0.004	0.03
Significance Threshold	10	1.0	0.3

NOTE(S): $\mu g/m^3$ = micrograms per cubic meter; HI = Hazard Index; MEI = Maximally Exposed Individual; $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter

a. The combined cancer risk shown is at the construction MEIR assuming that the receptor continues to be exposed to the Project's operational emissions once construction has ended. It is not the sum of the Project's maximum construction and maximum operational risks. The operational risk does not contribute to the combined risk at the daycare MEIR as the exposure duration for daycare receptors is between 6 weeks and 5 years of age, after which they transition to school and are no longer at the MEIR location. During this period, they are only exposed to 5 years of construction emissions. For residential and worker MEIR, the combined risk is the sum of construction risk and operational risk at that location (not the maximum operational risk) with age of operational exposure adjusted to start after construction ends.
b. The combined chronic HI and annual average $PM_{2.5}$ concentrations are annual numbers and not the sum of construction and operation as construction and operations will not take place simultaneously. It is determined using the higher value of construction and operations.
c. The resident infant MEIR for cancer risk, chronic HI and annual average $PM_{2.5}$ concentration is located in the residential neighborhood between SR 24 and Shattuck Avenue to the east of the Project site. Construction exposure is assumed to begin at the start of the third trimester of an unborn child and operational exposure to start at 8.5 years of age after end of construction.
d. The daycare MEIR for cancer risk, chronic HI and annual average $PM_{2.5}$ concentration is located at the Mechita Daycare along Shattuck Avenue approximately 750 feet east of the Project site. Daycare exposure is conservatively assumed to begin at 6 weeks of age and end at 5 years of age when they transition to school.
e. The worker MEIR for cancer risk, HI and annual average $PM_{2.5}$ concentration is located at the UCSF BCH Oakland OPC 2 building north of the Project site across 52nd Street.

SOURCE(S): ESA, 2024.

Cumulative Health Risk Impact under Revised Project

Table 8.3-5 tabulates the cumulative health risks from existing permitted stationary sources and mobile sources (highways, major streets and rail) within 1,000 feet of the study resident MEIR in combination with unmitigated health risks from construction and operation of the revised NHB Project. The combined health risks from construction and operation of the revised NHB Project would incrementally increase the total cumulative health risks compared to the cumulative results reported in the Draft EIR for the previously proposed Project (i.e., increase from 184.3 to 184.9 in one million), and as before, would exceed the BAAQMD's cumulative threshold of 100 in one million for excess lifetime cancer risk. The cumulative annual average $PM_{2.5}$ concentration (2.68 ug/m^3, which is same as under the previously proposed Project) would also exceed the BAAQMD's cumulative threshold for $PM_{2.5}$ concentration. As under the previously proposed Project, the cumulative impact would remain significant.

TABLE 8.3-5
SUMMARY OF CUMULATIVE EXCESS LIFETIME CANCER RISK, NON-CANCER CHRONIC RISK, AND ANNUAL AVERAGE $PM_{2.5}$ CONCENTRATION AT THE EXISTING OFF-SITE RESIDENT MEIR

Emissions Source	Excess Lifetime Cancer Risk (per million)	Non-Cancer Chronic Hazard Index (unitless)	Annual Average $PM_{2.5}$ Concentration ($\mu g/m^3$)
Revised Project Contribution			
Revised Project Construction[a] + Operations	8.1	0.004	0.04
Background Contributions from BAAQMD Permitted Stationary Sources within 1,000 feet of the Resident MEIR[b]			
UCSF BCH Oakland[c]	83.6	0.055	0.6
City of Oakland Environmental Services Division – Emergency Generator	0.3	<0.001	<0001
ARCO Facility – Gasoline Station	0.4	0.002	0.0
Background Contribution from Mobile Sources at the Resident MEIR[d]			
Roadways, Highways and Major Streets	92.4	0.34	2.1
Cumulative – Revised Project Plus Background			
Background Total	**176.8**	0.34	**2.64**
Revised Project Contribution	8.1	0.004	0.04
Cumulative Total	**184.9**	0.35	**2.68**
Cumulative Significance Thresholds	100	10.0	0.8
Significant?	Yes	No	Yes

NOTE(S): $PM_{2.5}$ = particulate matter that is 2.5 microns or less in diameter; = $\mu g/m^3$ micrograms per cubic meter; MEI = maximally exposed individual

Bold values = threshold exceedance

The resident infant MEIR for cancer risk, chronic HI and annual average $PM_{2.5}$ concentration is located in the residential neighborhood between SR 24 and Shattuck Avenue to the east of the Project site.

a. For onsite construction, $PM_{2.5}$ concentrations include exhaust and fugitive dust emissions as required by the most recent BAAQMD Guidelines.
b. Health risks from BAAQMD permitted stationary sources derived from the BAAQMD's Stationary Source Screening Map.
c. Please see Table 4.1-3 in Draft EIR.
d. Background health risks from mobile sources derived from BAAQMD's Mobile Source Screening Map.

SOURCE(S): ESA, 2024.

Implementation of Mitigation Measure C-AIR-1 identified in the Draft EIR would require the use of clean construction equipment, which would substantially reduce the revised NHB Project's contribution to cumulative health risks. Proposed back-up power generators would already meet Tier 4 engine standards. However, as shown in **Table 8.3-6**, even with mitigation, the combined health risk impact of the revised NHB Project and background sources in the area (180.2, slightly higher than the 179.8 cumulative cancer risk reported in the Draft EIR under the previously proposed Project) would exceed the BAAQMD's cumulative threshold for incremental lifetime cancer risk. In addition, even with mitigation, the total cumulative annual average $PM_{2.5}$ concentration (2.66 ug/m^3, same as under the cumulative scenario for the previously proposed Project) would exceed the BAAQMD's cumulative threshold for $PM_{2.5}$ concentration. Therefore, the cumulative health risk impact of the revised NHB Project would remain significant and unavoidable, same as under the previously proposed Project. No additional mitigation is feasible.

Thus, the revised NHB Project would not result in any new or substantially more severe significant human health risk impacts than previously disclosed in the Draft EIR.

TABLE 8.3-6
SUMMARY OF MITIGATED CUMULATIVE EXCESS LIFETIME CANCER RISK, NON-CANCER CHRONIC RISK, AND ANNUAL AVERAGE $PM_{2.5}$ CONCENTRATION AT THE EXISTING OFF-SITE RESIDENT MEIR

Emissions Source	Excess Lifetime Cancer Risk (per million)	Non-Cancer Chronic Hazard Index (unitless)	Annual Average $PM_{2.5}$ Concentration (μg/m³)
Background Total[a]	**176.8**	0.34	**2.64**
Revised Project Contribution as Mitigated[b]	3.4	0.003	0.02
Cumulative Total	**180.2**	0.34	**2.66**
Cumulative Impact Significance Thresholds	100	10.0	0.8
Significant?	Yes	No	Yes

NOTE(S): $PM_{2.5}$ = particulate matter that is 2.5 microns or less in diameter; = μg/m³ micrograms per cubic meter; MEI = maximally exposed individual

Bold values = threshold exceedance

The resident infant MEIR for cancer risk, chronic HI and annual average $PM_{2.5}$ concentration is located in the residential neighborhood between SR 24 and Shattuck Avenue to the east of the Project site.

a. See Table 4.1-11 in the Draft EIR for details.
b. Mitigated risk from implementation of Mitigation Measure C-AIR-1.

SOURCE(S): ESA, 2024.

Noise and Vibration

Noise Impact Associated with Relocation of Site Stationary Noise Sources under Revised NHB Project

As discussed above, under the revised NHB Project, certain noise-generating site equipment would be relocated to a proposed utility yard. This would include up to three emergency generators (previously proposed to be located on the east side of Project site), and three heat pumps and cooling towers (previously proposed on the new hospital building rooftop). As under the previously proposed Project, each of these equipment pieces would be contained within enclosures that would provide weather protection and noise reduction features. Other proposed equipment that would be relocated to the utility yard, including switchgear and transformer (previously proposed within the parking garage), would not be substantial sources of noise, and consequently, are not considered in this analysis.

The proposed utility yard would be situated at the south end of the Project site, between the proposed parking garage and MLK Jr. Way. Directly west across MLK Jr. Way from the proposed utility yard is the existing UCSF BCH Oakland West Lot surface parking. Under the revised NHB Project, the proposed utility yard would place the site's emergency generators closer to the nearest off-site noise sensitive receptors to the west, and consequently increase their noise contributions. Conversely, the cooling towers and heat pumps that would be relocated to the utility yard would be further from the prior nearest off-site noise sensitive receptors for this equipment, and as a result, the noise contribution from these sources would be reduced at those receptors. Modeled noise levels from the proposed noise-generating equipment are presented in **Table 8.3-7**, below.

TABLE 8.3-7
REVISED PROJECT STATIONARY NOISE SOURCES AND OPERATIONAL NOISE LEVELS

Source	# of Units	Sound Power Level (dB per unit)	A-Weighted Sound Pressure Level at the Nearest Residential Property Line	Residential Standard per City Noise Ordinance
HVAC Exhaust	8 on new hospital building roof	80	45 L_{eq}	
AHUs (Supply)	6 on new hospital building roof	83	47 L_{eq}	
Cooling Towers	3 in utility yard 1 on new hospital building roof	102 102	54 L_{eq} 49 L_{eq}	
Air Source Heat Pumps	3 in utility yard	93	51 L_{eq}	
Emergency Generators	3 in utility yard	75	38 L_{eq}	
Total Stationary Sources	—	—	**57 dBA**	61 dBA

SOURCE(S): Smith Group, 2023, 2024; Stantec, 2023; ESA, 2024

As can be seen from the table, the resulting total (aggregate) noise levels at the nearest noise sensitive receptors to the west of the utility yard would be 57 dBA. This estimate is lower than what was estimated for the previously proposed Project in the Draft EIR (59 dBA) and also less than the residential noise standard per the City Noise Ordinance, and accordingly, the stationary source noise impact would remain less than significant. Thus, the revised NHB Project would not result in any new or substantially more severe significant environmental impacts than previously disclosed in the Draft EIR, and no new or revised mitigation would be required.

Noise Impacts Associated with Operation of Helistop under the Revised NHB Project

Under the revised NHB Project, the helistop landing deck would be located at 121 feet agl, which is 15 feet lower than that previously proposed under the NHB Project (and 85 feet higher in elevation compared to the existing helistop). As discussed above, as under the previously proposed Project, the revised Project helistop would be relocated approximately 160 feet to the north of the existing helistop.

Figure 8.3-8 illustrates the arriving and departing flight tracks for helicopters that would use the relocated helistop atop the revised new hospital building. Similar to existing conditions and to the previously proposed Project, under the revised NHB Project, helicopters would typically arrive from the east and depart to the west, and when feasible, fly over SR 24 and hospital property when landing at or departing from the helistop in an effort to minimize noise impacts on the surrounding community. As under the previously proposed Project, under the revised NHB Project, helicopter operations (landings plus takeoffs) are projected to increase compared to existing conditions.

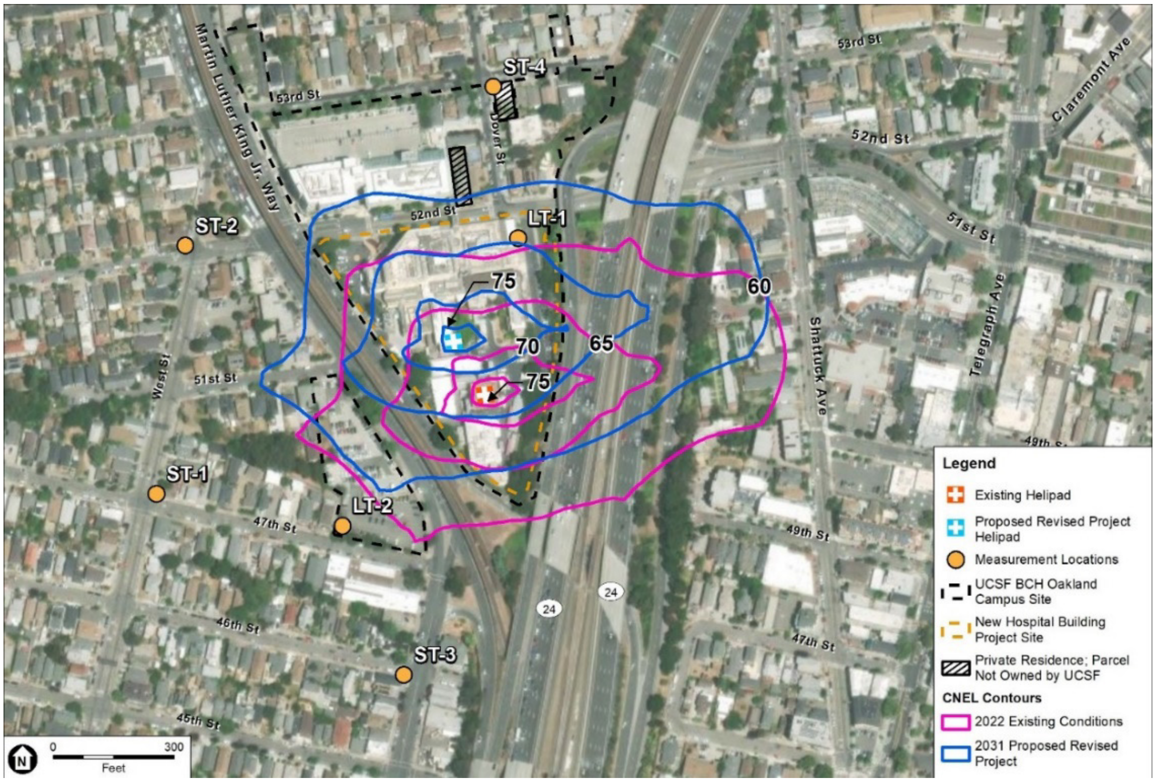
SOURCE(S): AEDT, 2023; Environmental Science Associates, 2024 UCSF BCH Oakland NHB Project EIR

Figure 8.3-8
Helicopter Flight Tracks Using Proposed UCSF BCH Oakland Helistop atop New Hospital Building under the Revised NHB Project

ESA prepared a Technical Noise Memorandum (see **Appendix NOI-R**) that assessed the shift in helistop location and elevation and increase in helicopter activity at the relocated helistop atop the new hospital building under the revised NHB Project. **Figure 8.3-9** presents CNEL contours under Existing Conditions and 2031 revised NHB Project Conditions for the existing and relocated helistops.

Table 8.3-8 summarizes and compares calculated helicopter CNEL values at the helicopter noise impact assessment sites under Existing Conditions and 2031 revised NHB Project Conditions. Overall revised Project-related changes show increase in noise exposure ranging from 1.8 dB to 5.6 dB at sensitive land uses to the north of the helistops and decrease in noise exposure ranging from -0.9 dB to -1.1 dB at sensitive land uses to the south of the helistops.

Impacts related to the increase in aggregate noise in terms of the CNEL noise metric are assessed relative to a threshold of a 3 dBA increase, which is an increase that is considered to be barely perceptible to the human ear. As shown in Table 8.3-8, none of the residential receptors would experience an increase in CNEL that is greater than 3 dBA, and the increases in noise levels at the residential receptors would not be perceptible. This finding is consistent with the finding of the previous impact analysis set forth in the Draft EIR.



SOURCE(S): AEDT, 2024; Environmental Science Associates, 2024

UCSF BCH Oakland NHB Project EIR

Figure 8.3-9
Existing and 2031 Revised NHB Project CNEL Contours Comparison for UCSF BCH Oakland Helistop

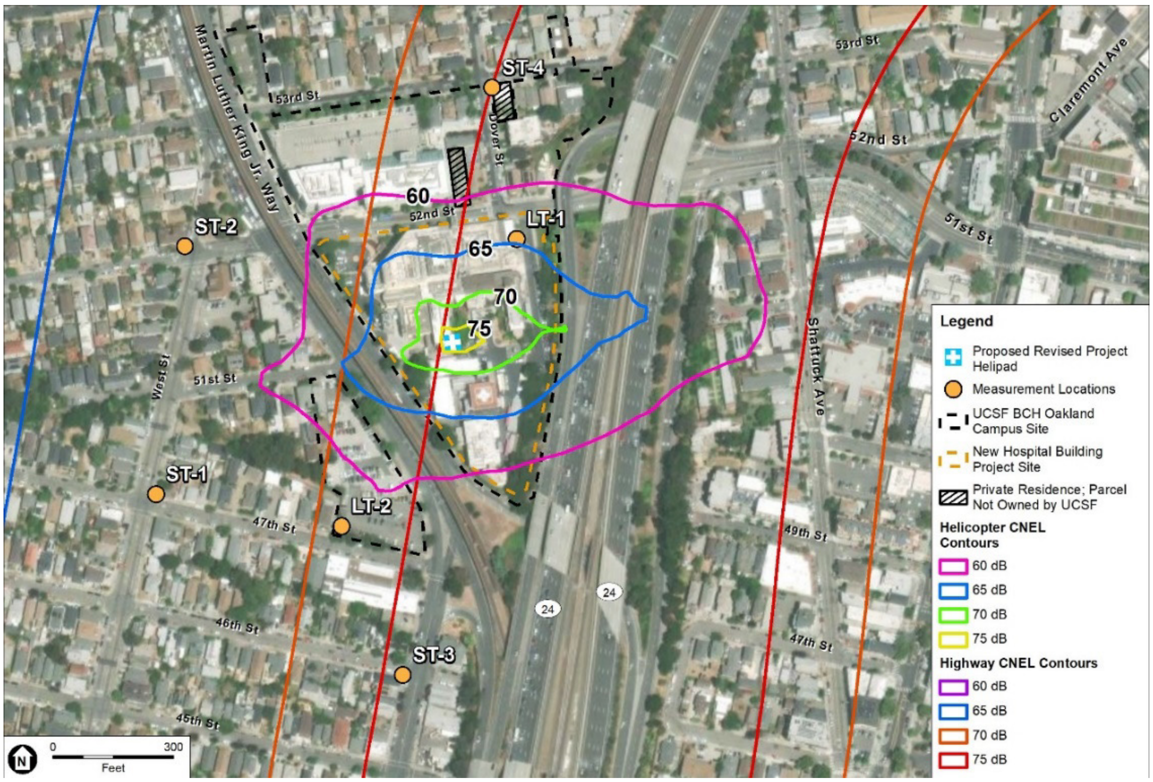
TABLE 8.3-8
MODELED CNEL VALUES AT NOISE IMPACT ASSESSMENT SITES FOR REVISED NHB PROJECT HELISTOP

Site	Land Use	Existing Helistop CNEL (dB)	Revised NHB Project Helistop CNEL (dB)	
		2022	2031	Revised Project-Related Change
LT-1	Hospital	59.0	64.6	5.6
LT-2	Residential	56.9	56.0	-0.9
ST-1	Residential	53.8	52.7	-1.1
ST-2	Residential	50.8	52.6	1.8
ST-3	Residential	52.3	51.3	-1.0
ST-4	Residential	52.2	54.6	2.4

SOURCE(S): ESA, 2024

The only receptor that would experience a noise increase that is greater than 3 dBA CNEL would be the hospital itself (Location LT-1[5]). However, as explained below, the increases in helicopter noise at Location LT-1 would not be perceived due to the substantial contribution of background highway traffic noise at the location.

Figure 8.3-10 graphically displays the 2031 revised NHB Project CNEL contours for the relocated helistop, along with CNEL contours for the adjacent SR 24 freeway background traffic. Location LT-1 is located approximately 275 feet from the centerline of SR 24.



SOURCE(S): AEDT, 2024; Environmental Science Associates, 2024 UCSF BCH Oakland NHB Project EIR

Figure 8.3-10
2031 Revised NHB Project CNEL Contours for UCSF BCH Oakland Helistop Compared with CNEL Contours for SR 24 Background Traffic

It should be noted that site-specific noise monitoring conducted at Location LT-1 indicates that the noise levels at this location are approximately 71 dBA CNEL. Assuming ambient conditions at Location LT-1 are 71 dBA CNEL, the combined noise level (helicopter noise of 64.6 dBA CNEL and traffic noise of 71 dBA CNEL) would be 71.9 dBA, for a maximum increase in ambient noise of 0.91 dBA. Only noise level increases of 3 dBA or more are considered perceptible by the human ear. Therefore, as with the previously proposed NHB Project, helicopter operations under

[5] It should be noted that the predicted CNEL increase at the hospital is an impact of the Project on itself, which would be a non-CEQA impact that would be addressed by UCSF BCH Oakland through implementation of an acoustical study to ensure that building materials are appropriate to maintain interior hospital noise at acceptable levels.

the revised NHB Project would not result in a substantial permanent increase in noise levels at sensitive receptors in the Project area, and the impact would be less than significant.

Conclusion

The proposed incrementally lower elevation of the helipad landing deck on the revised new hospital building would not result in an increase in CNEL noise levels at the study sensitive receptors that is substantially different from that presented in Impact NOI-2 in the Draft EIR for the previously proposed Project,[6] and consequently would result in the same less than significant impact regarding substantial permanent increases in noise levels at sensitive receptors. Thus, the proposed revised NHB Project would not result in any new or substantially more severe significant environmental impacts than previously disclosed in the Draft EIR, and no new or modified mitigation measures would be required.

Supplemental Noise Analysis for Impact of the Revised NHB Project on Sleep, Speech, and Vibration Effects

Similar to that provided for the previously proposed Project, for informational purposes, alternative metrics were considered to estimate speech interference and sleep disturbance associated with operation of the proposed revised NHB Project helistop. The Technical Noise Memorandum (Appendix NOI-R) provides a helistop noise analysis using the Sound Exposure Level (SEL) and Time Above (TA) metrics to evaluate how speech interference and sleep disturbance could be affected by the proposed relocation of the helistop under the revised NHB Project. That assessment is summarized below.

Sleep Disturbance Assessment

Table 8.3-9 summarizes the calculated Sound Exposure Level (SEL) values at each noise impact assessment site for potential sleep disturbance under the revised NHB Project.

Overall, as shown in Table 8.3-9, under the revised NHB Project there would be an increase in maximum percent awakened north of the existing helistop, from 0.7 dB to 1.2 dB, and a decrease in maximum percent awakened south of the existing helistop, from -0.8 dB to -2.1 dB. These changes are identical to those estimated for the previously proposed Project.

As indicated in Table 8.3-9, relocation of the helistop would result in a shift of SEL values, with values increasing for residences to the north and values decreasing for residences to the south. This is consistent with the Draft EIR finding for the previously proposed NHB Project. Similar to the previously proposed Project, under the revised NHB Project only a fraction (22 annual operations) of the total increase in helicopter flights would occur during nighttime hours (10:00 PM to 7:00 AM), and thus potentially could result in nighttime awakenings.

[6] Please also see minor staff-initiated corrections made to Draft EIR Impact NOI-2 in Section 8.6, *Revisions to the Draft EIR*.

TABLE 8.3-9
MODELED SEL VALUES AND SLEEP DISTURBANCE SITES FOR THE REVISED NHB PROJECT

Site	Land Use	Existing Helistop			Revised Project Helistop			Revised Project Related Change in Maximum Awakened (%)
		Exterior SEL (dB)[a]	Interior SEL (dB)[b]	Maximum % Awakened[c]	Exterior SEL (dB)[a]	Interior SEL (dB)[b]	Maximum % Awakened[c]	
LT-1	Hospital	99.4	84.4	11.1	102.6	87.6	12.3	1.2
LT-2	Residential	95.3	80.3	9.7	93.0	78.0	8.9	-0.8
ST-1	Residential	98.1	83.1	10.6	95.3	80.3	9.7	-0.9
ST-2	Residential	91.0	76.0	8.2	93.2	78.2	9.0	0.7
ST-3	Residential	94.2	79.2	9.3	87.6	72.6	7.2	-2.1
ST-4	Residential	87.4	72.4	7.1	90.4	75.4	8.0	0.9

NOTE(S):
a. AEDT calculated SEL value for the A-109 on flight track closest to receiver.
b. Outdoor-to-indoor noise level reduction of 15 was applied to all receivers.
c. Maximum percent awakened calculated using FICAN dose-response curve.

SOURCE(S): ESA, 2024.

Furthermore, only a fraction of that number (five annual operations) would occur along the east-west flight track, where the vast majority of residences that would experience an increase in SEL are located. Consequently, as with the previously proposed NHB Project, while the proposed helistop under the revised NHB Project would result in some new residential land uses to experience an increase in single event noise, the occurrences when the increase might be experienced would be infrequent.

Speech Interference Assessment

Table 8.3-10 summarizes calculated exterior L_{max} values at the helicopter noise impact assessment sites for the closest modeled flight route and the potential for speech interference when all modeled flight routes are taken into consideration. The data in Table 8.3-10 shows that overall, the revised NHB Project would either result in no change or small increase in the existing potential speech interference duration at the modeled residential site locations, and no change at LT-1 compared to existing conditions.

TABLE 8.3-10
CALCULATED TIME ABOVE (TA) AND SPEECH INTERFERENCE FOR THE REVISED NHB PROJECT

Site	Land Use	Existing Helistop		Revised Project Helistop		Revised Project Related Change (min/day)
		Lmax (dB)[a]	2022 TA65 (min/day)	Lmax (dB)[a]	2031 TA65 (min/day)	
LT-1	Hospital	98.7	0.4	97.4	0.4	0.0
LT-2	Residential	101.0	0.1	101.9	0.2	0.1
ST-1	Residential	100.6	0.0	93.8	0.1	0.1
ST-2	Residential	85.1	0.0	89.3	0.1	0.1
ST-3	Residential	90.4	0.1	85.5	0.1	0.0
ST-4	Residential	88.1	0.1	93.1	0.2	0.1

NOTE(S):
a. AEDT calculated SEL value for the A-109 on flight track closest to receiver.
SOURCE(S): ESA, 2024.

Operational Vibration Assessment for the Revised NHB Project

Due to proximity, low frequency and vibration effects would be more pronounced within the Project site than within the surrounding areas off-campus. As under the previously proposed Project, since the proposed replacement helistop under the revised NHB Project would be at a higher elevation (85 feet higher) than the existing helistop, it is expected that the helicopters would be operating at a higher altitude over surrounding off-campus residential areas, and therefore, would result in fewer potential low frequency or vibration effects at sensitive uses than under existing conditions.

Conclusion

The proposed incrementally lower elevation helipad landing deck on the revised new hospital building included in the revised NHB Project would not result in a change in SEL values at the study sensitive receptors from that presented in the supplemental noise analysis included in the Draft EIR for the previously proposed Project, and consequently would result in the same less than significant effects on sleep disturbance as reported for the previously proposed NHB Project in the Draft EIR.

In addition, the revised NHB Project would result in only a minor increase (no more than 0.1 min/day) in TA values at the study sensitive receptors compared to that presented in the supplemental noise analysis included in the Draft EIR for the previously proposed NHB Project,[7] and would result in the same less than significant impact conclusion regarding noise effects on speech disturbance.

Furthermore, the revised NHB Project, similar to the previously proposed NHB Project, would result in fewer potential low frequency or vibration effects at sensitive uses than under existing

[7] Please also see minor staff-initiated corrections made to Draft EIR supplemental noise analysis on speech interference in Section 8.6, *Revisions to the Draft EIR*.

conditions, and consequently, would result in the same less than significant impact conclusion regarding vibration effects on nearby at sensitive uses as reported for the previously proposed NHB Project in the Draft EIR.

Thus, the revised NHB Project would not result in any new or substantially more severe significant noise and vibration impacts than previously disclosed in the Draft EIR.

Noise Impacts Associated with Operation of Helistop under the Revised NHB Project Variant

Under the revised NHB Project variant, the proposed helistop landing atop the parking garage would measure approximately 57 feet agl, or approximately 15 feet higher than the helistop on the garage under the previously analyzed Project variant, approximately 21 feet higher in elevation than the existing helistop, and about 64 feet lower than the proposed helistop atop the new hospital building under the revised NHB Project. Under the revised NHB Project variant, the helistop would be relocated approximately 125 feet to the south of the existing helistop, similar to the previously analyzed Project variant.

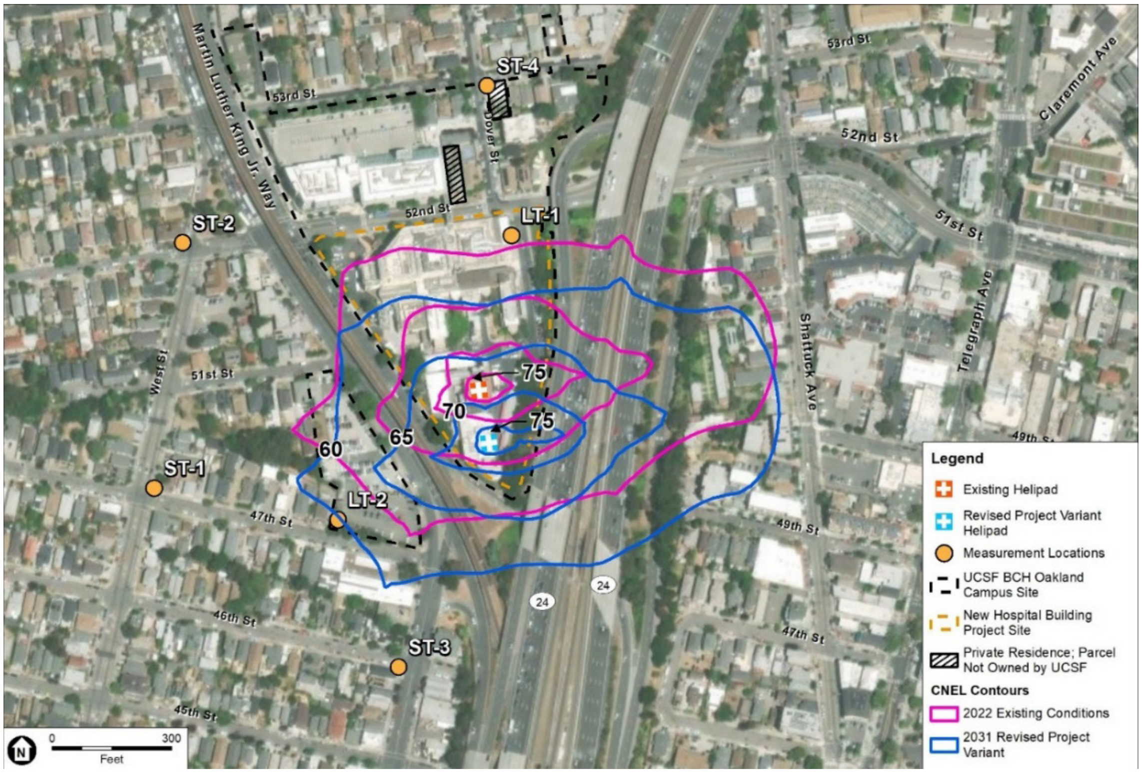
Figure 8.3-11 illustrates the arriving and departing flight tracks for helicopters that would use the relocated helistop atop the proposed parking garage. As under the previously proposed NHB Project variant, under the revised NHB Project variant, helicopter operations (landing plus takeoffs) are projected to increase compared to existing conditions.

SOURCE(S): AEDT, 2024; Environmental Science Associates, 2024 UCSF BCH Oakland NHB Project EIR

Figure 8.3-11
Helicopter Flight Tracks Using Proposed UCSF BCH Oakland Helistop atop Parking Garage under Revised NHB Project Variant

ESA prepared a Technical Noise Memorandum (see Appendix NOI-R) that assessed the change in helistop height and increase in helicopter activity at the relocated helistop atop the proposed garage under the revised NHB Project variant. **Figure 8.3-12** presents Existing Conditions and 2031 revised Project Variant Conditions CNEL contours for the existing and relocated helistops. **Table 8.3-11** summarizes and compares calculated helicopter CNEL values at the helicopter noise impact assessment sites under Existing Conditions and 2031 revised NHB Project Variant Conditions.

Overall revised Project variant-related changes show decreases in noise exposure ranging from -0.4 dB to -2.5 dB at sensitive land uses to the north of the helistops and increases in noise exposure ranging from 0.2 dB to 2.8 dB at sensitive land uses to the south of the helistops. As shown in Table 8.3-11, no receptors would experience a noise increase that is greater than 3 dBA CNEL.



SOURCE(S): AEDT, 2024; Environmental Science Associates, 2024 UCSF BCH Oakland NHB Project EIR

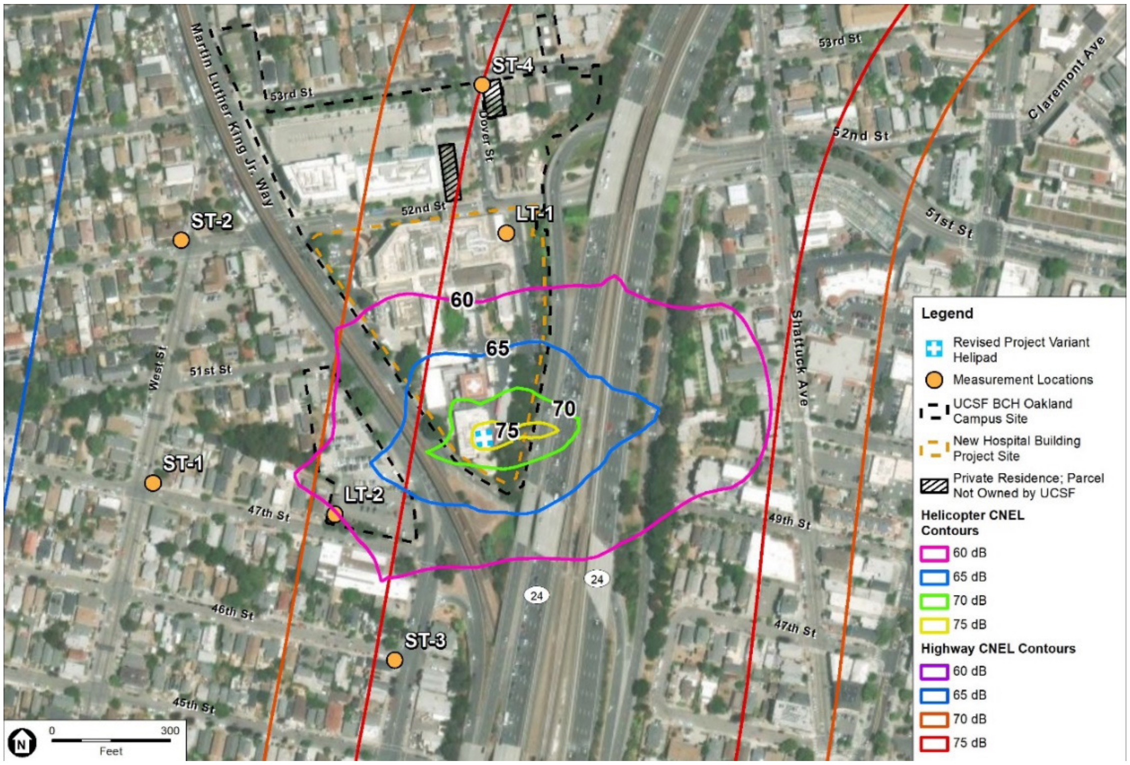
Figure 8.3-12
Existing and 2031 Revised NHB Project Variant CNEL Contours Comparison for UCSF BCH Oakland Helistop

TABLE 8.3-11
MODELED CNEL VALUES AT NOISE IMPACT ASSESSMENT SITES FOR REVISED NHB PROJECT VARIANT HELISTOP

Site	Land Use	Existing Helistop CNEL (dB)	Revised Project Variant Helistop” CNEL (dB)	
		2022	2031	Project-Related Change
LT-1	Hospital	59.0	56.5	-2.5
LT-2	Residential	56.9	59.7	2.8
ST-1	Residential	53.8	54.0	0.2
ST-2	Residential	50.8	50.4	-0.4
ST-3	Residential	52.3	54.5	2.2
ST-4	Residential	52.2	51.3	-0.9

SOURCE(S): ESA, 2024

Figure 8.3-13 graphically displays the 2031 revised NHB Project Variant CNEL noise levels for the relocated helistop, along with CNEL contours for the adjacent SR 24 freeway background traffic. For the same reasons discussed above for the revised NHB Project, the estimated increases in helicopter noise under the revised NHB Project variant would not be perceived due to the



SOURCE(S): AEDT, 2024; Environmental Science Associates, 2024 UCSF BCH Oakland NHB Project EIR

Figure 8.3-13
2031 Revised NHB Project Variant CNEL Contours for Helistop Compared with CNEL Contours for SR 24 Background Traffic

substantial contribution of background highway traffic noise from the adjacent SR 24. Therefore, similar to the previously proposed NHB Project variant, the revised NHB Project variant would have a less than significant operational noise impact with respect to helicopter noise.

Conclusion

The incrementally higher elevation helistop landing on the parking garage under the revised NHB Project variant would not result in a change in CNEL noise levels at the study sensitive receptors from that presented in Impact NOI-2 in the Draft EIR for the previously proposed NHB Project variant, and consequently would result in the same less than significant conclusion regarding substantial permanent increases in noise levels at sensitive receptors. Thus, the revised NHB Project variant would not result in any new or more severe impacts than previously identified in the Draft EIR.

Supplemental Noise Analysis for Impact of the Revised NHB Project Variant on Sleep, Speech, and Vibration Effects

Similar to that provided for the revised NHB Project, above, for informational purposes, alternative metrics were considered to estimate speech interference and sleep disturbance associated with operation of the revised NHB Project variant helistop. The Technical Noise Memorandum (Appendix NOI-R) provides a helistop noise analysis using the Sound Exposure

Level (SEL) and Time Above (TA) metrics to evaluate how speech interference and sleep disturbance could be affected by the proposed relocation of the helistop under the revised NHB Project variant. That assessment is summarized below.

Sleep Disturbance Assessment

Table 8.3-12 summarizes the calculated SEL values at each noise impact assessment site location for potential sleep disturbance under the revised NHB Project variant.

TABLE 8.3-12
MODELED SEL VALUES AND SLEEP DISTURBANCE SITES FOR THE REVISED NHB PROJECT VARIANT

Site	Land Use	Existing Helistop			Revised Project Variant Helistop			Revised Project Variant Related Change in Maximum Awakened (%)
		Exterior SEL (dB)[a]	Interior SEL (dB)[b]	Maximum % Awakened[c]	Exterior SEL (dB)[a]	Interior SEL (dB)[b]	Maximum % Awakened[c]	
LT-1	Hospital	99.4	84.4	11.1	98.2	83.2	10.7	-0.4
LT-2	Residential	95.3	80.3	9.7	98.3	83.3	10.7	1.0
ST-1	Residential	98.1	83.1	10.6	97.5	82.5	10.4	-0.2
ST-2	Residential	91.0	76.0	8.2	89.6	74.6	7.8	-0.4
ST-3	Residential	94.2	79.2	9.3	91.8	76.8	8.5	-0.8
ST-4	Residential	87.4	72.4	7.1	85.5	70.5	6.6	-0.5

NOTE(S):
a. AEDT calculated SEL value for the A-109 on flight track closest to receiver.
b. Outdoor-to-indoor noise level reduction of 15 was applied to all receivers.
c. Maximum percent awakened calculated using FICAN dose-response curve.

SOURCE(S): ESA, 2024.

Overall, as shown in Table 8.3-12, revised NHB Project variant-related changes show a decrease in maximum percent awakened from -0.2 dB to -0.8 dB at all modeled site locations except one. An increase of 1.0 percent is expected at LT-2, southwest of the hospital.

As indicated in Table 8.3-12, relocation of the helistop under the variant would result in a shift of SEL values, with values increasing for residences to the south and values decreasing for residences to the north of the campus site. Similar to the case discussed for the revised NHB Project, above, only a fraction of the total increase in helicopter flights would occur during nighttime hours (10 PM to 7 AM), and thus potentially could result in nighttime awakenings. Furthermore, only a fraction of that number would occur along the east-west flight track, where the vast majority of residences that would experience an increase in SEL are located. Consequently, while the relocation of the helistop would result in some new residential land uses to experience an increase in single event noise, the occurrence during which the increase might be experienced would be infrequent.

Speech Interference Assessment

Table 8.3-13 summarizes calculated exterior L_{max} values at the helicopter noise impact assessment sites for the closest modeled flight route and the potential for speech interference when all modeled flight routes are taken into consideration. The data in Table 8.3-13 shows that overall, the revised NHB Project variant would not increase the existing speech interference duration at the modeled residential sites, and would result in a small decrease at LT-1.

TABLE 8.3-13
CALCULATED TIME ABOVE (TA) AND SPEECH INTERFERENCE FOR THE REVISED NHB PROJECT VARIANT

Site	Land Use	Existing Helistop		Revised Project Variant Helistop		Revised Project Variant Related Change (min/day)
		L_{max} (dB)[a]	2022 TA65 (min/day)	L_{max} (dB)[a]	2031 TA65 (min/day)	
LT-1	Hospital	98.7	0.4	98.4	0.3	-0.1
LT-2	Residential	101.0	0.1	104.7	0.1	0.0
ST-1	Residential	100.6	0.0	102.4	0.0	0.0
ST-2	Residential	85.1	0.0	82.8	0.0	0.0
ST-3	Residential	90.4	0.1	97.5	0.1	0.0
ST-4	Residential	88.1	0.1	85.7	0.1	0.0

NOTE(S):
a. AEDT calculated SEL value for the A-109 on flight track closest to receiver.
SOURCE(S): ESA, 2024.

Operational Vibration Assessment for the Revised NHB Project Variant

Similar to that discussed for the revised NHB Project, due to proximity, low frequency and vibration effects would be more pronounced within the Project site than within the surrounding areas off-campus. Since the proposed helistop under the revised NHB Project variant would be located at a higher elevation than the existing helistop within the Project site, it is expected that the revised NHB Project variant would result in fewer low frequency or vibration effects at off-campus sensitive uses than under the existing conditions.

Conclusion

The incrementally higher elevation helistop landing on the parking garage under the revised Project variant would not result in a change in SEL values at the study sensitive receptors from that presented in the supplemental noise analysis included in the Draft EIR for the previously proposed NHB Project variant, and consequently would result in the same less than significant impact conclusion regarding noise effects on sleep disturbance as reported for the previously proposed NHB Project variant in the Draft EIR.

In addition, the revised NHB Project variant would result in the same or less increase in TA values at the study sensitive receptors compared to that presented in the supplemental noise analysis included in the Draft EIR for the previously proposed NHB Project variant, and as a result, would result in the same less than significant conclusion regarding noise effects on speech disturbance.

Furthermore, the revised NHB Project variant, similar to the previously proposed NHB Project variant, would result in fewer potential low frequency or vibration effects at sensitive uses than under existing conditions, and consequently, would result in the same less than significant impact conclusion regarding vibration effects at sensitive uses as reported for the previously proposed NHB Project variant in the Draft EIR.

Thus, the revised NHB Project variant would not result in any new or more severe noise and vibration impacts than previously identified in the Draft EIR.

8.3.4 Environmental Analysis of the Peralta Site Temporary Helistop

Hazards

Hazard Impacts from Operation of Temporary Helistop at the Peralta Site

There are no public use airports within 2 miles of the Peralta site. Oakland International Airport and San Francisco International Airport are located approximately 4 and 13 miles from the Peralta site, respectively.

UCSF's aviation consultant, Heliplanners, conducted a preliminary assessment of the installation of a temporary helistop at the Peralta site. This preliminary assessment included evaluating potential flightpath alignments that could be used by helicopters to arrive at and depart from the potential Peralta site, taking into account area topography, and the presence of surrounding on- and off-site buildings, structures, and other objects. These are described and graphically illustrated under *Noise Impacts Associated with Temporary Operation of Helipad at Potential Peralta Community College Site,* below.

The installation and use of a temporary helistop at the Peralta site would be subject to further design and analysis by the aviation consultant to determine the most suitable location for the helistop within the site; the type of helistop structure (e.g., freestanding structure, elevated on berm, etc.), the appropriate height of the helistop structure, required safety lighting features, and selection of flight paths alignments that would demonstrate that the approach/departure and transitional surfaces would provide adequate clearance from on- and off-site obstructions in the site vicinity. The temporary helistop would also be subject to applicable permitting approvals prior to operation. These mechanisms and regulatory oversight would ensure that the temporary use of a helistop at the Peralta site would not pose any potential safety hazards for people residing or working in the project area, or create any hazard to navigable airspace.

Noise and Vibration

Noise Impacts Associated with Temporary Operation of Helipad at Peralta Site

As discussed above under *Hazard Impacts from Operation of Temporary Helistop at the Peralta Site*, UCSF's aviation consultant, Heliplanners, conducted a preliminary assessment of potential flightpath alignments that could be used by helicopters to arrive at and depart from the Peralta site. As noted, the installation and use of a temporary helistop at the Peralta site would be subject to further design and analysis by the aviation consultant. Nevertheless, adequate information is available at this time to conduct a conservative planning-level analysis of potential noise impacts from the operation of this temporary helistop for CEQA purposes.

Existing Noise and Vibration Environment

The existing ambient noise environment at the Peralta site is dominated by vehicular traffic on the adjacent I-880 freeway and to a lesser extent from traffic on nearby public streets, including 4th Street and the Embarcadero; train traffic along the existing Amtrak/freight rail corridor located approximately 350 feet to the south of the Peralta site; air traffic related to the Oakland International Airport; and from noise generated from surrounding industrial land uses.

Ambient Noise Measurements

Ambient long-term (24-hour) and short-term (15-minute) noise measurement data were collected on April 25 through April 26, 2024 to characterize ambient noise conditions at the Peralta site and the environs. Noise measurement locations are shown in **Figure 8.3-14**, and noise results for the long-term and short-term monitoring locations are summarized in **Table 8.3-14** and **Table 8.3-15**, respectively.

TABLE 8.3-14
LONG-TERM AMBIENT NOISE LEVELS IN THE PERALTA SITE VICINITY

Measurement Location		Community Noise Exposure Level (CNEL)	Noise Levels in dBA	
			Daytime hourly average, L_{eq}	Nighttime hourly average, L_{eq}
LT-1	Across Civic Center Lodge on Fallon Street	75	70	68
LT-2	Across Sierra At Jack London Square condominium complex on Oak Street	73	71	65
LT-3	Adjacent to 845 Embarcadero condominiums, at the corner of Embarcadero and Brooklyn Basin Way	78	74	71

NOTE: See Figure 8.3-14 for noise measurement locations.
SOURCE: ESA, April 2024.

TABLE 8.3-15
SHORT-TERM AMBIENT NOISE LEVELS IN THE PERALTA SITE VICINITY

Measurement Location		Time	Noise Levels in dBA	
			Hourly L_{eq}	L_{max}
ST-1	In front of Portabello condominium complex on Embarcadero West	10:48 AM	62.4	75.5
ST-2	At the Intersection of 5th Avenue and East 9th Street	11:54 AM	69.7	86.4
ST-3	At the entrance to Peralta site	11:08 AM	70.6	80.6

NOTE: See Figure 8.3-14 for noise measurement locations. L_{eq} represents the constant sound level; L_{max} is the maximum noise level.
SOURCE: ESA, April 26, 2024.

SOURCE: ESA, 2024, Google Earth, 2024

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Figure 8.3-14
Noise Monitoring Locations in the
Peralta Site Temporary Helistop Vicinity

To provide a basis for evaluating potential impacts of the operation of the temporary helistop on nearby residences, noise monitoring was conducted at a number of representative locations within the surrounding residential neighborhoods. As illustrated in Figure 8.3-14, short-term monitoring location ST-1 is located on Embarcadero West, in front of Portabello condominium complex; ST-2 is located at the intersection of 5th Avenue and East 9th Street, adjacent to residential mixed uses and a Laney College athletic field; and ST-3 is located at the entrance to the Peralta site.

Long-term monitoring location LT-1 is located adjacent to the Civic Center Lodge motel and in proximity of the single-family residences on Fallon Street. The noise environment at this location is dominated by vehicle traffic on 7th Street and, to a lesser extent, by vehicles entering/exiting the Laney College faculty/staff parking lot. Noise data indicates that these noise sources are consistent throughout the daytime and nighttime hours. Long-term monitoring location LT-2 is located across the Sierra At Jack London Square condominium complex on Oak Street. The noise environment at this location is dominated by vehicle traffic on Oak Street. Long-term monitoring location LT-3 is located at 845 Embarcadero, at the intersection of Embarcadero and Brooklyn Basin Way, and adjacent to the 845 Embarcadero condominium complex. The noise environment at this location is dominated by vehicle traffic on I-880 and Embarcadero.

Noise Impacts from Operation of Temporary Helistop

ESA prepared a Technical Noise Memorandum (see Appendix NOI-R) that assessed the noise impacts from the proposed use of a temporary helistop at the Peralta site.

While detailed design information is not yet available for the temporary helistop at the Peralta site, it is conservatively assumed for this noise assessment that a helistop structure at the Peralta site would have a landing at 5-feet agl.

The NHB Project would necessitate use of a temporary helistop at the Peralta site for nearly 5.5 years (January 2026 to May 2031). The NHB Project variant, which would include a new helistop on the proposed parking garage at the BCH Oakland campus site, would necessitate use of the temporary helistop site at Peralta site for 1.5 years (January 2026 to June 2027). To provide a conservative assessment of Project impacts, the Project scenario is assessed in this noise analysis, and as such, conditions were analyzed in 2031, when the greatest number of temporary helicopter operations at the Peralta site would occur.

Helistop operations for the modeling scenarios were derived based on flight log data provided by UCSF BCH Oakland, as the analysis assumes a temporary shift in annual helicopter operations from the UCSF BCH Oakland site to the Peralta site. It is projected that operations would increase at a rate of 1 percent per year through the completion date of 2031 of the permanent UCSF BCH hospital helistop. As such, there would be up to 858 annual operations at the temporary helistop in 2031.

UCSF's aviation consultant conducted a preliminary assessment that identified four potential flightpath alignments that could be used by helicopters to arrive at and depart from the Peralta site (see **Figure 8.3-15**), taking into account area topography, and the presence of surrounding on-

SOURCE(S): Heliplanners 2024; ESA, 2024

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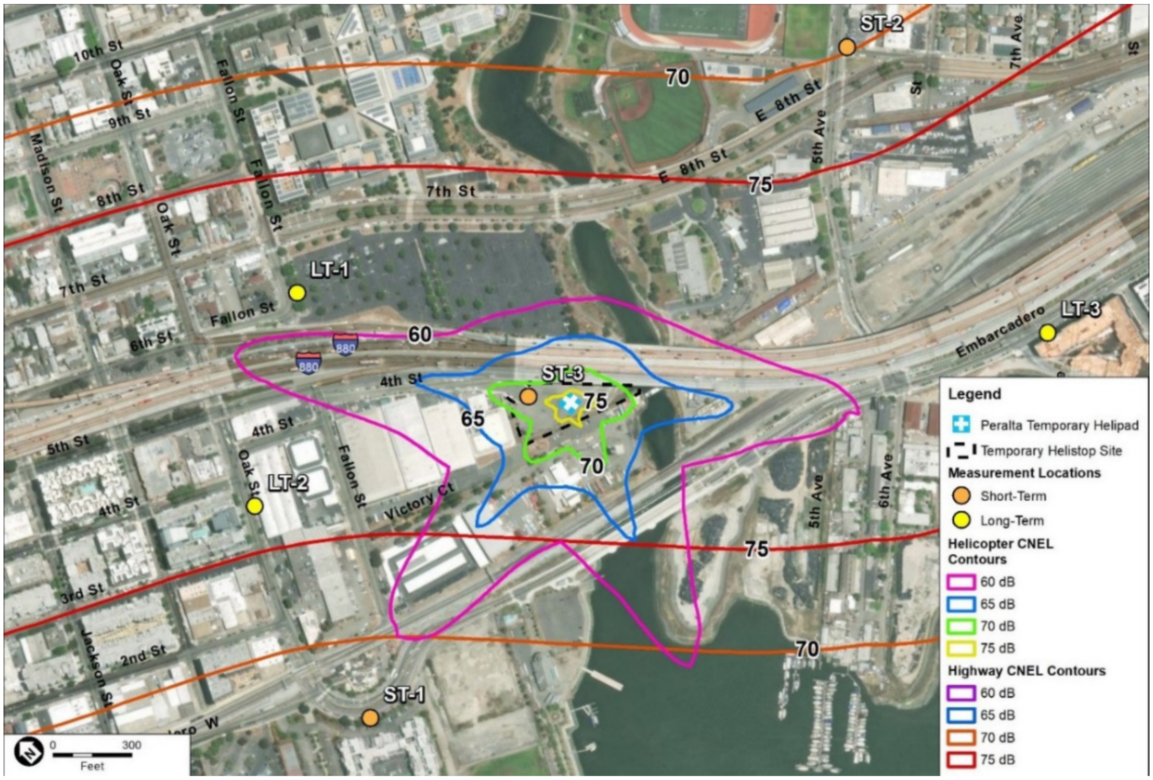
Figure 8.3-15
Preliminary Helicopter Flightpaths Assumed to Use Temporary Helistop at Peralta Site

and off-site buildings, structures, or other objects. Given that the temporary helistop at the Peralta site would be subject to further design and analysis, and subject to applicable permitting approvals prior to operation, the assumed flightpaths are considered preliminary and subject to refinement. As a conservative approach to assess potential worst-case noise impacts, 100 percent of helicopter operations were assessed on each of the four flightpath alignments.[8]

Figure 8.3-16 graphically presents 2031 CNEL contours for operation the temporary helistop at the Peralta site. **Table 8.3-16** provides the modeled results at the Peralta site and each of the representative residential noise impact assessment sites. Sites LT-1, LT-2, and ST-1 are located to the north and west of the Peralta site, while LT-3 and ST-2 are located to the east, and ST-3 is located at the entrance to the Peralta site.

To the north of the Peralta site, CNEL ranged from 53.7 to 57.1 dB. To the south the CNEL ranged from 45.6 to 54.4. Overall, the CNEL at the residential impact assessment sites ranged from 45.6

[8] While 100 percent of all operations were applied to each flightpath, the total noise exposure presented in this analysis is not the cumulative result of 400 percent of the total operations. The CNEL contours for each track (representing 100 percent of the operations, e.g., 429 operations on each arrival track and 429 operations on each departure track) were combined to create a composite contour, with the outer limits of each interval forming the composite contour.



SOURCE(S): Heliplanners 2024; ESA, 2024 — UCSF BCH Oakland NHB Project EIR

Figure 8.3-16
2031 CNEL Contours for Temporary Helistop at Peralta Site, and CNEL Contours for I-880

TABLE 8.3-16
MODELED 2031 CNEL VALUES AT NOISE IMPACT ASSESSMENT SITES FOR TEMPORARY HELISTOP AT PERALTA SITE

Site	Land Use	Peralta Site Temporary Helistop CNEL (dB)
		2031
LT-1	Residential	57.1
LT-2	Residential	53.7
LT-3	Residential	54.4
ST-1	Residential	57.7
ST-2	Residential	45.6
ST-3	Peralta Site	74.0

SOURCE: ESA, 2024

to 57.7 dB, with the loudest modeled noise level at the Peralta site entrance at 74.0 dB. All land uses within the CNEL contours were analyzed using Google Earth aerial photography. It was determined that no noise sensitive land uses would be located within the CNEL 60-65 under the temporary helistop modeling scenario.

Figure 8.3-16 also graphically displays existing (2019) CNEL contours for the adjacent I-880 freeway background traffic as prepared in support of the City of Oakland General Plan Update. Background vehicular traffic noise from I-880 is the predominant noise source for the Peralta site and surrounding vicinity. The figure shows helicopter noise exposure from 60 through 75 CNEL contours in 5 dB increments. Noise exposure along the I-880 is presented from 70 and 75 CNEL. As shown in Figure 8.3-16, the 60 CNEL contour associated with the temporary helistop is primarily contained within the 70 CNEL generated by the freeway. While the contribution of operational noise from the temporary helistop would be less than the existing contribution of vehicle traffic on I-880, this contribution would still result in a marginal increase in noise over existing conditions. Specifically, the temporary helistop would create an overall CNEL increase of less than 0.5 dB around the Peralta site due to the temporary helistop.

In summary, helistop operations at the Peralta site by themselves would not cause ambient noise levels to exceed 65 dBA CNEL at any of the nearest residential receptors. When the noise from the helistop operations is combined with the freeway noise, the project-related increase would be less than 0.5 dB. Helistop operations would not result in a significant noise impact on any receptors in the helistop site vicinity.

Mitigation: None required.

Supplemental Analysis for Impact of the Temporary Helistop on Sleep, Speech, and Vibration Effects

For informational purposes, alternative metrics were considered to estimate speech interference and sleep disturbance associated with operation of the proposed temporary helistop at the Peralta site. The Technical Noise Memorandum (Appendix NOI-R) provides a helistop noise analysis using the SEL, L_{max} and TA metrics to evaluate how speech interference and sleep disturbance could occur with the proposed temporary operation of the helistop at the Peralta site. The analysis and results are summarized herein.

Sleep Disturbance Assessment

As previously discussed in the analysis for the helistop at the BCH Oakland campus site, sleep disturbance is often expressed as "maximum percent awakened," and represents the potential for sleep disturbance within the population residing beneath a specific flight path, indicating the maximum percentage of the population expected to be awakened. To determine potential sleep disturbance, an outdoor-to-indoor noise level reduction (NLR) was applied. For this analysis, an NLR of 15 dB was applied to modeled results.

Table 8.3-17 summarizes the calculated SEL values at each noise impact assessment site location for potential sleep disturbance due to the operation of the proposed temporary helistop at the Peralta site. The 15 dB NLR was subtracted from the exterior SEL and maximum percent awakened was calculated based on the interior SEL using the FICAN dose response curve.

To the north and west of the Peralta site, the maximum percent awakened at the study residential receptors under the operation of the helistop at the Peralta site ranged from 10.3 to 11.7 percent. To the east of the Peralta site, the maximum percent awakened ranged from 7.6 and 10.6 percent.

TABLE 8.3-17
MODELED SEL VALUES AND SLEEP DISTURBANCE SITES FOR THE TEMPORARY HELISTOP AT THE PERALTA SITE

Site	Land Use	Proposed Temporary Helistop at the Peralta Site		
		Exterior SEL (dB)[a]	Interior SEL (dB)[b]	Maximum % Awakened[c]
LT-1	Residential	100.5	85.5	11.5
LT-2	Residential	97.1	82.1	10.3
LT-3	Residential	97.8	82.8	10.6
ST-2	Residential	101.1	86.1	11.7
ST-3	Residential	88.9	73.9	7.6
ST-4	Peralta Site	117.4	102.4	18.5

NOTE(S):
a. AEDT calculated SEL value for the A-109 on flight track closest to receiver.
b. Outdoor-to-indoor noise level reduction of 15 was applied to all receivers.
c. Maximum percent awakened calculated using FICAN dose-response curve.
SOURCE(S): ESA, 2024.

Overall, the maximum percent awakened at the residential impact assessment sites ranged from 7.6 to 11.7 percent. It should be noted that this analysis does not include percent awakened due to existing noise generated (e.g. community noise, railway operations[9], and freeway noise) within the vicinity of the receptors and, as such, it could be expected that the project-related sleep disturbance would be minimal.

Speech Disturbance Assessment

Potential speech interference is assumed to occur at interior noise levels at or above 65 dB. The AEDT was used to calculate exterior noise levels that exceeded 80 dB, (e.g., TA 80 dB in minutes per day) to account for the 15 dB NLR inside the residence.

Table 8.3-18 summarizes the calculated Lmax and TA 65 values at each noise impact assessment site for potential speech interference. The data shows that the overall speech interference would be minimal, ranging from 0.2 to 0.3 minutes per day at the modeled residential receptors.

In summary, helistop operations at the Peralta site would not result in substantial speech interference and sleep disturbance at any of the nearest residential receptors.

9 At-grade rail crossings at Oak Street and at 5th Avenue, adjacent to LT-2 and LT-3, respectively, operate with alarm bells and required locomotive horn blasts.

TABLE 8.3-18
CALCULATED TIME ABOVE (TA) AND SPEECH INTERFERENCE FOR THE TEMPORARY HELISTOP AT THE PERALTA SITE

Site	Land Use	Temporary Helistop at the Peralta Site	
		Lmax (dB)[a]	2031 TA65 (min/day)
LT-1	Residential	117.4	0.3
LT-2	Residential	84.4	0.2
LT-3	Residential	88.0	0.3
ST-1	Residential	95.6	0.2
ST-2	Residential	75.1	0.0
ST-3	Peralta Site	121.2	5.1

NOTE(S):
a. AEDT calculated SEL value for the A-109 on flight track closest to receiver.
SOURCE(S): ESA, 2024.

Operational Vibration Assessment

Due to proximity, low frequency and vibration effects would be more pronounced within the Peralta helipad site than within the surrounding areas. There are existing sources of vibration in the area, primarily from the existing Amtrak/freight rail corridor located approximately 350 feet to the south of the Peralta site. The frequency of helicopter operations (approximately 2.4 operations per day) at the Peralta site would be substantially fewer than the existing nearby rail operations. Currently, AMTRAK operates 38 passenger trains every weekday on this track, and additionally, there are approximately six daily freight trains. Given the existing vibration background in the area and the nominal frequency of helicopter overflights from the proposed temporary helistop, which may or may not generate vibration, the potential vibratory impacts of helistop operations would not be significant.

8.4 Agencies, Organizations, and Individuals Commenting on the Draft EIR

This Final EIR document provides written responses to comments received on the Draft EIR during its public review period (January 15, 2024, through March 1, 2024), including all written comments submitted either by letter or email, and all oral comments presented at the Draft EIR public hearing.

This section lists all agencies, organizations, and individuals ("persons") who submitted comments on the Draft EIR. Persons who submitted written comments are grouped according to whether they represent a public agency, organization, or an individual member of the public, and persons who provided oral comments at the public hearing are also listed.

For each commenter on the Draft EIR, the person's name, agency or organization as applicable, comment format, comment date, and a commenter code are provided. The commenter codes were assigned to facilitate the preparation of responses. A unique commenter code is assigned to each comment letter, email, and public hearing transcript comment based on the name of the agency, organization, or individual submitting the comment. Comments submitted by mail, email, or orally at the public hearing (as transcribed in the official public hearing transcript) are all coded and numbered the same way.

8.4.1 Commenters on the Draft EIR

Public Agencies That Commented on the Draft EIR

Table 8.4-1, below, provides a list of all public agencies that commented on the Draft EIR.

TABLE 8.4-1
PUBLIC AGENCIES THAT COMMENTED ON THE DRAFT EIR

Commenter Code	Name of Person and Agency Submitting Comments	Comment Format	Comment Date
A-Caltrans	Yunsheng Luo, Branch Chief, Local Development Review, Office of Regional and Community Planning, California Department of Transportation	Letter	03/01/2024
A-ACDEH	Matthew Soby, Sr. Hazardous Materials Specialist, Alameda County Department of Environmental Health, Certified Unified Program Agency	Email	03/01/2024
A-EBMUD	David J. Rehnstrom, Manager of Water Distribution Planning, East Bay Municipal Utility District	Letter	03/08/2024

SOURCE: ESA, 2024

Organizations That Commented on the Draft EIR

Table 8.4-2, below, provides a list of all organizations that commented on the Draft EIR.

TABLE 8.4-2
ORGANIZATIONS THAT COMMENTED ON THE DRAFT EIR

Commenter Code	Name of Person and Organization Submitting Comments	Comment Format	Comment Date
O-OHA	Daniel Levy, President, Oakland Heritage Alliance	Letter	03/01/2024
O-BEB	Robert Prinz, Advocacy Director, Bike East Bay	Email	02/19/2024
SOURCE: ESA, 2024			

Individuals Who Commented in Writing on the Draft EIR

Table 8.4-3, below, provides a list of all individuals who commented in writing on the Draft EIR.

TABLE 8.4-3
INDIVIDUALS WHO COMMENTED IN WRITING ON THE DRAFT EIR

Commenter Code	Name of Individual Submitting Comments	Comment Format	Comment Date
I-Levin	Phil Levin	Email	01/25/2024
I-Park	Paul Park	Email	01/25/2024
SOURCE: ESA, 2024			

Individuals Who Commented Orally at the Draft EIR Public Hearing

Table 8.4-4, below, provides a list of all individuals who commented orally at the public hearing on the Draft EIR.

TABLE 8.4-4
INDIVIDUALS WHO COMMENTED AT THE DRAFT EIR PUBLIC HEARING

Commenter Code	Name of Individual Submitting Comments	Comment Format	Comment Date
PH-Schiff	Naomi Schiff	Transcript	02/15/2024
PH-Pajarillo	Jovita Pajarillo	Transcript	02/15/2024
PH-Smith	Patricia Smith	Transcript	02/15/2024
SOURCE: ESA, 2024			

8.5 Written and Oral Comments on the Draft EIR, and Responses to Comments

8.5.1 Introduction

This section contains copies of the written comment letters (including emails) on the Draft EIR received during the public review period (January 16, 2024, through March 1, 2024) from agencies, organizations and individuals, and also includes a copy of the public hearing transcript. Each comment letter received during the comment period is reproduced here in its entirety.

8.5.2 Comments and Responses

Each written comment letter is designated with commenter code in upper right-hand corner of the letter. The commenter code begins with a prefix indicating whether the commenter represents a public agency (A), an organization (O), an individual (I), or a speaker at the public hearing (PH). This is followed by a hyphen and the acronym of the agency or organization, or the individual's last name.

Within each written comment letter, individual comments are labeled with a number in the margin. Immediately following each comment letter is a corresponding response to each numbered comment.

Within the public hearing transcript, individual speaker comments are labeled with the name of the speaker followed by the numbered comment of the speaker in the margin. Immediately following the public hearing transcript are the corresponding responses to all of the numbered comments.

Where responses have resulted in changes to the Draft EIR text, the reader is referred to changes that appear in Section 8.6, *Revisions to the Draft EIR*, in this Final EIR document.

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8.5.2.1 Draft EIR Comment Letters – Agencies

CALIFORNIA STATE TRANSPORTATION AGENCY GAVIN NEWSOM, GOVERNOR

California Department of Transportation

DISTRICT 4
OFFICE OF REGIONAL AND COMMUNITY PLANNING
P.O. BOX 23660, MS–10D | OAKLAND, CA 94623-0660
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March 1, 2024

SCH #: 2023050540
GTS #: 04-ALA-2023-00789
GTS ID: 29901
Co/Rt/Pm: ALA/24/R2.7

Diane Wong, Environmental Coordinator
University of California, San Francisco
654 Minnesota Street
San Francisco, CA 94143

Re: UCSF Benioff Children's Hospital Oakland New Hospital Building Project — Draft Environmental Impact Report (DEIR)

Dear Diane Wong:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the Project. We are committed to ensuring that impacts to the State's multimodal transportation system and to our natural environment are identified and mitigated to support a safe, sustainable, integrated, and efficient transportation system. 1

The Local Development Review (LDR) Program reviews land use projects and plans to ensure consistency with our mission and state planning priorities. The following comments are based on our review of the January 2024 DEIR.

Project Understanding
The University of California, San Francisco (UCSF) is proposing to construct a new hospital building and associated improvements at the UCSF Benioff Children's Hospital Oakland campus, located adjacent to State Route (SR)-24. The project would include the construction of a new 332,523 square-foot 8-story hospital building; an approximately 270-stall, 4-story parking structure; and a rooftop helistop. 2

Travel Demand Analysis
The project vehicle miles traveled (VMT) analysis and significance determination are undertaken in a manner consistent with the Office of Planning and Research's (OPR) Technical Advisory. Per the DEIR, this project is found to have a less than significant VMT impact, therefore working towards meeting the State's VMT reduction goals. 3

Diane Wong, Environmental Coordinator
March 1, 2024
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Aeronautics
One of the goals of the California Department of Transportation, Caltrans Aeronautics, is to assist cities, counties, and Airport Land Use Commissions (ALUC) or their equivalent, to understand and comply with the State Aeronautics Act pursuant to the California Public Utilities Code (PUC), Section 21001 et seq. 4

The environmental analysis performed by the applicant and Lead Agency concluded that Project helicopter operations would not result in a substantial permanent increase in noise levels at sensitive receptors and to the surrounding community due to the construction and operation of the planned new platformed heliport that is part of the Project. 5

Pursuant to the PUC, Section 21662 and 21662.1, Caltrans Aeronautics is a permitting officer and shall be consulted for the authorization and approvals for the temporary helistop site and the planned heliport for the project. If you have any questions pertaining to Caltrans Aeronautics, please contact Tiffany Martinez at (916)-879-6596 or by email at tiffany.martinez@dot.ca.gov. 6

Construction-Related Impacts
Project work that requires movement of oversized or excessive load vehicles on State roadways requires a transportation permit that is issued by Caltrans. To apply, please visit Caltrans Transportation Permits (*link*). Prior to construction, coordination may be required with Caltrans to develop a Transportation Management Plan (TMP) to reduce construction traffic impacts to the State Transportation Network (STN). 7

Equitable Access
If any Caltrans facilities are impacted by the project, those facilities must meet American Disabilities Act (ADA) Standards after project completion. As well, the project must maintain bicycle and pedestrian access during construction. These access considerations support Caltrans' equity mission to provide a safe, sustainable, and equitable transportation network for all users. 8

Encroachment Permit
Please be advised that any permanent work or temporary traffic control that encroaches onto Caltrans' Right-of-Way (ROW) requires a Caltrans-issued encroachment permit. As part of the encroachment permit submittal process, you may be asked by the Office of Encroachment Permits to submit a completed encroachment permit application package, digital set of plans clearly delineating Caltrans' ROW, digital copy of signed, dated and stamped (include stamp expiration date) traffic control plans, this comment letter, your response to the comment letter, and where applicable, the following items: new or amended Maintenance Agreement (MA), approved Design Standard Decision Document (DSDD), approved encroachment exception request, and/or airspace lease agreement. 9

The checklist TR-0416 (*link*) is used to determine the appropriate Caltrans review process for encroachment projects. The Office of Encroachment Permit requires 100% complete design plans and supporting documents to review and circulate the permit application package. To obtain more information and download the permit application, please visit Caltrans Encroachment Permits (*link*). Your application package may be emailed to D4Permits@dot.ca.gov. 9 cont.

Thank you again for including Caltrans in the environmental review process. Should you have any questions regarding this letter, please contact Llisel Ayon, Associate Transportation Planner, via LDR-D4@dot.ca.gov. For future early coordination opportunities or project referrals, please contact LDR-D4@dot.ca.gov. 10

Sincerely,

YUNSHENG LUO
Branch Chief, Local Development Review
Office of Regional and Community Planning

c: State Clearinghouse

Responses to Comments from Caltrans

A-Caltrans-1 The commenter indicates Caltrans is committed to ensuring impacts to the State's multimodal transportation system and the natural environment are identified and mitigated to support a safe, sustainable, integrated, and efficient transportation system.

This comment is noted; no response is required.

A-Caltrans-2 The commenter summarizes the primary physical characteristics and location of the proposed Project.

A detailed description of the proposed Project is presented in Draft EIR Chapter 3. See also a description of proposed Project refinements discussed and analyzed in Section 8.3 of this Final EIR document.

A-Caltrans-3 The commenter indicates that the Project vehicles miles traveled (VMT) analysis and significance determination were undertaken in a manner consistent with the Office of Planning and Research (OPR) Technical Advisory. The commenter adds that per the Draft EIR, the Project was found to have a less than significant VMT impact, and therefore, it works towards meeting the State's VMT reduction goals.

These comments are noted; the Draft EIR concludes that Project VMT impact (as analyzed in Impact TRANS-2) and cumulative impact on VMT (as analyzed in Impact C-TRANS-1) were determined to be less than significant.

A-Caltrans-4 The commenter states one of the goals of the Caltrans Aeronautics is to assist cities, counties, and Airport Land Use Commissions (ALUC) or their equivalent, to understand and comply with the State Aeronautics Act pursuant to California Public Utilities Code (PUC) Section 21001 et seq.

The comment is noted; no response is required.

A-Caltrans-5 The commenter indicates the environmental analysis concluded that Project helicopter operations due to the construction and operation of the proposed heliport would not result in a substantial permanent increase in noise levels at sensitive receptors and to the surrounding community.

The comment is noted. Project noise impacts from the proposed relocated helistop atop the new hospital building rooftop, and atop the parking garage rooftop under the Project variant, were addressed in Draft EIR Impact NOI-2, and cumulative operational noise impacts were addressed in Impact C-NOI-2 and were determined to be less than significant. A supplemental helistop noise analysis related to Project helicopter effects on sleep disturbance and speech interference was also included in Draft EIR Impact NOI-2. See an analysis of potential helicopter noise effects associated with the revised NHB Project and the revised NHB Project variant set forth in Section 8.3 of this Final EIR document.

A-Caltrans-6 The commenter states that pursuant to the PUC, Sections 21662 and 21662.1, Caltrans Aeronautics is a permitting officer and shall be consulted for the authorization and approvals for the temporary helistop site and the planned heliport for the Project.

The comment is noted. The University will consult with Caltrans Aeronautics regarding approvals for the temporary helistop site and the planned helistop for the Project.

A-Caltrans-7 The commenter indicates that Project work that requires movement of oversized or excessive load vehicles on State roadways requires a transportation permit that is issued by Caltrans. The commenter adds that prior to construction, coordination may be required with Caltrans to develop a Transportation Management Plan (TMP) to reduce construction traffic impacts to the State Transportation Network (STN).

These comments are noted. The Draft EIR addressed potential Project construction impacts in Impact TRANS-5 and identified as mitigation (see Draft EIR pages 4.11-31 to 4.11-32) that the construction contractor shall prepare and implement a Construction TMP, including, but not limited to, the identification of construction truck routes, coordination of feasible measures to reduce traffic congestion, and potential detours, which would ensure temporary construction impacts to the transportation system, including the STN, would be less than significant.

A-Caltrans-8 The commenter states that if any Caltrans facilities are impacted by the Project, those facilities must meet Americans with Disabilities Act (ADA) Standards after Project completion. The commenter indicates that the Project must maintain bicycle and pedestrian access during construction, and adds that these access considerations support Caltrans' equity mission to provide a safe, sustainable, and equitable transportation network for all users.

These comments are noted. The revised NHB Project would not make any alterations to Caltrans facilities in the Project area. Adjacent city streets would be affected due to driveway modifications and curb cuts. However, all improvements constructed as part of the Project within the Project site and on adjacent city streets would meet ADA standards and requirements, as applicable. With respect to maintaining bicycle and pedestrian access during construction, per mitigation identified in the Draft EIR, the construction contractor shall prepare and implement a Construction TMP which would include measures to reduce potential traffic congestion, bicycle and pedestrian circulation effects and ensure temporary construction impacts to the transportation system would be less than significant.

A-Caltrans-9 The commenter advises that any permanent work or temporary traffic control that encroaches onto Caltrans' Right-of-Way (ROW) would require a Caltrans-issued encroachment permit and outlines the process and requirements for obtaining the permit.

The comment is noted. The revised NHB Project does not include any improvements that would encroach onto Caltrans' ROW, and therefore an encroachment permit from Caltrans would not be required.

A-Caltrans-10 The commenter expresses appreciation for inclusion of the agency in the environmental review process for this Project.

The comment is noted; no response is required.

From: Soby, Matthew, Env. Health
To: BCH Oakland NHB
Subject: ACDEH CUPA Comments to BCH Oakland"s Draft EIR Number 2023050540
Date: Friday, March 1, 2024 12:49:21 AM

This Message Is From an External Sender
This message came from outside your organization.

Good morning Diane Wong, UCSF,

Please accept Alameda County Department of Environmental Health, Certified Unified Program Agency's (CUPA) comments/observations regarding the UCSF Benioff Children's Hospital Oakland New Hospital Building Project at 747 52nd Street, Oakland, CA. The comments/observations pertain to the Draft Environmental Impact Report (EIR) (State number 2023050540). 1

The CUPA's comments/observations are limited in scope to our jurisdiction of underground storage tank program (UST) (Health and Safety Code (HSC) Chapter 6.7 and California Code of Regulations (CCR) Title 23), hazardous materials business plan program (HMBP) (HSC Chapter 6.95), and hazardous waste generator program (HWG) (HSC Chapter 6.5 and CCR Title 22).

UST

Impacts to the UST are not addressed and are noted to be outside the scope of the EIR and were not analyzed. The EIR does mention the mandated removal of the single-walled UST by early 2026 *(sic)* and elsewhere *"the project is planned to be implemented in early 2024 and completed in early 2025"*. The EIR mentions the UST will be replaced by a 12,000 gallon AST.

The only impact discussed was: *"UCSF-proposed cumulative projects that would occur on or adjacent to the Project site include the BCH Oakland Infrastructure Improvements project, replacement of the existing fuel oil underground storage tank (UST) with an above ground fuel oil tank, and construction of the Administrative Support Building and related improvements. These cumulative projects could contribute construction related discharges of pollutants, and/or operational increases stormwater flows to the City and ACFCWD stormwater systems. These projects would similarly implement construction-phase controls and long-term stormwater management controls to ensure they would not result in a violation of water quality standards or waste discharge requirements, or otherwise degrade surface or groundwater quality."* 2

HMBP/HWG

Hazardous waste and hazmat were generally discussed in broad terms: Procedures to follow if evidence of soil and/or groundwater contamination is encountered, overall analysis of 3 hazardous waste and biohazardous waste streams (Table 4.7-1) and their management, discussed changes to fluorescent lamp handling as universal waste, CHP/DOT regulation of transportation/labelling, and discussed the existence of UCSF BCHO Hazardous materials and waste management plan and its policies. 3 cont.

"In the impacts below, the proposed new hospital building and renovation of existing facilities under the Project are considered together due to similar environmental impacts that would be associated with transport, use and disposal of hazardous materials in these facilities. It should be noted that since the existing Patient Tower and Ford Diagnostic and Treatment (D&T) Center are existing operating uses, the majority of use, disposal and/or transport of hazardous materials effects associated with the continued operation of these hospital facilities following renovation are part of the existing baseline conditions, and consequently, not new impacts." 4

Impact HAZ-1: Construction and operation of the NHB Project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. *(Less than Significant*)

Impact HAZ-2: Construction and operation of the NHB Project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. (*Less than Significant*) 5

Impact HAZ-3: Construction and operation of the NHB Project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. (*Less than Significant*)

If the facility maintains their operational policies and procedures, the EIR did not identify other/additional impacts. 6

Respectfully,

Matthew Soby
Sr. Hazardous Materials Specialist
510-567-6841

Responses to Comments from Alameda County Department of Environmental Health

A-ACDEH-1 The commenter indicates the comments in the letter are limited in scope to ACDEH Certified Unified Program Agency (CUPA)'s jurisdiction of underground storage tank program (UST), hazardous materials business plan program (HMBP), and hazardous waste generator program (HWG).

The comment is noted; no response is required.

A-ACDEH-2 The commenter indicates that impacts to the UST are not addressed, are noted to be outside the scope of the EIR, and not analyzed.

The Fuel Oil UST removal and replacement is independent of and is not a part of the NHB Project. As discussed in the Draft EIR, Section 4.0, *Introduction to Environmental Analysis*, under *Cumulative Impact Analysis*, separate from the proposed NHB Project, UCSF plans to replace the Fuel Oil UST on the Project site by early 2025. As discussed in Section 4.7, *Hazards and Hazardous Materials*, on page 4.7-15 under *Aboveground and Underground Storage Tanks*, this storage tank does not meet current code requirements and must be decommissioned by December 2025. The UST will be decommissioned under ACDEH oversight, removed in compliance with State UST regulations, and replaced with a 12,000-gallon aboveground storage tank in early 2025 prior to the start of construction of the Project. UCSF determined the removal of this tank to be categorically exempt from CEQA under Class 3, and the UST project was approved by UCSF in September 2023.

Accordingly, the Draft EIR addresses the UST replacement project in the cumulative context. The commenter cites the Draft EIR's discussion of the UST replacement project in Impact C-HYD-1 in Section 4.8, *Hydrology and Water Quality*, including how all cumulative projects, including UST replacement project, would need to implement their own construction-phase controls and long-term stormwater management controls where applicable to ensure they would not result in a violation of water quality standards or waste discharge requirements, or otherwise degrade surface or groundwater quality.

The commenter is also referred to Impact C-HAZ-1 in Section 4.7, *Hazards and Hazardous Materials*, which discusses that the UST replacement project and other cumulative projects would be carried out in accordance with all applicable regulations governing hazardous materials and subject to any specific hazardous materials mitigation measures identified for those projects, and on this basis, the cumulative impact related to hazardous materials would be less than significant.

A-ACDEH-3 The commenter summarizes how Draft EIR Section 4.7, *Hazards and Hazardous Materials*, Environmental Setting addressed hazardous waste and hazardous materials, including procedures to follow if evidence of soil and/or groundwater contamination is encountered, overall analysis of hazardous waste and biohazardous waste streams (Table 4.7-1) and their management, regulations governing transportation/labelling, and UCSF BCH Oakland hazardous materials and waste management plans and policies.

The comment is noted. The extensive regulatory framework, and plans, policies and procedures maintained by UCSF BCH Oakland were used in part as a basis for concluding that the storage, use, transport and disposal of hazardous materials would continue to be managed properly and therefore the impacts would be less than significant.

A-ACDEH-4 The commenter cites the Draft EIR's approach to analysis of hazardous materials in Project site facilities in Section 4.7, *Hazards and Hazardous Materials*, page 4.7-19, including how the proposed new hospital building and renovation of existing facilities under the Project were considered together due to their similar environmental impacts that would be associated with the transport, use and disposal of hazardous materials in these facilities; and that the continued operation of existing facilities at the Project site following renovation would not result in new impacts with hazardous materials.

The comment is noted. These assumptions were used in evaluating similar impacts associated with construction and/or operation of these proposed BCH Oakland hospital facilities.

A-ACDEH-5 The commenter cites the full text of the bolded impact statements from Impact HAZ-1, Impact HAZ-2, and Impact HAZ-3 in Draft EIR Section 4.7, *Hazards and Hazardous Materials*.

The comment is noted; no response is required. However, also see response to Comment A-ACDEH-6 below.

A-ACDEH-6 The commenter indicates that if the facility maintains their operational policies and procedures, the EIR did not identify other/additional impacts.

The operational policies and procedures maintained by UCSF BCH Oakland for the campus site, including but not limited to the *Hazardous Materials and Waste Management Plan, Hazard Communication Plan and Injury Illness Prevention Plan*, are summarized on pages 4.7-15 to 4.7-18 of the Draft EIR. As discussed in the Draft EIR, the *Hazardous Materials and Waste Management Plan* provides a framework for managing risks related to hazardous materials and waste, regulated medical waste, chemotherapeutic agents, pharmaceuticals, and radioactive materials; and sets forth a number of programs to ensure the safe use, storage and disposal of hazardous materials on the campus site. The *Hazard Communication Program*, which was prepared in accordance with California Code of Regulations (CCR) Title 8, Section 5194, and CFR Title 29, Section 1910.1200, ensures that the staff are knowledgeable of the hazards associated with the chemicals, and the methods that may be used to minimize the risk of an accident or illness resulting from the use of these chemicals. The *Injury Illness Prevention Plan* (IIPP) is intended to, among other objectives, reduce work-related injuries and illnesses, and comply with Cal/OSHA regulations for Injury and Illness Prevention Program (CCR Title 8, Section 3203).

As addressed in Impact HAZ-1 in the Draft EIR, under the proposed NHB Project, UCSF BCH Oakland operations would continue to comply with all hazardous material regulatory requirements and UCSF BCH Oakland protocols for the campus site, including the plans identified above. Compliance with hazardous storage and transportation regulations, and continuation of the programs and controls currently in place to manage hazardous materials, as mandated by State and federal laws, would minimize the hazards to workers, the public, and the environment. Therefore, operation of the new and renovated hospital facilities under the proposed NHB Project would result in a less than significant impact related to the routine transport, use, and disposal of hazardous materials and wastes.

As addressed in Impact HAZ-2 in the Draft EIR, UCSF BCH Oakland would continue to implement existing campus health and safety practices and comply with federal and State regulations related to the use, transport, and disposal of hazardous materials, thus minimizing the potential for an accidental release and providing for prompt and effective cleanup in the unlikely event of an accidental release. Furthermore, UCSF BCH Oakland maintains an Emergency Operations Plan for the campus site, which addresses the campus community's planned response to various levels of human-made or natural emergency situations, including the accidental release of hazardous materials. Because the NHB Project will comply with existing regulatory requirements and/or UCSF BCH Oakland policies and programs, the potential impact of an accidental release involving hazardous materials would be reduced to a less than significant level.

As addressed in Impact HAZ-3 in the Draft EIR, UCSF BCH Oakland facilities would continue to adhere to existing regulatory requirements and UCSF BCH Oakland policies. Furthermore, while these new and renovated facilities would increase the total quantities of hazardous materials used at the campus site, there would not likely be a substantive change in hazardous emissions since all transportation, use, storage, and disposal of hazardous materials would be conducted in accordance with applicable federal and State regulations, and UCSF requirements which are designed to minimize exposure. Therefore, the operation of UCSF BCH Oakland facilities under the proposed NHB Project would not expose existing or future schools and daycare centers near the campus site to hazardous emissions and the impact would be considered less than significant.

Lastly, it should be noted that UCSF BCH Oakland would regularly update its existing operational policies and procedures as needed to remain up to date and reflect conditions and operations in the expanded facilities. UCSF would also implement Mitigation Measure HAZ-4 prior to and during the construction of the proposed NHB Project to ensure that contaminated soils and ground water impacts are avoided both during construction and post-construction.

EAST BAY
MUNICIPAL UTILITY DISTRICT

March 8, 2024

Diane Wong, Environmental Coordinator
UCSF Real Estate – Campus Planning
654 Minnesota Street
San Francisco, California 94143-0287

Re: Notice of Availability Draft Environmental Impact Report for the UCSF Benioff Children's Hospital Oakland New Hospital Building Project, Oakland

Dear Ms. Wong:

East Bay Municipal Utility District (EBMUD) appreciates the opportunity to comment on the Draft Environmental Impact Report (EIR) for the UCSF Benioff Children's Hospital Oakland New Hospital Building Project located at 747 52nd Street in the City of Oakland. EBMUD has the following comments.

WATER SERVICE

EBMUD's Claremont Pressure Zone, with a service elevation between 100 and 200 feet, will serve the proposed development. Separate structures on a single parcel require separate water services. When the development plans are finalized, the project sponsor should contact EBMUD's New Business Office and request a water service estimate to determine costs and 1
conditions for providing water service to the project. Engineering and installation of water services require substantial lead time, which should be provided for in the project sponsor's development schedule.

EBMUD owns and operates distribution pipelines in 52nd Street, 53rd Street, Dover Street, and Martin Luther King Jr. Way, which provide continuous service to EBMUD's customers in the area. There is an 8-inch water main in 52nd Street, 53rd Street, Dover Street, and two 8-inch water mains in Martin Luther King Jr. Way that traverse through the proposed development. Any construction activity in 52nd Street, 53rd Street, Dover Street, and Martin Luther King Jr. Way would need to be coordinated with EBMUD so that the integrity of these water mains are maintained at all times. If modifications to the streets occur that require pipeline relocation, the 2
relocation costs would be at the project sponsor's expense. Please see the attached EBMUD documents for California (Waterworks Standards) Code of Regulations, Title 22, Section 64572 (Water Main Separation) and EBMUD requirements for placement of water mains. All costs associated with abandonment and relocation of pipelines, relocation of water services, relocation of hydrants, pipeline extensions, and offsite improvements would be at the project sponsor's expense. The engineering, installation and abandonment of water mains often require substantial lead time, which should be accounted for in the project sponsor's development schedule.

EBMUD's Standard Site Assessment Report indicate the potential for contaminated soils or groundwater to be present within the project site boundaries. The project sponsor should be aware that EBMUD will not install piping or services in contaminated soil or groundwater (if groundwater is present at any time during the year at the depth piping is to be installed) that must be handled as a hazardous waste or that may be hazardous to the health and safety of construction and maintenance personnel wearing Level D personal protective equipment. Nor will EBMUD install piping or services in areas where groundwater contaminant concentrations exceed specified limits for discharge to the sanitary sewer system and sewage treatment plants. The project sponsor must submit copies to EBMUD of all known information regarding soil and groundwater quality within or adjacent to the project boundary and a legally sufficient, complete, and specific written remediation plan establishing the methodology, planning and design of all necessary systems for the removal, treatment, and disposal of contaminated soil and groundwater. 3

EBMUD will not design piping or services until soil and groundwater quality data and remediation plans have been received and reviewed and will not start underground work until remediation has been carried out and documentation of the effectiveness of the remediation has been received and reviewed. If no soil or groundwater quality data exists, or the information supplied by the project sponsor is insufficient, EBMUD may require the project sponsor to perform sampling and analysis to characterize the soil and groundwater that may be encountered during excavation. Alternatively, EBMUD may perform such sampling and analysis at the project sponsor's expense. If evidence of contamination is discovered during EBMUD work on the project site, work may be suspended until such contamination is adequately characterized and remediated to EBMUD standards.

WASTEWATER SERVICE

EBMUD's Main Wastewater Treatment Plant (MWWTP) and interceptor system are anticipated to have adequate dry weather capacity to accommodate the proposed wastewater flows from this project and to treat such flows provided that the wastewater generated by the project meets the requirements of the EBMUD Wastewater Control Ordinance. However, wet weather flows are a concern. 4 The East Bay regional wastewater collection system experiences exceptionally high peak flows during storms due to excessive infiltration and inflow (I/I) that enters the system through cracks and misconnections in both public and private sewer lines. EBMUD has historically operated three Wet Weather Facilities (WWFs) to provide primary treatment and disinfection for peak wet weather flows that exceed the treatment capacity of the MWWTP. Due to reinterpretation of applicable law, EBMUD's National Pollutant Discharge Elimination System (NPDES) permit now prohibits discharges from EBMUD's WWFs. Additionally, the 5 seven wastewater collection system agencies that discharge to the EBMUD wastewater interceptor system ("Satellite Agencies") hold NPDES permits that prohibit them from causing or contributing to WWF discharges. These NPDES permits have removed the regulatory coverage the East Bay wastewater agencies once relied upon to manage peak wet weather flows.

A federal consent decree, negotiated among EBMUD, the Satellite Agencies, the Environmental Protection Agency (EPA), the State Water Resources Control Board (SWRCB), and the Regional Water Quality Control Board (RWQCB), requires EBMUD and the Satellite Agencies to eliminate WWF discharges by 2036. To meet this requirement, actions will need to be taken over time to reduce I/I in the system. The consent decree requires EBMUD to continue implementation of its Regional Private Sewer Lateral Ordinance (www.eastbaypsl.com), construct various improvements to its interceptor system, and identify key areas of inflow and 6
rapid infiltration over a 22-year period. Over the same time period, the consent decree requires the Satellite Agencies to perform I/I reduction work including sewer main rehabilitation and elimination of inflow sources. EBMUD and the Satellite Agencies must jointly demonstrate at specified intervals that this work has resulted in a sufficient, pre-determined level of reduction in WWF discharges. If sufficient I/I reductions are not achieved, additional investment into the region's wastewater infrastructure would be required, which may result in significant financial implications for East Bay residents.

To ensure that the proposed project contributes to these legally required I/I reductions, the lead 7
agency should require the project applicant to comply with EBMUD's Regional Private Sewer Lateral Ordinance. Additionally, it would be prudent for the lead agency to require the following mitigation measures for the proposed project: (1) replace or rehabilitate any existing sanitary sewer collection systems, including sewer lateral lines to ensure that such systems and lines are free from defects or, alternatively, disconnected from the sanitary sewer system, and (2) ensure 8
any new wastewater collection systems, including sewer lateral lines, for the project are constructed to prevent I/I to the maximum extent feasible while meeting all requirements contained in the Regional Private Sewer Lateral Ordinance and applicable municipal codes or Satellite Agency ordinances.

WATER CONSERVATION

The project presents an opportunity to incorporate water conservation measures. EBMUD requests that the lead agency includes in its conditions of approval a requirement that the project sponsor comply with Assembly Bill 325, "Model Water Efficient Landscape Ordinance," (Division 2, Title 23, California Code of Regulations, Chapter 2.7, Sections 490 through 495). 9
The project sponsor should be aware that Section 31 of EBMUD's Water Service Regulations requires that water service shall not be furnished for new or expanded service unless all the applicable water-efficiency measures described in the regulation are installed at the project sponsor's expense.

If you have any questions concerning this response, please contact Timothy R. McGowan, Senior Civil Engineer, Major Facilities Planning Section at (510) 287-1981.

Sincerely,

David J. Rehnstrom
Manager of Water Distribution Planning

Enclosure: Applicant Pipeline Design Criteria

DJR:AT:djr
wdpd24_020 UCSF Benioff Children's Hospital Oakland.doc

EAST BAY MUNICIPAL UTILITY DISTRICT

Applicant Pipeline Design Criteria

EBMUD values applicant pipeline projects and is committed to providing a thorough and efficient design. To ensure an efficient design process and to avoid significant delays the design criteria below should be adhered to when submitting improvement plans.

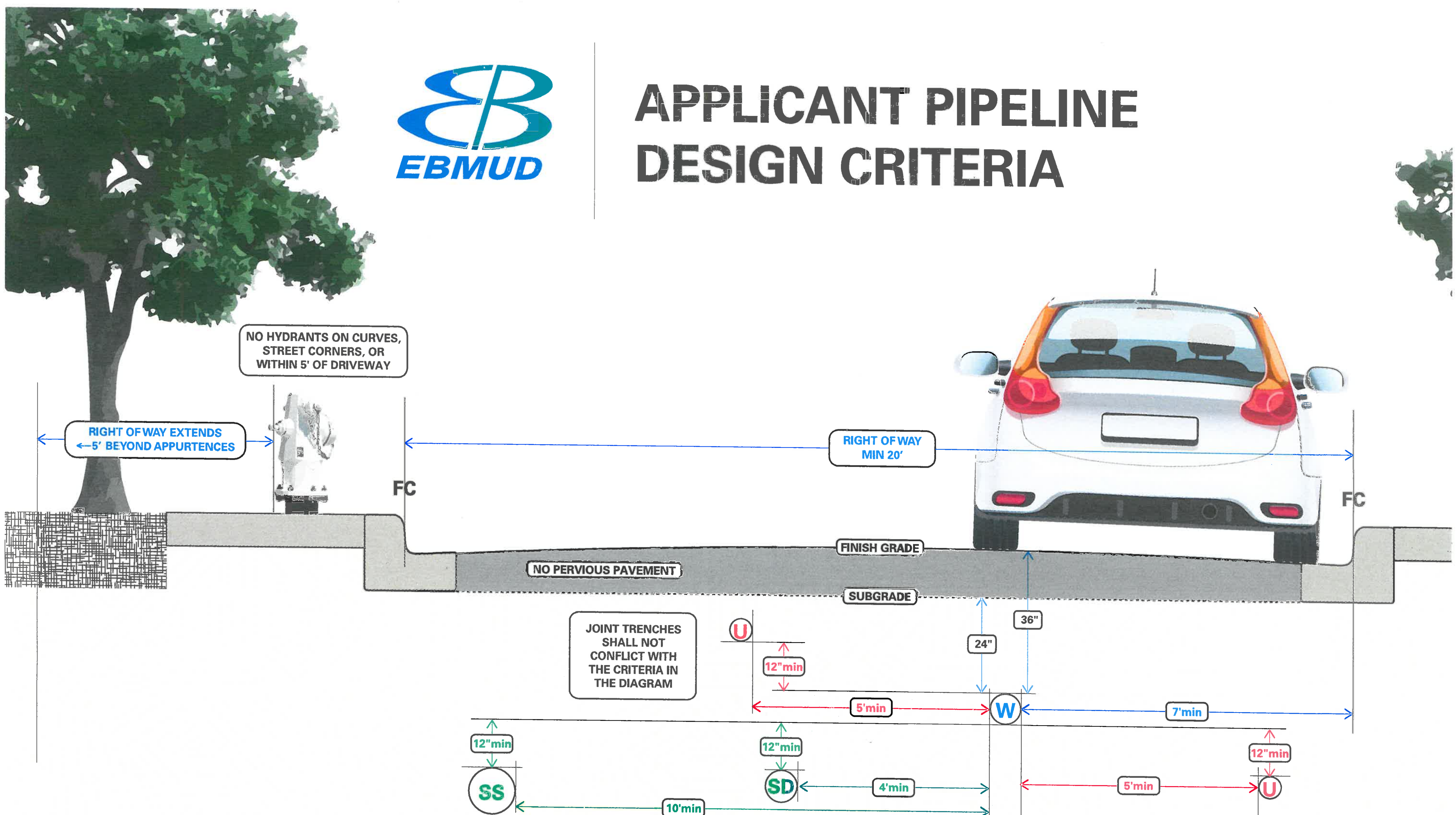
Design Criteria

- Water mains shall be seven (7) feet from face of curb.
- Water mains shall maintain a minimum one (1) foot vertical and five (5) foot horizontal clearance from other utilities.
- Gas mains shall meet the one (1) foot vertical separation requirement by installing the gas main below the water main only.
- Water mains shall maintain a minimum ten (10) foot horizontal clearance (O.D. to O.D.) and be located a minimum one (1) foot above any sewer main. Title 22 CCR
- Water mains shall maintain a minimum four (4) feet horizontal clearance (O.D. to O.D.) and be located a minimum one (1) foot above any storm drain. Title 22 CCR
- Water mains shall have a 36-inch cover to final grade and 24-inch cover to pavement subgrade.
- Joint trenches that are in conflict with the criteria above may delay the project. Submit to EBMUD final joint trench plans (no intent plans) which include the size of the joint trench and the utilities located inside.
- Water mains shall not be installed under pervious pavement.
- Water mains installed under decorative pavement, pavers, or stamped concrete will require an additional paving agreement.
- Hydrants shall not be located on curved sections of street, street corners, or within five feet of a driveway.
- Right of ways for 6-inch and 8-inch water mains shall be a minimum of 20 feet wide and extend five (5) feet past the water main centerline.
- Right of ways for 12-inch to 24-inch water mains shall be a minimum of 20 feet wide and extend eight (8) feet past the water main centerline.

Please contact the New Business Office representative assigned to your project if there are any questions regarding the requirements listed above. Meeting this criteria will enable the most efficient design possible.

March 2021

APPLICANT PIPELINE DESIGN CRITERIA



W = WATER
24" cover to subgrade
36" cover to final grade
7' inset from face of curb

U = UTILITY
min 12" vertical clearance
min 5' horizontal clearance

SS = SANITARY SEWER
min 12" below water
min 10' horizontal clearance

SD = STORM DRAIN
min 12" below water
min 4' horizontal clearance

FC= FACE OF CURB

4203 • 5/21

Responses to Comments from East Bay Municipal Utility District

A-EBMUD-1 The commenter indicates EBMUD's Claremont Pressure Zone will serve the Project. The commenter states that separate structures on a single parcel require separate water services. The commenter adds that when the development plans are finalized, UCSF should contact EBMUD's New Business Office and request a water service estimate to determine costs and conditions for providing water service to the Project. Lastly, the commenter indicates that engineering and installation of water services require substantial lead time, which should be provided for in the UCSF's development schedule.

UCSF BCH Oakland acknowledges EBMUD's conditions for water service as stated in the comment, and would adhere to applicable conditions of such service, including the request for a water service estimate to further determine the costs and conditions of providing water service for the proposed Project.

A-EBMUD-2 The commenter indicates it owns and operates distribution lines in 52nd Street, 53rd Street, Dover Street and Martin Luther King Jr. Way, and that any construction in these streets would need to be coordinated with EMBUD so that the integrity of these water lines is maintained at all times. The commenter further notes that all costs associated with the abandonment and relocation of pipelines, relocation of water services, relocation of hydrants, pipeline extensions and off-site improvements would be at UCSF's expense. Lastly, the commenter indicates the engineering, installation and abandonment of water mains often require substantial lead time, which should be accounted for in UCSF's development schedule.

UCSF BCH Oakland acknowledges that any work conducted in adjacent streets would need to be coordinated with EMBUD; and that UCSF BCH Oakland would be responsible for costs associated with the abandonment and relocation of pipelines, relocation of water services, relocation of hydrants, pipeline extensions and off-site improvements.

A-EBMUD-3 The commenter states that an EBMUD Standard Site Assessment Report indicates the potential for contaminated soils or groundwater to be present at the Project site. The commenter states that EBMUD will not install piping or services in contaminated soils or groundwater that must be handled as hazardous waste or that may be hazardous to the health and safety construction personnel; or where groundwater contaminant concentrations exceed specified limits for discharge to the sanitary sewer system and sewage treatment plants. In addition, the commenter adds that UCSF BCH Oakland must submit copies of all known information regarding soil or groundwater within or adjacent to the Project boundary, and a legally sufficient, complete and specific written remediation plan establishing the methodology, planning and design of all necessary systems for the removal, treatment and disposal of contaminated soil and groundwater.

The commenter also indicates that EBMUD will not design piping or services until soil and groundwater quality data and remediation plans have been received and reviewed, and will not start underground work until remediation has been carried out and documentation of the effectiveness of the remediation has been received and reviewed. The commenter adds that if no soil or groundwater data exists or the data is insufficient, UCSF BCH Oakland or EBMUD may conduct sampling and analysis to characterize the soil and groundwater that may be encountered during excavation. Lastly, the commenter states that if evidence of contamination becomes available during EBMUD work on the Project site, work may be suspended until such contamination is characterized and remediated to EBMUD standards.

Note that UCSF BCH Oakland will be responsible for the design and construction of all utilities, including water mains and distribution lines on the Project site. The Project's construction contractor will conduct all needed on-site water distribution system removal, relocation, and installation. The proposed NHB Project will comply with EBMUD design standards and requirements, as applicable. It is expected that for on-site water distribution improvements, UCSF BCH Oakland will submit design drawings to the EBMUD New Business Office and the Oakland Fire Department (as appropriate); and once the water distribution system improvements are constructed, they would be inspected and approved by EBMUD inspectors. UCSF does not expect to submit any soil or groundwater contamination data and/or remediation plan to EBMUD because all on-site work will be the responsibility of and conducted by UCSF.

With regard to on-site contamination, Draft EIR Section 4.7, *Hazardous Materials*, assessed the potential for contaminated soils or groundwater to be present at or in the vicinity of the Project site. Although there is no recorded history of subsurface contaminants on the Project site, there were two cases of subsurface contamination elsewhere on the campus site.[1] The Draft EIR reported that contaminated soil and groundwater could be encountered during Project construction associated with these releases, or with previously-unidentified contamination. To mitigate the impact from potential exposure to contamination, Impact HAZ-4 in the Draft EIR identified that the proposed Project would be required to implement Mitigation Measure HAZ-4a, Soil and Groundwater Management Plan (SGMP) to follow protocols for identifying, handling, and characterizing suspect contaminated soils and/or groundwater. The SGMP would be prepared by a qualified environmental consulting firm to reflect current

1 As reported in the Draft EIR, in the first case, petroleum hydrocarbons were detected in soil samples and tetrachloroethene (PCE) and trichloroethene (TCE) were detected in groundwater within the campus site north of 52nd Street (north of the Project site). The Alameda County Department of Environmental Health (ACDEH) concluded that UCSF BCH Oakland is not the source or the responsible party for the contamination detected in the groundwater. The second case involved a release of gasoline within the campus site west of MLK Jr. Way (west of the Project site) during the removal of USTs. The Regional Water Quality Control Board (RWQCB) determined that any residual contaminants from this release do not pose a risk to people or the environment, and has since closed the case with no further action required.

regulatory requirements and risk management protocols that are in accordance with ACDEH oversight. Notification and sampling requirements for adequate characterization would be conducted in accordance with ACDEH requirements and any required removal or remediation work shall be completed to the overseeing agency's standards prior to occupancy of the new buildings.

Implementation of Mitigation Measure HAZ-4a would ensure that exposure to soil or groundwater contamination during Project construction would not create a significant hazard to the public or the environment, and therefore, the impact would be less than significant. Furthermore, as discussed in Impact HYD-1 in Section 4.8, *Hydrology and Water Quality*, Mitigation Measure HAZ-4a would also reduce potential water quality impacts associated with the discharge of contaminated groundwater extracted during site dewatering to a less than significant level.

A-EBMUD-4 The commenter indicates that EBMUD's Main Wastewater Treatment Plant (MWWTP) and interceptor system have adequate dry weather capacity to treat Project flows provided that the wastewater generated by the Project meets the requirements of the EBMUD Wastewater Control Ordinance.

This comment is noted. Draft EIR Section 4.12, *Utilities and Services*, page 4.12-3 documents that existing dry weather flows at the MWWTP are well under the Plant's treatment capacity. UCSF BCH Oakland would continue to comply with the applicable regulations of the EMBUD Wastewater Control Ordinance.

The commenter also indicates that the East Bay regional wastewater collection system experiences exceptionally high peak flows during storms due to excessive infiltration and inflow (I/I) that enters the system through cracks and misconnections in both public and private sewer lines.

This comment is noted. Draft EIR Section 4.12, page 4.12-3 discusses that wet weather flows can exceed primary and secondary treatment capacity of the MWWTP during wet weather events. Note that new sewer lines and storm water lines will be installed on the Project site as part of the proposed NHB Project. Also there would be no cross connections between storm water and sewer lines on the Project site. These new sewer lines will ensure that I/I does not enter the new sewer lines on the Project site. By completely avoiding I/I into the sewer system and by collecting and discharging storm water into the storm drain system only, the Project would avoid a storm water-related increase in wet weather flows received at the MWWTP. Also see response to Comment A-EBMUD-8 below with respect to the Project's compliance with the Regional Private Sewer Lateral Ordinance.

A-EBMUD-5 The commenter indicates that EBMUD has historically operated three Wet Weather Facilities (WWFs) to provide primary treatment and disinfection for peak wet weather flows that exceed the treatment capacity of the MWWTP. The commenter notes that due to a reinterpretation of applicable law, EBMUD National Pollutant Discharge Elimination System (NPDES) permit now prohibits discharges from EBMUD's WWFs, and NPDES permits from the seven wastewater collection system agencies (Satellite Agencies) that discharge to the EMBUD wastewater interceptor system prohibit those agencies from causing or contributing to the WWF discharges.

As stated in the response to the comment above, new water lines and storm water lines will be installed on the Project site as part of the proposed NHB Project. These new pipelines will ensure that I/I does not enter the sewer system on the campus site. With the new pipelines, no storm water from the Project site would be discharged into the sewer system and the Project will not cause an increase in wet weather flows received at the WWFs. Also see response to Comment A-EBMUD-8 below with respect to the Project's compliance with the Regional Private Sewer Lateral Ordinance.

A-EBMUD-6 The commenter discusses a federal consent decree that requires EBMUD and the Satellite Agencies to eliminate WWF discharges by 2036. The commenter then discusses that EBMUD is required to continue implementation of its Regional Private Sewer Lateral Ordinance, construct various improvements to its interceptor system, and identify key areas of inflow and rapid infiltration over a 22-year period.

These comments are noted. See response to Comment A-EBMUD-8 below with respect to Project's compliance with the Regional Private Sewer Lateral Ordinance.

A-EBMUD-7 The commenter indicates that to ensure the proposed Project contributes to legally required I/I reductions, it should be required to comply with EBMUD's Regional Private Sewer Lateral Ordinance.

The comment is noted. Draft EIR, Section 4.12, page 4.12-10, discusses the EBMUD Regional Private Sewer Lateral Ordinance. The proposed Project would comply with EBMUD's Regional Private Sewer Lateral Ordinance, as applicable.

A-EBMUD-8 The commenter indicates it would be prudent to require the following measures for the proposed Project: (1) replace or rehabilitate any existing sanitary sewer collection systems, including sewer lateral lines to ensure that such systems and lines are free from defects or, alternatively, disconnected from the sanitary sewer system; and (2) ensure any new wastewater collection systems, including sewer lateral lines, for the project are constructed to prevent I/I to the maximum extent feasible while meeting all requirements contained in the Regional Private Sewer Lateral Ordinance and applicable municipal codes or Satellite Agency ordinances.

As discussed in Draft EIR Chapter 3, *Project Description*, as part of the Project, substantial improvements to the on-site sanitary sewer collection system are proposed on the Project site. This would include a proposed new (upsized, 12-

inch) sanitary sewer line to serve the proposed new hospital building and site support structure; and a new 6-inch sanitary sewer line to serve the proposed parking garage. These new sewer lines would connect to existing sanitary sewer facilities in 52nd Street and MLK Jr. Way, respectively. These wastewater collection improvements would serve to eliminate the I/I that may be associated with existing sewer lateral infrastructure on the Project site.

A-EBMUD-9 The commenter indicates the Project presents an opportunity to incorporate water conservation measures. The commenter requests UCSF include a requirement that the Project comply with Assembly Bill 325, "Model Water Efficient Landscape Ordinance." The commenter adds that Section 31 of the EBMUD's Water Service Regulations requires that water service shall not be furnished for new or expanded service unless all the applicable water-efficiency measures described in the regulation are installed at the project sponsor's expense.

The comment is acknowledged. The proposed Project would comply with the State Model Water Efficient Landscape Ordinance, EBMUD's water use efficiency regulations, and the UC *Policy on Sustainable Practices*, as well as meet CALGreen requirements, which would promote water use efficiency and reduce water demand. As an example, the proposed landscaping plan includes plant species that would be drought-tolerant and low-water use to reduce irrigation demand. Landscaped areas are proposed to drain or serve as stormwater filtration or storage, or include swales and/or drainage catch basins to drain excess runoff. Plantings would be selected to minimize the amount of irrigation water that is used on-site. UCSF BCH Oakland proposes to also reduce water use through the use of efficient plumbing fixtures and medical equipment.

8.5.2.2 Draft EIR Comment Letters – Organizations

OAKLAND HERITAGE ALLIANCE

March 1, 2024

By electronic transmission
Diane Wong, Environmental Coordinator
UCSF Real Estate - Campus Planning
654 Minnesota Street
San Francisco, CA 94143-0287 BCHOaklandNHB@ucsf.edu

Subject: UCSF Benioff Children's Hospital, New Hospital Building Project Draft EIR – State Clearinghouse Number 2023050540

Dear Coordinator Wong and Children's Hospital team:

Thank you for the opportunity to comment on this project, which is overseen by the Regents of the University of California. Although under state purview, the hospital is of course a key location and provides important services in the city of Oakland and surrounding areas.

We understand the need for seismically-compliant new construction. However, we very much regret the loss of local historic resources, particularly the A/B wing of 1928, and urge that the new construction be designed with a stronger relationship to the architectural and social history of the site and with more significant mitigations than are outlined in the DEIR. The mitigations are inadequate in relation to the loss of cultural resources. 1

Alternatives 2 and 3 each preserve the A/B wing, but are rejected for a variety of reasons, including operational deficiencies. There must be further discussion of the reasons for rejecting Alternatives 2 and 3, especially Alternative 3. A site plan and elevations of Alternative 3 should be provided. An additional alternative that may satisfy at least some of Alternative 3's concerns would be to construct a portion of building A above the ground floor driveway connecting to MLK Way, thereby connecting the upper floors of building A to the parking garage. This may allow shifting the building A site south to allow retention of the A/B wings. The EIR should discuss such an alternative. 2

QUESTIONS

1. Were comments and recommendations invited for appropriate mitigations or design solutions from the State Historic Preservation Office? 3

2. Who will review the design, and how is the public to be involved in design review? Who approves/disapproves/comments on design, beyond the state architect? This project is in a populated neighborhood, not on an isolated site. Please include the community. 4

446 17th Street, Suite 301, Oakland, California 94612 • (510) 763-9218 • info@oaklandheritage.org
Web Site: www.oaklandheritage.org

COMMENTS

We understand the requirements for seismic construction and modernization; nonetheless the mitigations for the loss of the A/B Wing as described in section 4.3 are too weak.

We urge a historically-informed design approach compatible with the history of the site, beyond just using bricks in the walkways and preserving the single sculpted glazed terra-cotta "bambino" relief plaque on the exterior. 5

Mitigation Measure CUL–1a Documentation

Page 4.3-17

1. Provide Oakland Heritage Alliance and neighborhood groups with opportunities to present a public tour of the Baby Hospital buildings (at least from the exterior) before any demolition occurs. 6

2. At "Copies of the records shall be submitted to the Northwest Information Center at Sonoma State University and the Oakland History Center at the Oakland Public Library."
In addition, please also deposit copies (including photographs) with Temescal branch and the projected Hoover-Foster branch of Oakland Public Library, and UC Bancroft Library. 7

Page 4.3-18
3. At "Following any demolition activities within the project site, UCSF shall provide within publicly accessible areas of the project site a permanent display(s) of interpretive materials concerning the history and architectural features of the individual historical resources." add: **visible to general public and passers-by from outside, not only patients, visitors, and staff.** 8

4. To preserve the history of the site and the hospital, subsidize or contribute to a historic book or publication on the history of the hospital. Examples:

https://www.cbsnews.com/chicago/news/doctor-publishes-book-detailing-history-of-childrens-memorial-hospital/
https://health.ucdavis.edu/aboutus/150th-anniversary/articles/history-of-the-hospital.html
https://www.arcadiapublishing.com/products/9781467131995
https://www.amazon.com/Pacific-Gateway-illustrated-History-Oakland/dp/0967861705 (also available in Oakland Public Library, and was an environmental mitigation) 9

Mitigation Measure CUL–1b: Interpretation and Salvage

In addition to saving the glazed terra cotta bambino relief, tree cuttings, and bricks:

1. Incorporate one or both of the two-story windowed bays, distinctive architectural elements that could be a wonderful addition to the proposed massive new structure of the hospital. 10

2. Reuse all or a significant part of the glazed terra cotta frieze band around the "bambino" plaque in the new building. 11

3. Use brick-like cladding (not merely ceramic rain screen, which does not reflect historic materials) as a reference to the original structures. 12

Impact CUL-1: Implementation of the NHB Project would result in a substantial adverse change in the significance of known historical resources and Cumulative Impacts:
The gradual rebuilding of the hospital campus is resulting in removal of many trees, increased building envelopes, greater traffic impacts and noise. With increases in parking demand and general usage in the area, we urge greater consideration of impacts on the neighborhood, and stronger efforts to mitigate the impacts of this important institution: 13

1. Contribute to and work with BART to significantly improve landscaping and maintenance of the area under the tracks along the length of the hospital properties. This would improve the appearance of the facility, help restore the neighborhood, and be a benefit to staff and visitors. 14

2. Make the site look attractive from the freeway. Perhaps some of those scion magnolias or other trees could green the site. The freeway is a major point from which people see the hospital. 15

3. Improve the appearance of the hospital parking lot across Martin Luther King, Jr. Way. 16

4. Specify trees that will grow to large size and help with visual screening, traffic noise reduction, wind reduction, and air quality, not just small "lollipop" types. 17

Please contact info@oaklandheritage.org or Naomi Schiff at (510) 910-3764 or Naomi@17th.com if you would like to discuss these comments.

Sincerely,

Daniel Levy
President

Elizabeth Epstein, UCSF Benioff Children's Hospital Team

Attachments

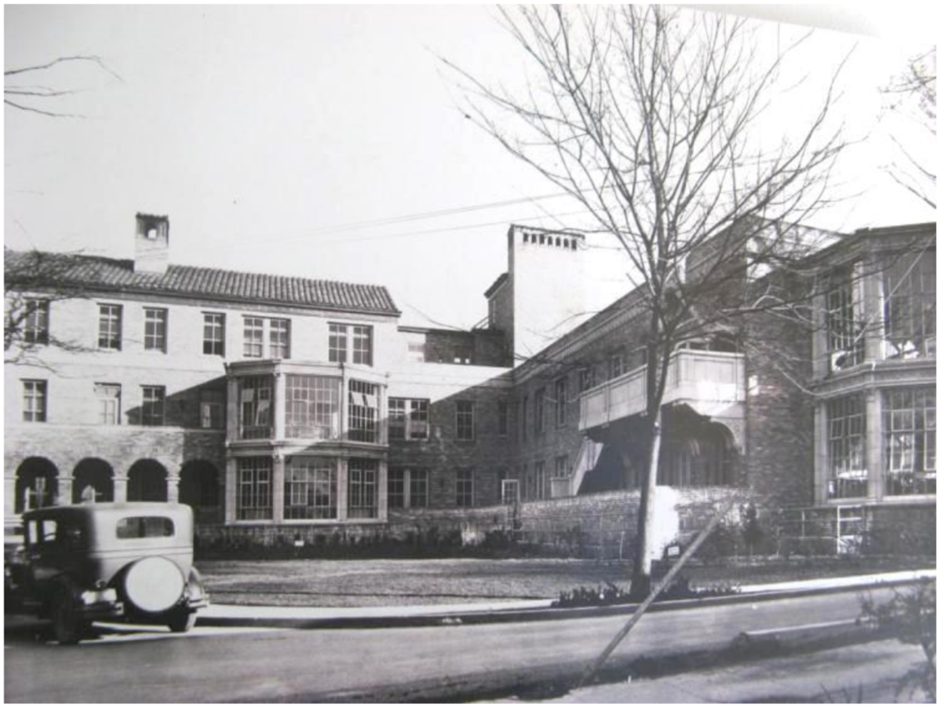
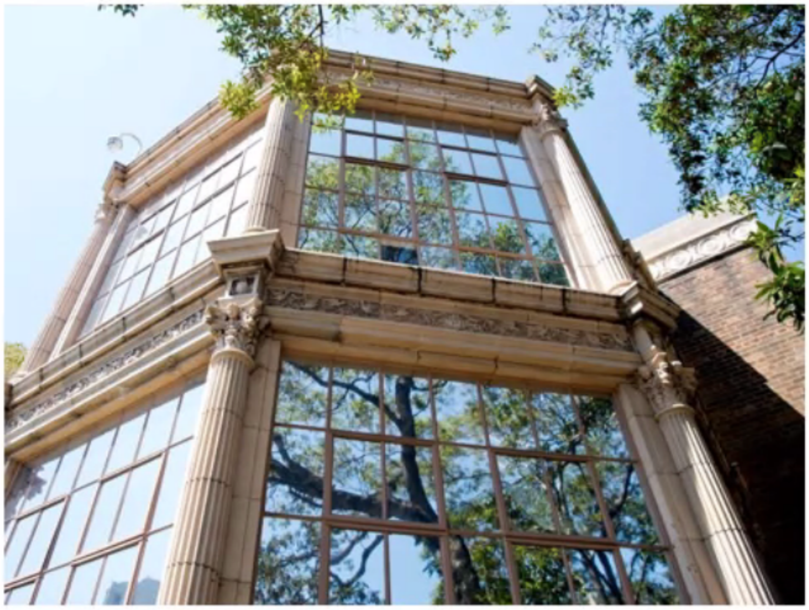


Figure 8. The Baby Hospital shortly after its construction in 1926.
Source: Oakland Children's Hospital Archives.



Responses to Comments from Oakland Heritage Alliance

O-OHA-1 The commenter states that while they understand the need for seismically compliant new construction, the mitigations in the Draft EIR are not adequate to address the loss of the A/B Wing.

The Draft EIR presents a range of mitigation measures to record, inform, and preserve the history and character-defining features of the A/B Wing. They include documentation of the site prior to its demolition, salvage of materials for use in interpretive materials and possibly for reuse on the Project site. In other comments (O-OHA-6 through O-OHA-17), the commenter provides additional efforts that could be undertaken to mitigate the impact. In response, certain modifications have been made to the mitigation measures in the Draft EIR. However, no mitigation would be sufficient to reduce the impact related to the loss of the A/B Wing to a less-than-significant level, and thus, the impact would remain significant and unavoidable. Constructing a new building in a historically-informed design may result in a different design than that currently proposed, but it will not reduce the impact any further. Please refer to responses to Comments O-OHA-6 through O-OHA-17 for further discussion of mitigation that will be implemented as part of the Project.

Note that since publication of the Draft EIR, UCSF BCH Oakland has refined certain aspects of the proposed Project, as part of the ongoing planning, development, and design process. This includes the development of a smaller, shorter and redesigned new hospital building, among other site modifications. However, these refinements are limited to the upper floors of the proposed new hospital building. The lower three stories would remain unchanged from the design presented in the Draft EIR and would require the demolition of both the A/B and B/C Wings. Refer to Section 8.3 in this Final EIR for a full description of the Project refinements.

O-OHA-2 The commenter indicates there must be further discussion of the reasons for rejecting Alternatives 2 and 3.

The Draft EIR provides a detailed discussion as to why Alternative 2 (New Hospital Project per the 2015 CHRCO CMP) and Alternative 3 (Modified Hospital Design) were rejected. With respect to Alternative 2, as explained in the Draft EIR, pages 6-15 to 6-16, because space requirements for modern hospitals have increased since approval of the 2015 CHRCO CMP, this alternative would provide a substantially smaller amount of clinical space (approximately 44 percent less than the required amount of space) as a result of which, it would not meet many of the fundamental objectives of the proposed Project, including the need to modernize the hospital to address challenges of undersized and inefficient facilities that affect the long-term viability of the institution, the existing shortage of capacity and access to pediatric care, and the current unmet demand for adolescent mental health care services. Further, it would not adequately support ED patient volumes. This alternative also would not meet the objective of developing a new hospital that is optimized in its spatial layout to enhance functionality in terms of workflow and wayfinding, as well as its efficiency so as to not increase operational costs. This is primarily because under this alternative, the new hospital would not be connected to the Ford D&T Building, one of the two existing inpatient facilities. This alternative would also not have sufficient space to accommodate modern regulatory requirements and industry standards, modern technology, and patient satisfaction requirements of contemporary hospitals. For example, the New Hospital Project per the 2015 CHRCO CMP did not include a new ED or other key program units and services that are proposed under the Project. Due to the accessibility codes in the California Building Code (CBC) and required by Americans with Disabilities Act (ADA), the amount of space needed today is approximately 50 percent more than was needed at the time the existing ED was designed for the same number of treatment rooms.

With respect to Alternative 3, as explained in the Draft EIR, pages 6-21 to 6-22, this alternative would not meet the fundamental objective of addressing the current unmet need for code compliant inpatient adolescent mental health care and services. It would also not meet the objective of developing a new hospital that is optimized in its spatial layout to enhance functionality in terms of workflow and wayfinding, and efficiency so as to not increase operational costs, because the new hospital under this alternative would not be directly connected to the Ford D&T Building, one of the two existing inpatient facilities.

The Draft EIR also explains that Alternative 3 would also not meet several of the development objectives of the proposed Project due to the smaller hospital building floorplate which would result in space inefficiencies. Specifically, as a result of the smaller footprint of this alternative, two important departments (Emergency Department [ED] and the Operating Suite) would be required to be split across two floors, which would require duplicate support spaces to be built out and staffed on multiple floors, driving up both the cost of construction as well as ongoing costs to operate. In addition, splitting these departments would make them less efficient operationally, provide less optimal patient care, and would not be consistent with hospital best practices. In addition, since the first floor footprint requires separate circulation for staff and services from the public, the first floor floorplate under Alternative 3 would be insufficient in size. To provide the duplicate support spaces on two floors for ED and Operating Suite without increasing building size and construction costs, space planned for other programs would need to be reduced under this alternative.

In addition, other departments that would be impacted by the narrowing of the footprint of the new building would be the Neonatal Intensive Care Unit (NICU) (currently planned for Level 4) and Behavior Health (currently planned for Level 5). The proposed NICU floor would need to be reduced to accommodate the narrower floorplate which would result in the need to shift to more shared rooms rather than private rooms. Provision of private rooms for the NICU department is a key project goal and best practice to improve patient outcomes and better support families and staff. Behavioral Health would also be compromised with the narrower footprint, which likely would not enable this floor to include the code required outdoor space as part of its program.

Other impacts of this narrowed footprint would be that the new hospital would likely only be able to connect to the existing Patient Tower at Level 1 rather than Levels 1 through 3 as planned under the proposed Project, and would not be directly connected to the Ford D&T Building. This would result in less efficient travel through the facility as a whole for both people and materials and create wayfinding challenges. In fact, hospital operations would become infeasible with the loss of connections on Levels 2 and 3. Therefore, the alternative would not meet the objectives of siting and developing a new inpatient facility in a way that optimizes operational activities with other clinical facilities on the site; developing a new inpatient facility that is optimized in its spatial layout to enhance functionality and efficiency; and developing spaces for clinical and translational research and learning in or adjacent to clinical areas where patients are located.

The commenter requests a site plan and elevations of Alternative 3. As demonstrated above, sufficient evidence is provided in the Draft EIR narrative to establish that this alternative is not feasible. A site plan and elevations would not provide any information that would contradict the conclusion that Alternative 3 is not feasible because it would not meet many of the fundamental objectives of the proposed NHB Project. In addition, the alternatives analysis in an EIR does not require the preparation of design plans or architectural drawings of alternatives, and it is appropriate to rely on estimates of square footage.

The commenter indicates an additional alternative that may satisfy at least some of Alternative 3's concerns would be to construct a portion of the new hospital building above the ground floor driveway connecting to MLK Jr. Way, thereby connecting the upper floors of the hospital building to the parking garage. This may allow shifting the new hospital building site south to allow retention of the A/B Wing. The EIR should discuss such an alternative. CEQA requires that the EIR study a reasonable range of alternatives [CEQA Guidelines Section 15126.6(a)]. The nature and scope of the alternatives to be studied in an EIR is governed by the rule of reason and under the rule of reason, an EIR need discuss only those alternatives necessary to permit a reasoned choice [CEQA Guidelines Section 15126.6(f)]. If the EIR studies a reasonable range of alternatives, the agency is not required to analyze additional alternatives suggested by commenters.

This suggestion by the commenter would elongate the new hospital and create further inefficiencies by increasing the distance physicians, nurses, and other clinical and nonclinical staff must travel within the new hospital. The increased distance creates a burden and fatigue for those staff who tend to be on their feet for a large portion of the day. In addition, the commenter's suggestion does not resolve the issue that the A/B Wing remains uninhabitable for clinical and non-clinical uses due to the non-code compliance and obsolescence of the building. As discussed in the Alternatives section, it is not feasible to bring the building into compliance with code and current standards while maintaining the historical character-defining features of the building.

Also note, as discussed in response to Comment O-OHA-1, above, UCSF BCH Oakland has refined certain aspects of the proposed Project. Refer to Section 8.3 in this Final EIR document for a full description of the Project refinements.

O-OHA-3 The commenter asks if "comments and recommendations [were] invited for appropriate mitigations or design solutions from the State Historic Preservation Office" (SHPO).

Generally, the SHPO does not comment on the project, mitigations or design solutions associated with sites that are not eligible for listing on the California or National Historic Registry. Because the Project does not contain any historical resources listed in, or eligible for listing in either the California Register of Historical Resources (California Register) or the National Register, consultation with the SHPO on any aspect of the Project is not required and was not conducted.

O-OHA-4 This comment requests clarification on both who will review the design of replacement structures and what the process for public review and comment might be regarding design. Specifically, the comment seeks clarification on opportunities for the public and neighborhood community to provide input on the design of the project.

The proposed NHB Project has been overseen by the UCSF Campus Architect. Design reviews by hospital administrators, patient and family advisory groups, and other stakeholders resulted in feedback on the patient and family experience, and on ensuring a durable and easily maintained hospital design. Additionally, a separate peer review, conducted by independent architects, was completed to solicit feedback from professionals unaffiliated with UCSF. Feedback from outside professionals on exterior architecture and landscape design will continue prior to UC Regents approval, to be sought in July 2024. Within the City of Oakland, the NHB Project was shared with both the Oakland Planning Commission and the Landmarks Preservation Advisory Board to solicit comments on the Project's design. Finally, a Historic Design Advisory Group was convened to provide ideas on how to recognize the history of the campus site in the design going forward.

As part of the Project development process, opportunities for public input were provided at community meetings in March, April, May, September, October, and December 2023. Please also note, as described in Section 8.3, *NHB Project*

Refinements, in this Final EIR, since publication of the Draft EIR UCSF BCH Oakland has refined certain aspects of the NHB Project, including the development of a smaller, shorter and redesigned new hospital building; a reshaped, slightly taller parking garage; a change from a site support building to a slightly smaller site support structure. Please also see Section 8.6, *Revisions to the Draft EIR*, in this Final EIR for graphics prepared for the NHB Project refinements. Section 8.6, Figure 3-4 shows the conceptual massing of the proposed buildings under the NHB Project; and Figures 3-6 thought 3-9 show the elevations of the proposed Project and includes descriptions of the building materials and their placement. Additional opportunities for public review were provided as part of the public comments portion of the Oakland Planning Commission and Landmarks Advisory Preservation Board presentations.

The Project is not subject to review by the State Architect. It is subject to approval by the University of California Board of Regents, which is the ultimate authority for design approval.

After certification of the Final EIR and approval of the NHB Project, UCSF BCH Oakland is committed to conducting additional community meetings to solicit input from the neighbors and interested parties about the project.

O-OHA-5 The commenter states that while they understand the need for seismic construction and modernization, the mitigations in the EIR are not adequate to address the loss of the A/B Wing. Additionally, the commenter urges consideration of a historically-informed design approach that is compatible with the history of the site and goes further than reuse of select architectural features.

See response to Comment O-OHA-1, above.

O-OHA-6 In review of Mitigation Measure CUL-1a, Documentation, the commenter requests a public tour of the exterior of the Baby Hospital Buildings (A/B and B/C Wings).

While a public tour of the Project site before demolition is not considered a mitigation measure, UCSF BCH Oakland will offer a public tour of the site with the Oakland Heritage Alliance and the neighborhood community prior to commencement of construction on the Project site.

O-OHA-7 In review of Mitigation Measure CUL-1a, Documentation, the commenter suggests the final documentation package produced under this mitigation measure also be offered to the Temescal branch of the Oakland Public Library (5204 Telegraph Avenue), the proposed future Hoover-Foster branch of the Oakland Public Library (also referred to as the Hoover Branch Library in current planning studies) and the University of California Bancroft Library (located on the University of California, Berkeley campus).

The changes made to the text of the mitigation measure in response to this comment are included in Section 8.6, *Revisions to the Draft EIR*, of this Final EIR document.

O-OHA-8 The commenter requests addition of the phrase "visible to general public and passers-by from outside, not only patients, visitors, and staff," to Mitigation Measure CUL-1b, Interpretation and Salvage, with the idea that the interpretive materials be placed at a location(s) where they would be visible to the public from off-site locations.

The final location of the interpretive materials is dependent on the final design of the NHB Project. As such, an exact location(s) is yet to be determined. Given the physical constraints of the Project site and its location between the existing hospital facilities and SR-24, it will be difficult to site the interpretive materials where they would be visible from off-site locations. UCSF BCH Oakland will, nonetheless, strive to locate them where they are easily visible and accessible to the public. Refer to Section 8.6, *Revisions to the Draft EIR*, for revisions made to Mitigation Measure CUL-1b, Interpretation and Salvage.

O-OHA-9 The comment suggests additional documentation in the form of a book or other publication to augment the documentation and interpretive materials already included as mitigation for Project impacts. Additionally, the comment provides examples of such publications.

UCSF maintains a publicly accessible website that contains historical information on its campuses and facilities (history.library.ucsf.edu/). This website currently contains important dates and information about the affiliation between UCSF and the Benioff Children's Hospital Oakland. This information will be augmented to include a more thorough presentation of the history of the Project site, based on the documentation produced under Mitigation Measure CUL-1a, Documentation.

O-OHA-10 The commenter requests the incorporation of one or both of the two-story window bays on the A/B Wing into the proposed NHB Project.

UCSF has considered possible reuse options for the windows and window bays to incorporate them into the new design. However, to meet current code requirements within a hospital setting, significant modifications to the windows, window bays, and/or window framing would be necessary.

Structurally, the slim profile of the muntins and frames are unlikely to perform adequately during a seismic event. In typical new construction, curtainwalls are designed to rack or move in a seismic event. As such, modern curtainwalls are more likely to survive with minimal damage to the exterior window system. To meet these standards, the existing window system would need to be strengthened and attached to the building structure to allow for movement. It is unclear if the true divided light windows would be able to survive a seismic event. Instead, it is highly possible that they would create additional hazards. To strengthen the windows would require installation of new tube steel secondary framing on the interior side of the window. This may include strengthening of the muntins with supplementary steel, such as small T-shaped sections, as well. Overall, the addition of a secondary window system and/or structural steel to reinforce the existing windows would significantly diminish the historical integrity of the windows.

Additionally, if the window system were to be reused as new exterior windows, the existing single-pane glazing would have to be replaced to meet current codes. Alternatively, a secondary window system would have to be installed to meet current codes. The secondary window system would have to be installed at the exterior of the building to serve as the primary window system and weather barrier. The original window system would then serve an aesthetic function, visible only from the interior.

Another consideration is the slim profile of the existing muntins and frame. Because of their small dimensions, they are not suitable for retrofit with new, insulated, multi-pane glazing units. Even if the muntins were large enough to accommodate new insulated glass units (IGU), the existing frame is not thermally broken and therefore would not perform to today's standards. Condensation would occur and the lifespan of the installation would be greatly compromised.

Given the extensive modification that would be necessary to reuse the window bays, the end result would not be a valuable representation of the original window bays.

O-OHA-11 The commenter suggests reusing all, or a significant portion of, the “bambino” terra cotta frieze in the new building.

Under Mitigation Measure CUL-1b, Interpretation and Salvage, UCSF will salvage the “bambino” central feature and terra cotta frieze. This element, in whole or in part, will be incorporated into the interpretive display created under the existing mitigation measure. At this time, it is unknown whether all of the frieze is suitable for salvage or if the interpretive display will accommodate the entirety of the existing frieze. The frieze and bambino medallion are considered character-defining features of the A/B Wing and their interpretation and salvage are included in the existing language of Mitigation Measure CUL-1b. As such, no further modifications to the mitigation measure to address this comment are warranted.

O-OHA-12 The commenter suggests the use of a brick-like cladding to serve as a reference to the original structures on the Project site.

Construction of the new building with actual brick masonry is cost prohibitive. Therefore, a possible use of brick-like unit cladding or other features (e.g., terracotta rainscreen) for the proposed hospital were evaluated and were determined by UCSF BCH Oakland as neither cost effective nor practical. Further, while use of unit cladding may be referential to the historical resource, there would no longer be a physical context to inform the casual observer of the connection between the original brick masonry building and the Project. In addition, there would be no connection between the historic cladding and the modern unit cladding (not brick) that might be chosen. Ultimately, incorporation of these materials would not further reduce the impacts resulting from the loss of the A/B Wing. As such, no further mitigations are warranted. Please note, however, that use of brick in the ground-plane at staff gardens for pathways and other hardscaped areas within the Project site may be considered.

O-OHA-13 The commenter notes that the gradual development and redevelopment of the Project site has altered the number and location of trees and includes larger buildings that were originally located on the site. The commenter states that these changes have increased parking demand and intensified uses in the area and that impacts should be considered.

The purpose of CEQA is to assess impacts to the project site and surrounding areas in a number of specific environmental and technical subject areas. As required by CEQA, the Draft EIR analyzes and discloses environmental impacts of the proposed Project, both individually and cumulatively at the Project site and surrounding neighborhoods, including impacts on trees, traffic, and noise. Impacts related to parking are outside the scope of a CEQA document and are therefore not analyzed in the Draft EIR.

O-OHA-14 The commenter notes that the landscaping beneath the elevated BART tracks, adjacent to but outside of the Project area, could be improved.

The BART tracks and the land beneath the BART tracks are outside the Project site and would not be affected by the proposed Project. Additionally, UCSF BCH Oakland does not have jurisdiction over the land or landscaping associated with the BART right-of-way. As such, UCSF BCH Oakland cannot commit to making any improvements to the landscaping under the BART tracks adjacent to the campus site.

O-OHA-15 The commenter notes that the Project site is visible from the adjacent Highway 24 elevated roadbed and suggests using scion magnolias or other trees to improve the appearance of the Project site as seen from this viewpoint.

Under a project separate from the NHB Project, the embankment adjacent to Highway 24 will be excavated and redeveloped with a new retaining wall and fence. Following these necessary improvements, there would not be sufficient planting space in that area of the campus site to support healthy tree growth. As such, the landscape plan does not include installation of new trees in the areas suggested by the commenter.

However, the landscaping will include at least one magnolia sapling propagated from the existing heritage magnolia tree.

O-OHA-16 The commenter suggests improvements to the appearance of the hospital parking lot (West Lot) across Martin Luther King, Jr. Way (MLK Jr. Way) be included in the NHB Project.

While the West Lot is owned by UCSF BCH Oakland, it is outside the Project site and the proposed Project, and no changes are proposed to the appearance of the West Lot at this time.[1]

O-OHA-17 The commenter recommends that as part of this Project, UCSF BCH Oakland plant tree species that will grow to a large size and help with visual screening, traffic noise reduction, wind reduction, and air quality.

UCSF will plant a broad range of tree species that are appropriate for an urban healthcare setting, including species that would grow to a range of heights from 25 to 75 feet tall.

[1] Furthermore, as discussed in Section 4.0.2 in the Draft EIR, pursuant to the criteria established in Section 21099(d) of the *CEQA Guidelines*, aesthetics impacts of the Project are not considered as significant impacts on the environment.

From:	Robert Prinz
To:	BCH Oakland NHB
Subject:	CHO New Hospital Building (NHB) project - Draft EIR comments
Date:	Monday, February 19, 2024 5:38:57 PM

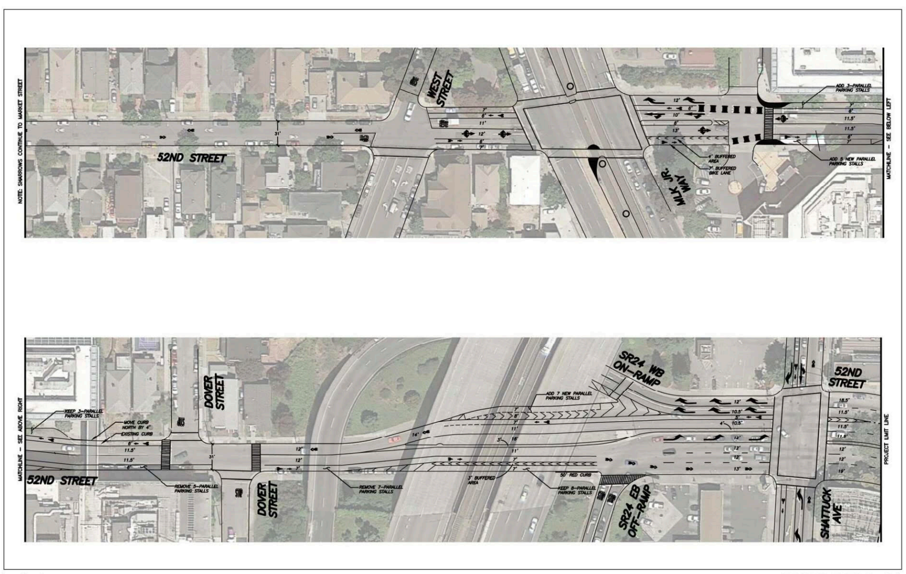
This Message Is From an External Sender
This message came from outside your organization.

Hello Dianne, please accept the following comments on behalf of Bike East Bay to the Children's Hospital Oakland "New Hospital Building Draft Environmental Impact Report" document:

This New Hospital Building (NHB) project draft EIR is following on the previous Children's Hospital Expansion plan from back in 2015. At that time the expansion plan EIR recommended a combination of Class 2 and Class 3 bike facilities on 52nd Street between MLK and Shattuck via the project's Phase 2, as follows:

- Eastbound 52nd St: Class 2 bike lane from West St to the SR 24 off-ramp; Sharrows from the off-ramp to Shattuck
- Westbound 52nd St: Class 2 bike lane from Shattuck through the SR 24 underpass, and from Dover to West St; Sharrows from the end of the SR 24 overpass to Dover

Here is CHO's concept published in the 2015 EIR, and these features are reiterated numerous other times in writing throughout the document:



1

LSA FIGURE IV.D-24

SOURCE: FEHR & PEERS, 2014.

CHRCO Campus Master Plan Project EIR
52nd Street Reconfiguration Conceptual Plan

At the time Bike East Bay was not satisfied by that proposal and advocated instead for a combination of continuous Class 2 painted and Class 4 parking-protected bikeways on 52nd Street (especially through the freeway underpass, concept images on pages 33-40 here) instead 2
of Class 3 sharrows, as well as a bikeway extension on 51st St between Shattuck and Telegraph. While nothing was committed to, the published EIR response to these suggestions

stated that:

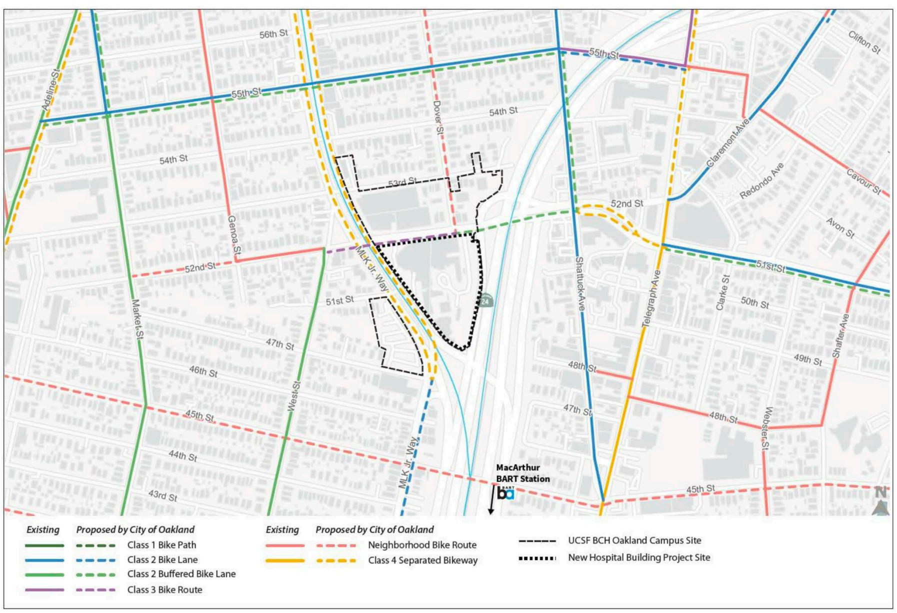
> "The final design for the 52nd Street bikeway will be prepared as part of Phase 2 of the proposed project..."

and... 2 cont.

> "The City of Oakland will consider elements of the Alternative Design as suggested by Bike East Bay..."

Unfortunately in the 9 years since then no bikeway of any type has been implemented on this segment. Also unfortunately Oakland's 2019 bike plan update included an error ignoring the 2015 CHO plan recommendations and erroneously proposing only a Class 3 arterial bike route on 52nd Street between MLK and Dover, and buffered bike lanes between Dover and Shattuck. As a member of the bike plan's Community Advisory Committee I pointed out this error to staff at the time but it was never corrected in the final draft. 3

Flash forward to the current NHB project's draft EIR recommendation, which now only includes a Class 3 arterial bike route recommendation on 52nd St from MLK to Dover, and Class 2 buffered bike lanes from Dover to Shattuck, following the error in Oakland's 2019 bike plan update and basically flipping the 2015 EIR's recommendation. 4



SOURCE: Fehr & Peers, 2023

UCSF BCH Oakland NHB Project EIR

ESA

Figure 4.11-2
Existing and Proposed Bicycle Network

I highly encourage this plan to re-evaluate the recommendation. There is space to fit a continuous Class 2 (or better) bicycle lane in each direction of 52nd St between MLK and Dover in each direction, as indicated in the 2015 plan EIR. On 52nd St from Dover to Shattuck a Class 4 protected bikeway is feasible, and necessary to offset safety impacts from car traffic headed to and from the freeway. 5

Oakland's 2019 bike plan recommendations for 52nd Street are erroneous and insufficient, and should not be relied on to inform the current NHB project's EIR. 6

Via Oakland's upper MLK Jr Way protected bikeway and paving project coordination, planned for implementation starting in 2025, I have consistently noted to city staff that 52nd Street east of MLK, also slated for repaving on the same schedule, is an extremely important connection in need of better near-term bike and pedestrian access and safety. I have asked Oakland DOT staff multiple times whether a 52nd St bikeway could be combined with the MLK project design and outreach efforts, but as far as I know this has not yet happened. 7

With this 52nd Street paving project still on the schedule for 2025 I am very nervous that it will move ahead without significant upgrades and we might end up waiting another decade or more to finally bridge this gap past SR 24. I highly encourage CHO to make this bikeway upgrade a priority, and reach out proactively to Oakland DOT staff to coordinate on facilitating solutions. 8

Thank you, and please let me know if you have any questions,

Logo

Robert Prinz | Advocacy Director
Pronouns: he/him
Mail: PO Box 1736 Oakland, CA 94604
Office: 466 Water Street Oakland, CA 94607
P: (510) 845-7433 x5 | E: Robert@BikeEastBay.org

Responses to Comments from Bike East Bay

O-BEB-1 The comment presents the conceptual bicycle improvements along 52nd Street that were presented in the 2015 *Children's Hospital and Research Center Oakland Campus Master Plan Project Draft EIR* (2015 CMP Draft EIR), which consisted of a combination of Class 2 and Class 3 bicycle facilities on 52nd Street between MLK Jr. Way and Shattuck Avenue.

The 2015 CMP Draft EIR recommended that BCH Oakland coordinate with the City of Oakland (City) to implement the 52nd Street bikeway improvements as part of the Phase 2 of the 2015 CMP (which substantially corresponds to the current NHB Project). This recommendation was provided in the 2015 CMP Draft EIR as a non-CEQA recommendation, and not a mitigation measure. UCSF BCH Oakland has commenced working with the City to implement 52nd Street bikeway improvements.

O-BEB-2 The comment discusses Bike East Bay (BEB)'s response to the 52nd Street bikeway improvements in the 2015 CMP Draft EIR and their proposed alternative concept which consisted of a combination of Class 2 and Class 4 facilities.

The 2015 CMP Final EIR presented the BEB's conceptual plans for 52nd Street, and as stated in the comment, the CMP Final EIR stated that the City would consider BEB's comments in the final design for 52nd Street. As noted above, UCSF has commenced working with the City to implement bikeway improvements on 52nd Street.

O-BEB-3 The comment states that the City of Oakland's 2019 Bicycle Master Plan did not reflect BEB's conceptual plans for 52nd Street that were presented in the 2015 CMP Final EIR.

The 2019 Bicycle Master Plan is a City of Oakland policy document and reflects the City's master plan for bicycle facilities. Consistent with the approved 2019 Bicycle Master Plan, Figure 4.11-2 on page 4.11-7 of the Draft EIR shows the proposed Class 3 arterial bike route on 52nd Street between MLK Jr. Way and Dover Street, and Class 2 buffered bike lanes between Dover Street and Shattuck Avenue. However, as noted in the response to Comment O-BEB-5 below, the City is developing a conceptual plan for 52nd Street between MLK Jr. Way and Shattuck Avenue that would generally consist of a combination Class 2 and Class 4 facilities, which is consistent with BEB's recommendation.

O-BEB-4 The comment states that the Draft NHB Project EIR recommended the City of Oakland's approved 2019 Bicycle Master Plan recommendation for 52nd Street.

The Draft EIR did not recommend any bicycle improvements on 52nd Street; rather, it presented the recommendations in the City of Oakland's approved 2019 Bicycle Master Plan because the 2019 Bicycle Master Plan is the latest approved policy document published by the City and the Draft EIR is required to be consistent with this document. However, the Draft EIR (page 4.11-25) acknowledges that "although no specific modifications are currently identified or designed for 52nd Street, the Project would not make major modifications to the public right-of-way and would not adversely affect installation of future facilities." Thus, the proposed NHB Project would not interfere with or otherwise affect the implementation of BEB's proposed bikeway or other modifications that can be accommodated within the public right-of-way on 52nd Street.

O-BEB-5 The comment encourages UCSF BCH Oakland to implement the conceptual 52nd Street bikeway proposed by BEB.

City of Oakland staff have been developing a conceptual plan for 52nd Street between MLK Jr. Way and Shattuck Avenue that would generally consist of a combination of Class 2 and Class 4 facilities, consistent with BEB's recommendation. **Figure 8.5-1** shows the latest plans for 52nd Street developed by the City of Oakland staff. UCSF BCH Oakland is coordinating with the City to further refine the design and implement the bikeway project.

O-BEB-6 The comment reiterates the previous concerns about the bikeway design on 52nd Street.

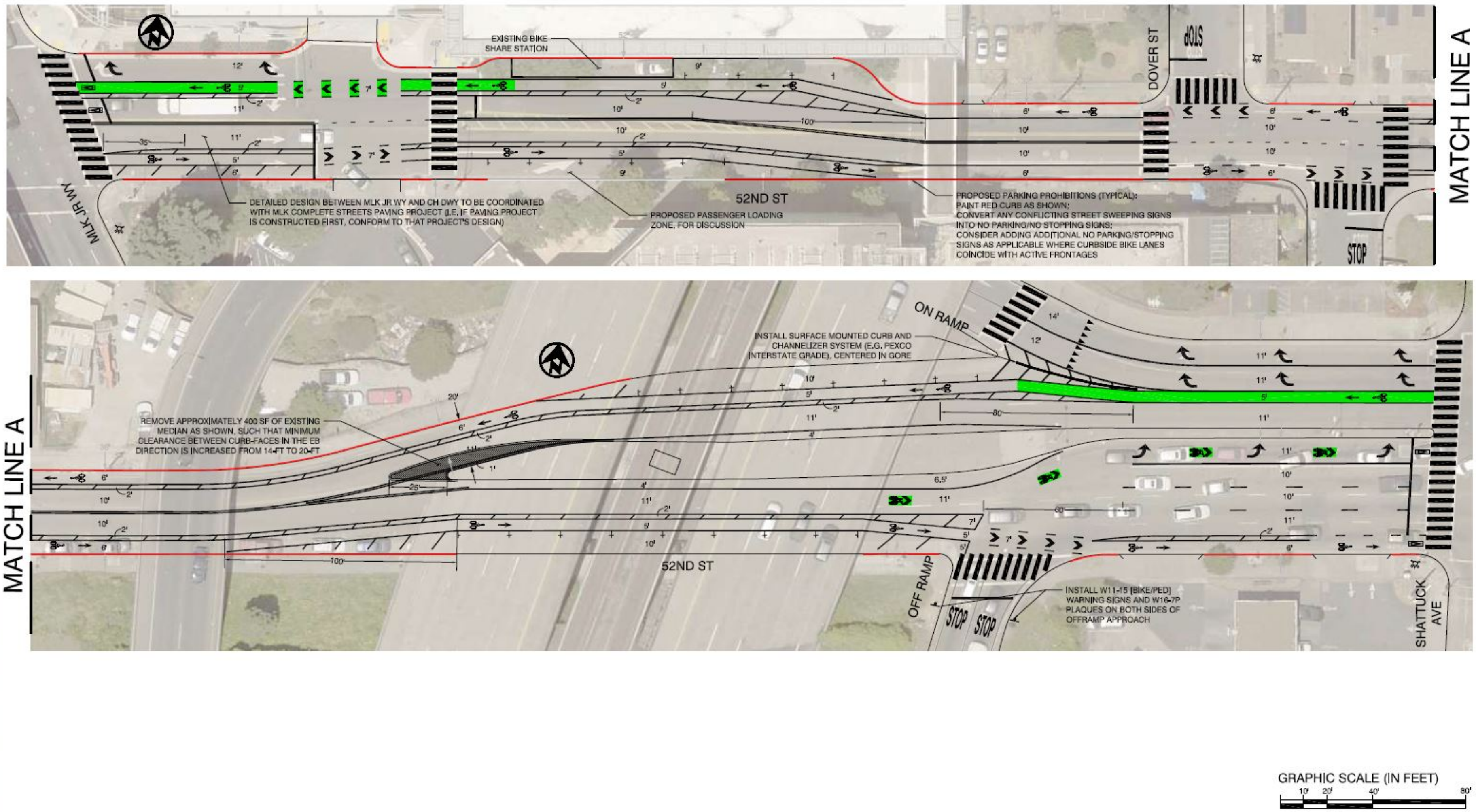
Please refer to responses to Comments O-BEB-1 through O-BEB-5 above.

O-BEB-7 The comment states that 52nd Street is on the same repaving schedule as MLK Jr. Way in 2025 and that it would be ideal for bikeway improvements on 52nd Street to be implemented at the same time as the planned improvements on MLK Jr. Way.

The City will determine the final design and timing for modifications in the public right-of-way, including the potential bikeway improvements on 52nd Street. Although not required as a mitigation measure, UCSF BCH Oakland is coordinating with the City to refine the design for 52nd Street and expects to implement the road and bikeway improvements prior to the completion of the NHB Project expected in 2031.

O-BEB-8 The comment reiterates the previous concerns about the timing of the implementation of bikeway improvements along 52nd Street.

See response to Comment O-BEB-7 above.



SOURCE: City of Oakland, 2024

LBNL LRDP

Figure 8.5-1
City of Oakland Conceptual Plan for 52nd Street Improvements
(MLK Jr. Way to Shattuck Avenue)

ESA

8.5.2.3 Draft EIR Comment Letters – Individuals

From: Phil Levin <levin.philip@gmail.com>
Sent: Thursday, January 25, 2024 3:37 PM
To: BCH Oakland NHB <bchoaklandnhb@ucsf.edu>
Subject: EIR for hospital expansion

This Message Is From an Untrusted Sender

You have not previously corresponded with this sender.

Hi Diane,

We are neighbors at 817 51st st. Great to hear that the hospital is expanding to provide more care. Even though we know the construction will impact us, we are very much in support of this. 1

Just one question: Is there anything in the plans around the vacant building at 815 51st st or the annex parking lot next to it? We are right next door and always curious what might come of it. 2

Phil

Responses to Comments from Phil Levin

I-Levin-1 The commenter expresses support for the proposed Project, despite the construction impacts.

The comment regarding support for the Project is noted and will be forwarded to decision-makers. With respect to Project construction impacts, the Draft EIR discloses all construction impacts and identifies associated mitigation measures that will be implemented.

I-Levin-2 The commenter inquires if there are development plans proposed for the vacant building at 815 51st Street or the adjacent Annex parking lot.

The vacant building at 815 51st Street and adjacent annex parking lot are not part of the proposed Project. At this time, there are no plans for the use of the vacant building at 815 51st Street or the adjacent Annex parking lot (West Lot) as part of the proposed Project, or otherwise.

From: Paul
To: BCH Oakland NHB
Subject: UCSF BCH Oakland Draft EIR - written comments
Date: Thursday, January 25, 2024 3:43:05 PM

This Message Is From an Untrusted Sender
You have not previously corresponded with this sender.

Hi Ms. Wong,

Thank you for the opportunity to comment on the Draft EIR.

As a resident of Oakland who is deeply concerned about the city's future, I strongly believe that the new hospital building's ability to ensure the long-term viability of BCH Oakland (and by extension Oakland itself) far outweighs any anticipated environmental effects. Quite frankly our city does not have the luxury to contemplate (arguably) tangential concerns. 1

The significant investment by BCH Oakland would enable upgrading vital infrastructure, and play a key role in supporting the desperately needed improvements in the city of Oakland.

Thanks for taking the time to solicit comments, and also for all that you do.

Sincerely,

Paul

525 43rd St, Oakland CA 94609

Responses to Comments from Paul Park

I-Park-1 The commenter expresses support for the proposed Project and states that the benefits from the Project outweigh any environmental impacts.

The comment is noted and will be forwarded to decision-makers.

8.5.2.4 Draft EIR Public Hearing Transcript

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DRAFT ENVIRONMENTAL IMPACT REPORT

PUBLIC HEARING

UNIVERSITY OF CALIFORNIA SAN FRANCISCO

BENIOFF CHILDREN'S HOSPITAL OAKLAND

NEW HOSPITAL BUILDING

Thursday, February 15, 2024

Via Zoom Web Conferencing

STENOGRAPHICALLY REPORTED
BY: DEBORAH FUQUA, CSR #12948
CERTIFIED STENOGRAPHIC REPORTER

APPEARANCES

ALICIA MURASAKI, Assistant Vice Chancellor and Campus Architect

DIANE WONG, UCSF Senior Planner / Environmental Coordinator

KATIE WALSH, UCSF Senior Project Manager, Design and Construction

JESSICA ARLINE, UCSF Assistant Director of Community and Government Relations

PAUL MITCHELL, Environmental Science Associates, Consultant

PUBLIC COMMENTS

Thursday, February 15, 2024 6:03 p.m.

---o0o---

P R O C E E D I N G S

JESSICA ARLINE: All right. How's it going? Welcome, welcome.

Welcome to our Oakland New Hospital Building Draft EIR public hearing. My name is Jessica Arline. I am the hospital's Associate Director of Community and Government Relations. And we will be walking you through what you can expect from tonight's hearing.

Next slide, please.

So I know most of you are accustomed to Zoom, so just bear with me for those that have heard this several times. But we want to make sure that everyone is on mute. So this is a public hearing, a public comment process, so it's really important -- we have a court reporter here -- that everyone remain on mute.

This is kind of an interesting format. It's not like our typical community meetings where we go back and forth, answer questions. So it's -- for this part, raise your digital hand. Really, you can put your comments into the comment chat box. But when it does come time to make a public -- time for a comment, we'll call you in the order which we see you. And you can raise your digital hand by clicking at the bottom of the participant list. And for those of you who are on the phone, you can dial star 9 to raise your hand, and we'll do our best to call you in the order which we see you. And also note that this is being recorded, too.

And so one last -- oh, another thing to mention is that, because this is public comments, we won't be answering your questions directly. But go ahead and feel free to put your comments in the chat box.

Okay. Next slide.

So the agenda, we'll have welcome, introductions -- that's me. Hello -- the purpose of this public hearing; the new hospital building project overview; the EIR overview; and then lastly, we'll have the public comment period on the Draft EIR.

Next slide.

So I will go ahead and hand it off to our Assistant Vice Chancellor and Campus Architect, Alicia Murasaki.

ALICIA MURASAKI: Thank you, Jessica.

I just -- I'll start off by -- oh, can we go to the next slide, please?

I want to just start off by just saying, just to avoid confusion, so you can use the chat if you have any issues or problems with the Zoom, and the host can help you. However, to make an official comment on our Draft EIR, we don't accept those in the chat box. So you'll need to raise your digital hand and speak. Or I'll also give you an opportunity to submit written comments in a different way. But let me go over this slide really quickly.

Tonight's public meeting is conducted pursuant to the University of California's procedures for the implementation of the California Environmental Quality Act, often referred to as CEQA. The purpose of this public hearing is to receive your comments on the Draft EIR for the proposed new hospital building project. We will briefly present the scope of the project to remind you of the proposal. However, the focus of tonight's public hearing is solely on receiving comments on the Draft EIR.

UCSF has held community meetings about the project over the past several months and will continue to do so. By registering for this meeting, you are already on the UCSF's mailing list, so you will be notified of our next community meeting where you will have ample opportunity to comment for the project.

As required by the California Environmental Quality Act, UCSF will respond in writing to all substantive comments, and therefore, we will not respond verbally to comments tonight or engage in dialog.

You may also submit your written comments by the end of the comment period, March -- excuse me, March 1st, 2024. Information about how to submit written comments is indicated at the front of the draft EIR and will be provided at the end of tonight's meeting. So if you want to write it down, that will be made available tonight.

I would also like to note that our public outreach about this public hearing, we have let people know that, if they do not have access to a computer to participate in this hearing, we could make accommodations for them and provide that access. No one requested that accommodation.

I will hand it over to the next speaker now. I'd like for you to welcome Katie Walsh, our Senior Project Manager at UCSF Design and Construction.

KATIE WALSH: Thanks, Alicia.

All right. If you go to the next slide, I'm going tell you a bit about our project as an overview. So we regularly start with the need for this project and why it's so important for Oakland as far strengthening and expanding the care that we're providing in Oakland.

And these images are what we start with because nothing really epitomizes the need for the investments in our facilities like this does. On the left-hand side, we have an image of our current wards here in Oakland for our NICU patients. And one of the projects we're looking to do here is to provide private patient rooms to really help with more healthful outcomes and spaces for our patients, our families, and our staff. And an example of what that would look like is on the right-hand side.

Go to the next slide.

So a bit more about what this project is looking to do. We're looking to provide state-of-the-art facilities to support and extend the excellent care that is currently provided by all of our staff here in Oakland. As part of that, we're looking to provide space for a new emergency department build-out as well as new operating rooms in this new hospital building.

We're also looking to expand some of the care and services that we provided to meet critical needs in our community. And one of those is to provide dedicated mental health beds as part of this project at our new service line.

And then overall as an objective is to create more healing environments to support our patients and our families. So in creating those private patient rooms, it allows the families to have space to stay with their children during their course of care here and to create quieter environments to help in their overall care here.

Next slide.

And now for where our project is targeted. Our new hospital building project is planned for our current inpatient site here in Oakland. It's south of 52nd Street and located between Highway 24 and Martin Luther King Jr. Way. It is on an existing campus where we have a number of buildings that have been built over the years. And so as part of that, there's work that needs to be done to make way for this project. And this blue oval is showing the area of key development as part of this project, and the buildings in gray are those that need to be removed to make room for it.

So go to the next slide.

This is a look at what the plan is looking like for our new hospital building. So the buildings in the white hatch along 52nd and MLK, those are existing buildings on our campus that are going to remain. And then our new hospital building is central to the site. And that is going to be connected to the existing buildings so that they really -- you can navigate and orient them as one.

Our existing main entry near the corner of 52nd and MLK is going to remain as is as the main way that you would enter our facility. But with this expansion, we are adding some vehicle circulation onto the campus through our Dover Street extension that will include a loop for emergency department drop-off patients as well as access to the new parking garage that were planned at the south corner of the site that you can see noted as Item B here in the south corner.

Our site is also going to have space for accommodating a new ambulance drop-off as well as services to support the overall facility over on the right-hand side along Highway 24. So that includes what's noted as Item C. That's our site services building. This will hold loading dock functions during the course of the construction of our project to ensure that we're supporting the overall continued operation of the existing hospital over the full course of the project as well as other support functions like generators for case of emergency.

So if we go to the next slide.

This is a 3-D view as if you're over Highway

24 looking at what the massing of this new hospital building might look like. So we're showing here the eight stories for which we're entitling for this new hospital building, and we're showing a helistop that is a replacement for our existing helistop on campus that is planned to go on top of that new hospital building. Our project is also evaluating an alternate location for that replacement helistop. And that would be further south, on top of the new parking garage.

And lastly, you can see where I indicated the site support building and the support functions. You can see just a bit of those just behind Highway 24.

So if we go to the next slide.

So we're still early in our design process. And we're here speaking to you as part of our CEQA and EIR process. And we're working towards going to UC Regents for approval for this project overall and this EIR in summer of 2024. And overall, we're tracking towards first patient in this facility to open the new hospital building in 2030.

Go to the next slide.

This first link this is where you can find information about our project. So it will tell you, you know, the current status and information about it. It's also where you can go if you want to find out updates over the course of the project. And of course you can always reach out to Jessica Arline, who has kicked off this meeting for us. And her email address is there.

All right. With that, I'll go ahead and hand it over to Paul Mitchell so that he can talk to you about our EIR overall process.

PAUL MITCHELL: Great. Thanks very much, Katie. And good evening, everyone.

I'd like to just briefly touch on -- first on the EIR process and time line. Currently the Draft EIR is in a 45-day public review period. It was published and circulated for review in mid January. And the public review period will continue through March 1st.

Following the close of the public review period, UCSF will then consider all the comments that are received, including any comments received at tonight's public hearing, and will prepare a Response to Comments document. And this summer, UCSF anticipates publishing the Final EIR, which will then go before the UC Regents for consideration of certification.

Next slide, please.

I'll now just take a minute to discuss a summary of the key project impacts and mitigation measures. But I would encourage everyone to please refer to the Draft EIR for the full detail of all the impacts and associated mitigation.

With respect to air quality, during construction, the project would generate construction emissions that would contribute to cumulative air quality conditions and health risks. For mitigation, the Draft EIR identifies that UCSF shall use clean construction equipment as feasible. This is primarily including use of electric powered equipment as opposed to diesel powered. Mitigation also requires that, if any diesel-powered equipment is used or needed, it would need to meet stringent Tier 4 emission standards as established by the State Air Resources Board.

And lastly, UCSF would be required to comply with implementation of a dust control program as established by the Air District to prevent fugitive dust during construction.

With respect to biological resources, the construction of the project would have the potential to temporarily disturb nesting birds and roosting bats on the project site and vicinity. This impact would be mitigated through implementation of pre-construction surveys for both birds and bats and implementation of avoidance protocols as needed.

Secondly, the new building development would create a potential for bird strikes for migratory and resident birds. This impact would be mitigated through implementation of building design measures intended to reduce risk for bird strikes. Examples of mitigation include the use of glazing and fritted exterior glass, shielding exterior lighting to -- to limit lighting impacts on birds, and other feasible measures.

And then thirdly, the project would require the removal of approximately 28 trees on or adjacent to the project site. This impact would be mitigated through replacing trees within the public right of way in conformance with the City of Oakland tree protection ordinance.

With respect to cultural resources and specifically historical resources, the project would demolish the hospital's A/B wing, which qualifies as a historical resource under CEQA. Mitigation identified in the Draft EIR includes recordation of the A/B wing to Historic American Building Survey Standards, also known as HABS standards. Mitigation would also include installation of a public interpretation plan for installation on site and development of a salvage plan for potential reuse on site.

Next slide, please.

With respect to archeological and tribal and cultural resources, while there are no recorded buried cultural resources on the site, project construction would have the potential nevertheless to encounter unknown archeological or tribal resources. Mitigation was developed in the EIR in consultation with the Confederated Villages of the Lisjan Tribe and includes preparation of an archeological and tribal cultural resources monitoring plan; construction worker training for cultural resources sensitivity; and implementation of established protocols for potential inadvertent discovery of those resources.

With respect to noise, project construction would generate temporary periods where noise would be in excess of noise standards established in the City of Oakland Municipal Code. Mitigation identified in the EIR includes implementation of a noise control plan which will include strategies to reduce construction noise, limits on construction hours, and establishment of procedures for responding to and tracking potential noise complaints.

Finally, with respect to transportation, project construction could temporarily impact travel conditions in the site vicinity. Mitigation identified in the EIR includes implementation of a construction traffic control plan, development of a construction worker parking and travel management plan, and as needed, coordination with the City of Oakland for any potential repairs that may be needed for damage within the public right of way.

Next slide, please.

Now, even with the mitigation measures identified in the Draft EIR, there are three impacts that would remain significant. The first significant and unavoidable impact is related to cumulative air quality, specifically the project's addition to cumulative health risks. The second significant and unavoidable impact is related to cultural resources and more specifically historic resources due to the demolition and removal of the historic A/B wing. The third significant and unavoidable impact is related to construction noise. This is specifically limited to rare instances where the project may necessitate construction work during nighttime hours, although this would be rare.

Next slide, please.

And then lastly, I'd just like to briefly summarize the alternatives to the proposed project that were addressed and analyzed in the Draft EIR. As required under CEQA, the first alternative, Alternative

Number 1, is the no-project alternative. And under this alternative, the no-project -- no project construction or demolition would occur. All existing buildings, including the historic A/B wing, would be retained on site.

There are also three build alternatives that were addressed in the EIR, Alternatives 2, 3, and 4 specifically. Alternative 2 is the hospital project per the prior design proposed under the 2015 campus master plan. This is a similar development to that proposed in 2015. Under this alternative, it assumes overall less development than the current proposed project, and consequently they would involve less new construction and demolition than the proposed project. Under this alternative, the A/B wing would similarly be retained as under the no-project.

Alternative 3 is a modified hospital design project and, under this alternative, would involve the same hospital square footage as that proposed under the project. However, the new hospital building would have a smaller footprint, a smaller floor plate, but accordingly would also be taller. This alternative would involve somewhat less demolition than the proposed project and, like the previously discussed alternative, the A/B wing would be retained.

And then lastly, a reduced project alternative -- which is the same -- same project as that proposed, although the overall size of it would essentially be proportionally less by about one third, so one third less proposed new inpatient beds, less parking, less square footage. This would involve less new construction and a shorter overall hospital and parking garage. It would essentially involve the same amount of demolition as the proposed project and would involve removal of the A/B wing.

And lastly, of the three build alternatives, Alternative 2 was identified to be the environmentally superior alternative.

So this concludes my overview, discussion of the EIR, and I'll turn to presentation back to UCSF.

DIANE WONG: Thank you, Paul.

We now get to the public comment portion of our meeting. My name is Diane Wong. I'm with the UCSF Campus Planning Office. Welcome, everyone.

Next slide, please.

So we will start public comment.

Next slide, please.

And just a few instructions here on how to do this. So if you would like to comment, from your computer, you can raise your digital hand by clicking on the reactions button at the bottom of your screen or, on the older Zoom functions, at the bottom of the participants list. If you are calling in, you can hit star 9 on your phone to raise your digital hand. Staff will request that you unmute when it's your turn to speak.

Please begin by stating your first and last name. And to ensure that everyone has an opportunity to speak, please limit your remarks to two minutes.

Commenters will be called in the order of hands raised. And until you are able to speak, do not lower your hand as you will lose your place in the queue. And since this is a draft EIR hearing, please focus your comments on potential environmental impacts.

And as mentioned earlier, staff will not respond to your comments tonight. Your comments will be responded to in writing in the Final EIR. And if you'd like to provide written comments, all comments are due by 5:00 p.m. on March 1st, 2024. And we'll provide that information on how to comment in writing.

And then just a few reminders that comments will be transcribed by a court reporter. And the transcript of public comments as well as written comments received during the Draft EIR public review period will be included in the Final EIR. Comments tonight must be spoken in order to be captured by the court reporter. So please do not submit comments in the chat.

If you need to contact the host during this meeting for a technical issue, please use the chat button to message the host.

I know that's a lot of information. We will keep this slide up as people speak just to remind folks.

So I see we have a first speaker, Naomi Schiff. You can unmute yourself, Naomi.

NAOMI SCHIFF: Well, first I think since you have such a small turnout, you should allow people longer than two minutes. Two minutes is rather slender for a project of this size.

I will be submitting my comments in writing on behalf of Oakland Heritage Alliance, a 40-something-year old organization in Oakland, California which is concerned about the demolition of Schiff-1
the A/B wing. We understand you need to make a seismically safe hospital. I will observe that, actually, where the A/B wing is, you've put a driveway. One wonders if it's really necessary to demolish that historic building. Schiff-2

In the event that you must, we make some Schiff-3 suggestions for stronger mitigations. Incorporate one or both of the two-story windowed bays which are a distinctive architectural element that could maybe be used as a sort of solarium or a wonderful addition to your rather massive new structure.

Schiff-3 cont.

Reuse some or all of the glazed terracotta

Schiff-4

frieze band from the A/B wing.

Schiff-5

Make the site look better from the freeway. I would strongly suggest you consider not just replacement trees but replacement trees that will be of some size, not little lollipops as we have seen around town. Make them big. Make them something that will grow.

Schiff-6

Contribute to and work with BART to improve landscaping and maintenance under the tracks where your employees and patients will be coming across MLK to

Schiff-7

help restore the neighborhood. Consider subsidizing or contributing to a historic book on the history of the hospital. I have sent some links previously. I will do that again.

Schiff-8

Your informational exhibits that you plan should be visible from outside and passersby, not only people inside the building.

Schiff-9

Please allow me to finish. You don't have many speakers.

Consider improving the appearance of the

Schiff-10

Schiff-10 cont.

pretty unpleasant parking lot across MLK way in connection with this project.

Schiff-11

Consider using brick-like cladding, not merely ceramic rainscreen, as a reference to the historic structures.

Schiff-12

And lastly we'd just like to make a request that, before you knock everything down, you allow people to tour the historic A/B wing from the outside before you get started on this project. It looks like you've got a pretty long construction schedule; that should be feasible.

Thank you very much for the opportunity and for extending the time.

DIANE WONG: Thank you, Naomi.

All right. Next speaker is Jovita Pajarillo.

Pajarillo-1

JOVITA PAJARILLO: Yes. Hello. We live at the corner of 53rd and Dover. And we witnessed the movement of the two houses on 52nd and Dover. And we're very pleased that it got moved to where the modular building was demolished.

Pajarillo-2

But at the same time, we're very concerned about the tree removal that happened along the Caltrans bypass because you know what? It increases the noise from the freeway into our neighborhood.

And I don't know if that was ever considered because, you know, the trees are a really -- they serve a function in our ecosystem in terms of, you know, buffering noise and wind and all that sort of thing. And so it never occurred to me to make that kind of comment, something a lot of us are not sure what we're going to comment on until things get underway.

Pajarillo-2 cont.

And I just have to say, my husband and I, we're the only private property owners on this block. We are very apprehensive and wary about how things will unfold. And I do appreciate the communication and relationship that we have with Liz and with Jessica. But it's nonetheless daunting.

Pajarillo-3

And we will review the Draft EIR and submit detailed comments. But I just have to say, I was really disappointed by the whole thing that happened with the clearing of the trees because it only increased noise and pollutants and soot. And people need to think about that. Thank you.

Pajarillo-4

DIANE WONG: Thank you, Jovita.

Next speaker, Patricia Smith.

PATRICIA SMITH: Hello. Can you hear me?

DIANE WONG: Yes.

PATRICIA SMITH: I don't know if anyone can see me. I suppose it doesn't matter.

Thanks for hearing my comments. I will try and review the Draft EIR more carefully and submit comments in writing.

But I do have a concern about the parking. I looked at the Draft EIR, and it seems, unless I'm missing something, it -- specifically about parking, many people in the neighborhood -- and I live one block from there on Genoa Street, just west near 52nd Street and Genoa. I have a lot of friends in the neighborhood; we've been here for many decades.

People are concerned about loss of parking, as we've already experienced it. So the Draft EIR says that there's 275 parking spaces. And for the purpose of analysis within the Draft EIR, they're going to use the number of 275 as the worst case scenario. However, the proposal says that the minimum spaces needed is 200. Smith-1

And so I'm curious. That's seems to me to be a large gap between -- are you going to put in 200 spaces or 275? And then the Draft EIR goes on to use the number of 275 as a worst case scenario. I think many would argue that 200 would be worse than 275.

And speaking of worst case scenarios, why is the proposal using current demand for parking for the purpose of analysis? Unless I'm misunderstanding that, it sounds like they're looking at what -- how many people are using parking now or how many people, staff, Smith-2 patients, et cetera are coming to the hospital. Why are they using current demand when later in the report there's a projected increase of 736 people per day?

So I'm curious, why aren't they using how much -- you know, why aren't they using the projected increase when they consider the kinds of impacts it will have on parking and how many parking spaces they need?

Smith-2 cont.

Anyway, I have other concerns as well about the location of the heliport. And I don't know if I have time to discuss that, but for those of the residents in the area that happen to be on this call, I'm curious what the pros and cons are for putting the heliport at the new eight-story hospital as opposed to the alternate version further south. And the variant -- I guess it's called the variant proposal is placing the heliport on top of the new parking structure that is to be located at the extreme south of the property.

I didn't see it in the EIR, but of course I could have missed it, but I would like to know what the pros and cons are, like, for both trauma patients and also for residents. In other words, would one of those locations provide more or less noise for residents? We've lived there over 30 years, so we're aware of the -- of the noise.

Smith-3

And also is one of those better for trauma patients? You know, I want -- I would like children to get there as quickly as possible. It's something that the hospital has brought up in the past when considering a location of moving.

Smith-3 cont.

I have a concern about shade. I don't know if it's required to provide shade diagrams, but an eight-story building I think is going to have considerable impacts on many people, many homes. And can we view diagrams of that?

Smith-4

And my final comment is about exterior construction materials. I think the new building at the northeast corner of 52nd and MLK is pretty nice looking. Not like it's up to me, but you know what I've noticed -- and I haven't made this comment to anyone -- certain times of the year when the sun is setting, the reflection off that building is absolutely blinding. So if I'm heading eastbound, for example, on 52nd Street, from Market towards MLK, I can't see anything when the sun hits it just right. And it didn't used to be like that. It has to do with what -- you know, has to do with the new building.

Smith-5

Anyway, that's it. I appreciate your reaching out to the community about all of this. And thanks for your time.

DIANE WONG: Thank you, Patricia.

All right. I don't see any other hands raised. We'll give it a minute here for folks to think through what they want to comment on. So if you'd like to comment, please raise your hand.

(Pause in proceedings)

DIANE WONG: All right. So seeing no other hands raised, we will close the public comment portion. Thank you so much.

So this brings us to the end. The next steps are, again, that the Draft EIR is available online. You all have access to this link. It is on the Draft EIR. So to provide written comments, please send an email to BCHOaklandNHB@ucsf.edu, or you may submit written comments to me at the address indicated there. It's 654 Minnesota Street, Second Floor, San Francisco, 94143. And, again, comments are due by March 1st. The Final EIR is anticipated to be published in the summer of this year.

So that's it. Thank you all for coming this evening. Hope you have -- all have a great night. Thank you so much.

(Whereupon, the proceedings concluded at 6:37 p.m.)

STATE OF CALIFORNIA)
)
COUNTY OF MARIN)

I, DEBORAH FUQUA, a Certified Shorthand Reporter of the State of California, do hereby certify that the foregoing proceedings were reported via Zoom web conferencing by me, a disinterested person, and thereafter transcribed under my direction into typewriting and which typewriting is a true and correct transcription of said proceedings.

I further certify that I am not of counsel or attorney for either or any of the parties in the foregoing proceeding and caption named nor in any way interested in the outcome of the cause named in said caption.

Dated the 18th day of March, 2024.

DEBORAH FUQUA
CSR NO. 12948

Responses to Comments from the Public Hearing Transcript

PH-Schiff-1 The commenter states that she will be submitting comments in writing on behalf of the Oakland Heritage Alliance (OHA).

The comment is acknowledged. Comments from OHA were received in writing on March 1, 2024. Responses to the specific points raised in that letter are addressed in Section 8.4.2.2 in this Final EIR document.

PH-Schiff-2 This comment acknowledges the need for a seismically safe hospital. The comment also questions the placement of a driveway in the location of the A/B Wing.

The comment related to a seismically safe hospital is acknowledged. Reconfiguration of the site is a necessary component of the NHB Project. Both the NHB as well as the Emergency Department drop-off area would displace the A/B Wing. The demolition of the A/B Wing is required to maximize both efficiencies in site circulation and development of the site for the required programs stated in the CHRCO CMP.

PH-Schiff-3 The commenter requests the incorporation of one or both of the two-story window bays on the A/B Wing.

See response to Comment O-OHA-10.

PH-Schiff-4 The commenter suggests reusing all, or a significant portion of, the “bambino” terra cotta frieze within the new building.

See response to Comment O-OHA-11.

PH-Schiff-5 The commenter requests the site look better from the freeway.

See response to Comment O-OHA-15.

PH-Schiff-6 The commenter suggests that UCSF BCH Oakland plant tree species on the Project site that will grow to a large size.

See response to Comment O-OHA-17.

PH-Schiff-7 The commenter notes that the landscaping beneath the elevated BART tracks, adjacent to but outside of the Project site, could be improved.

See response to Comment O-OHA-14.

PH-Schiff-8 The commenter suggests additional documentation in the form of a book to on the history of the hospital.

See response to Comment O-OHA-9.

PH-Schiff-9 The commenter requests that informational exhibits should be visible to passers-by from outside , not only to people inside the building.

See response to Comment O-OHA-8.

PH-Schiff-10 The commenter suggests improvements to the annex parking lot across Martin Luther King, Jr. Way be included in the Project.

See response to Comment O-OHA-16.

PH-Schiff-11 The commenter suggests use of brick-like cladding, not merely ceramic rainscreen, as a reference to the historical structures.

See response to Comment O-OHA-12.

PH-Schiff-12 The commenter requests a public tour of the exterior of the historic A/B Wing prior to demolition.

See response to Comment O-OHA-6.

PH-Pajarillo-1 The commenter expresses support for the relocation of two houses from 52nd Street to 53rd Street that has occurred.

The comment is acknowledged. The relocation of two houses from 52nd Street to 53rd Streets was planned and approved under the 2015 Children's Hospital and Research Center Oakland Campus Master Plan (CHRCO CMP).

PH-Pajarillo-2 The comment expresses concern about tree removal along the Caltrans bypass and notes that it has increased the noise from the freeway into the commenter's neighborhood.

Caltrans has conducted tree removal within its right-of-way adjacent to SR 24, north of 52nd Street. That tree removal is not located within the UCSF BCH Oakland campus site boundary, and not associated with the proposed NHB Project.

In addition, tree removal was recently implemented by UCSF BCH Oakland within the campus site on the SR 24 embankment south of 52nd Street. This tree removal was completed as part of the BCH Oakland Infrastructure Project, and not the NHB Project, in order to construct the planned retaining wall along the freeway. As discussed in the Draft EIR, page 4.0-6 under *Cumulative Impact Analysis*, that project was previously analyzed at the BCH Oakland campus site under the CHRCO CMP.

It should be noted that studies conducted by Caltrans have shown that trees and vegetation do not result in a noticeable reduction in noise (Caltrans 2013). A vegetative strip must be very dense and wide for there to be any meaningful noise shielding effect. A heavily vegetated ground surface may increase ground absorption, which can increase attenuation over distance. More specifically, Caltrans research (Caltrans 1995) has shown that ordinary landscaping along a highway accounts for less than 1 decibel of noise reduction. Claims of increases in noise from removal of vegetation along highways are mostly spurred by the sudden visibility of the traffic source.[1]

PH-Pajarillo-3 The commenter indicates her home is the only privately owned property on the block of 53rd Street between Martin Luther King Jr. Way and SR 24; and notes appreciation with the communication provided by various UCSF staff. These comments are acknowledged.

The commenter also expresses apprehension regarding the proposed Project as "daunting." The comment is noted and will be forwarded to decision-makers. Note the Draft EIR addresses all potential Project impacts, as well as the Project's contribution to cumulative environmental impacts, and identifies associated mitigation measures that will be implemented as part of the proposed Project.

PH-Pajarillo-4 The commenter asserts the clearing of the trees has increased noise, pollutants and soot.

With respect to tree removal activities that have occurred adjacent to SR 24, please refer to response to Comment PH-Pajarillo-2, above.

Response to Comment PH-Pajarillo-2 also provides additional information on noise effects associated with tree removal adjacent to freeways. With respect to pollutants and soot, pollutants including soot, tend to settle in the vicinity of the roadways. The commenter's residence is located at a distance from the freeway and there are several intervening UCSF BCH structures between the roadway and the residence. Therefore, the residence is not expected to experience a substantial increase in exposure to pollutants as a result of the proposed Project.

PH-Smith-1 The comment requests clarification about the number of parking spaces in the proposed garage and why a larger sized garage would represent a worst-case scenario.

First, parking is expressly not a CEQA impact. The comment correctly states that the Draft EIR (page 3-25) assumed that the garage would provide between 200 and 270 parking spaces (although the comment mistakenly refers to the upper range as 275 spaces). As shown in Table 8.3-1 on page 8.3-1 of this Final EIR, the parking garage under the revised NHB Project would provide a maximum of 270 parking spaces, consistent with the previously proposed Project evaluated in

1 California Department of Transportation (Caltrans), *Traffic Noise Attenuation as a Function of Ground and Vegetation*, Final Report, Sacramento, CA, 1995; Caltrans, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013.

the Draft EIR. The number of parking spaces in the garage will be finalized as part of the final design for the Project.

As stated on page 3-25 of the Draft EIR, the larger-sized garage with 270 parking spaces is considered the worst-case scenario for assessment of potential environmental impacts. This is because the larger parking structure (the 270-space garage) would generate the greater number of vehicle trips, which have been used in the EIR for purposes of analyzing environmental impacts pertaining to transportation, air quality, greenhouse gas emissions, and noise.

PH-Smith-2 The comment incorrectly states that the Draft EIR analysis is based on the current parking demand at the UCSF BCH Oakland campus site. The Draft EIR estimated the parking demand under Project buildout conditions based on the forecasted increase in population (employees and patient/visitors) and the current parking demand rate, which assumes continuation of current travel characteristics such as travel mode and travel times at the UCSF BCH Oakland campus site.

Table 4.11-5 on Draft EIR page 4.11-22 presents the campuswide parking demand under existing (2023) and buildout conditions based on the estimated increase in peak population. The comment references an increase in population of 736 people, which is the increase in total population throughout a typical day. Considering that there are multiple work shifts for employees and that most patients and visitors are at the campus for a few hours at most, the parking demand is based on the peak population (the time of day with the highest number of people at the campus site), which is when the parking demand would be highest. As shown in Table 4.11-5, the peak population at the UCSF BCH Oakland campus is estimated to increase by about 266 persons and the peak parking demand is estimated to increase by about 180 vehicles.

PH-Smith-3 The commenter inquires about the pros and cons, for both neighbors and patients, of placing the proposed helistop on the new hospital building under the Project as opposed to atop the parking garage under the Project variant.

From an operational perspective, placing the helistop on the new hospital building roof under the proposed Project would facilitate slightly more efficient transfer of trauma patients directly to the hospital floors from the trauma elevator on the hospital roof. Conversely, under the Project variant, trauma patients would first need to be transferred via a trauma elevator on the parking garage roof to ground level, and then transported via ground north to the new hospital building.

On the other hand, the operation of a helistop atop the new hospital building would create helicopter noise effects on the upper levels of the new hospital that would need to be addressed through building design. In addition, the construction of the new helistop on the new hospital roof would take nearly 4 years longer than constructing a helistop atop the proposed parking garage. This would necessitate the use of a temporary off-site helistop for nearly 5.5 years for the NHB Project versus approximately 1.5 years for the NHB Project variant, while the existing helistop at UCSF BCH Oakland would be out of service during construction. As a consequence, the Project would result in a longer period of time in which trauma patients arriving by helicopter would also need to be transported from a temporary off-site helistop to UCSF BCH Oakland.

With respect to environmental impacts and effects on nearby sensitive receptors, the Draft EIR provides an equal level of analysis of the helistop under the proposed Project and under the Project variant. The principal difference in environmental effects would be minor changes in noise experienced at nearby sensitive receptors that would result from a shift in existing helicopter operations to the north to a proposed helistop on the new hospital building rooftop, versus to the south to a helistop on the parking garage (see Draft EIR pages 4.10-31 to 4.10-34 for the noise impact (Impact NOI-2) from operation of the relocated helistop under the Project, and Draft EIR pages 4.10-38 to 4.10-41 for the noise impacts from operation of the relocated helistop under the Project variant.) As demonstrated in the Draft EIR, under either the Project or Project variant, helicopter operations would not result in a substantial permanent increase in Community Noise Equivalent Level (CNEL) at sensitive receptors in the Project area, and therefore, the impact would be less than significant.

Also refer to Section 8.3 in this Final EIR that describes proposed Project refinements, including an incrementally lower elevation helistop on the new hospital building under the revised NHB Project, and an incrementally higher elevation helistop on the parking garage under the revised NHB Project variant. The analysis indicates that the revised Project would not result in a change in the CNEL at the study sensitive receptors from that presented in Impact NOI-2 in the Draft EIR for the previously-proposed Project and Project variant, and consequently would result in the same less than significant impact regarding substantial permanent increases in noise levels at sensitive receptors. Thus, the revised Project and revised Project variant would not result in any new or more severe helistop noise impacts that previously identified in the Draft EIR.

PH-Smith-4 The commenter expresses a concern about shading effects that a proposed eight-story hospital building would have on nearby homes, and requests to review shade diagrams.

The CEQA Guidelines do not identify shadow or shading effects of a proposed project as an environmental concern or topic that needs to be addressed in a CEQA document. Furthermore, the City of Oakland also does not require an analysis of the shadow effects of a land development project on other land uses.

Note, however, as discussed in Section 8.3 of this Final EIR, the proposed hospital building has been redesigned and the height of the new hospital building has been reduced from a previously-proposed 8-story building to a 7-story building, which would reduce any potential shading caused by the new hospital.

PH-Smith-5 The commenter indicates that at certain times of year, the existing UCSF BCH Oakland building at 52nd Street and Martin Luther King Jr. Way reflects sunlight that can be blinding.

This comment does not concern the adequacy of the Draft EIR or pertain to environmental effects of the proposed Project. Consequently, no response is required. The comment is noted and will be forwarded to decision-makers.

As it relates to the proposed Project, however, low-reflective exterior glass would be used on the new hospital building to minimize potential glare.

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8.6 Revisions to the Draft EIR

8.6.1 Overview

This section presents revisions to the text, tables, and figures in the Draft EIR. These revisions include revisions made in response to comments on the Draft EIR, as well as UCSF staff-initiated text changes to correct minor inconsistencies, and to provide updated information where applicable (See Section 8.6.2). None of these revisions or corrections substantially change the analysis and conclusions presented in the Draft EIR.

This section also presents the revisions to the Draft EIR text, tables, and figures to reflect the revised NHB Project and its environmental impacts (see Section 8.6.3). As explained in Section 8.3, *Project Refinements*, of this Final EIR document, as a result of the ongoing planning, development, and design process, UCSF BCH Oakland has refined certain aspects of the proposed NHB Project. This includes the development of a smaller, shorter and redesigned new hospital building; a reshaped, slightly taller parking garage; a change from a site support building to a slightly smaller site support structure; and a proposed new surface utility yard. As stated in Section 8.3, these Project refinements would not change the results of the previous impact analysis in all environmental topic areas, except Air Quality and Noise. This section presents the changes to Draft EIR Chapter 3, *Project Description*, and Section 4.2, *Air Quality*, and Section 4.8, *Noise and Vibration*, to reflect the air quality and noise impacts of the revised NHB Project and revised NHB Project variant. As demonstrated by the analysis, none of these revisions would substantially change the prior analysis and conclusions presented in the Draft EIR and therefore do not represent significant new information.

In addition, as explained in Section 8.3, UCSF may install a temporary helistop on a vacant parking lot in Oakland owned by the Peralta Community College District and use it for the duration of construction of a new helistop at the UCSF BCH Oakland campus site under the NHB Project. Potential impacts associated with the installation and use of this temporary helistop are analyzed and presented in Section 8.3, and do not necessitate revisions to the Draft EIR in this section.

All revisions to the Draft EIR are presented below in the sequential order that they appear in that document. Preceding each revision is a brief explanation for the text change, and the section/page number in the Draft EIR where the revision occurs. Deletions in text and tables are shown in strikethrough (~~strikethrough~~) and new text is shown in underline (<u>underline</u>).

8.6.2 Corrections to the Draft EIR

Draft EIR Chapter 2, Summary

Draft EIR Chapter 2, *Summary*, page 2-2, last paragraph, second sentence is hereby revised as a staff-initiated change:

> The new hospital building would comply with the applicable UC Policy on Sustainable Practices and would pursue a minimum level of LEED Gold Certification; as well as

meet CalGreen requirements. ~~and City of Oakland Green Building Ordinance "Sustainable Green Building Requirements for Private Development."~~

Draft EIR Chapter 2, *Summary*, Table 2-2, page 2-9, third column, Mitigation Measure CUL-1a is hereby revised in response to Comment O-OHA-7:

Mitigation Measure CUL-1a: Documentation of the A/B Wing

Prior to any demolition work initiated at the A/B Wing, UCSF shall ensure that a qualified architectural historian who meets the Secretary of the Interior's Professional Qualification Standards thoroughly documents the building and associated landscaping and setting. Documentation shall include still photography and a written documentary record of the building to the National Park Service's standards of the Historic American Buildings Survey (HABS), including accurate scaled mapping and architectural descriptions. If available, scaled architectural plans will also be included. Photographs include large-format (4"x5") black-and-white negatives and 8"x10" enlargements. Digital photography may be substituted for large-format negative photography if archived locally. The record shall be accompanied by a report containing site-specific history and appropriate contextual information relying as much as possible on previous documentation. Copies of the records, including photographs, shall be submitted to the Northwest Information Center at Sonoma State University, and the Oakland History Center ~~at~~, the Temescal Branch, and the proposed Hoover Branch of the Oakland Public Library. In addition, a complete documentation package will be offered to the Bancroft Library on the University of California, Berkeley Campus for inclusion in their digital repository.

Draft EIR Chapter 2, *Summary*, Table 2-2, pages 2-9 and 2-10, third column, Mitigation Measure CUL-1b is hereby revised in response to Comment O-OHA-8.

Mitigation Measure CUL-1b: Public Interpretation and Salvage Plan for the A/B Wing

Prior to any demolition work that would remove character-defining features of the A/B Wing, UCSF shall prepare a Salvage Plan for those components of the building suitable for salvage and/or reuse. A Salvage Plan shall be prepared by a qualified architectural historian or historic architect who meets the Secretary of the Interior's Professional Qualification Standards and presented to UCSF Planning staff. This would be a feasibility study to determine the structural integrity of the character-defining features associated with the A/B Wing, identify environmental factors that may require remediation prior to salvage (e.g., lead paint, chemicals, etc.), and present potential new uses of the salvaged features. The Salvage Plan will identify opportunities for UCSF to reuse character-defining features in the NHB.

Prior to any demolition activities that would remove character-defining features of, or demolish, an individual historical resource on the project site, UCSF shall prepare a plan for interpretive displays. The specific location, media, and other characteristics of such interpretive display(s) shall be included in this proposal. The historic interpretation plan shall be prepared in coordination with an architectural historian or historian who meets the Secretary of the Interior's Professional Qualification Standards and an exhibit designer or landscape architect with historical interpretation design experience. Interpretive display(s) shall document the individually eligible resource to be demolished. The interpretative plan should also explore contributing to digital platforms that are publicly accessible. A proposal describing the general parameters of the interpretive program and the substance, media, and other elements of such interpretive display shall be approved by UCSF Planning staff prior to commencement of any demolition activities.

Following any demolition activities within the project site, UCSF shall provide within publicly accessible areas of the project site a permanent display(s) of interpretive materials concerning the history and architectural features of the individual historical resources. All materials will be made accessible to patients and visitors, and to the greatest extent possible, these materials will also be made accessible to the general public and passers-by.

Draft EIR Chapter 2, *Summary*, Table 2-2, pages 2-15 and 2-16, third column, Mitigation Measure HAZ-4b is hereby revised as a staff-initiated change:

Mitigation Measure HAZ-4b: Vapor Mitigation: To mitigate potential exceedances of indoor air standards, the Project shall incorporate at least one or more of the vapor mitigation methods listed below in areas determined to have soil gas concentrations above soil gas screening levels. The proposed work-specific vapor mitigation must be in accordance with vapor mitigation guidance provided by the Department of Toxic Substances Control (DTSC), which provides vapor guidance information at https://dtsc.ca.gov/vapor-intrusion/.

- Excavate and remove contaminated materials (soil and, if needed, groundwater), to levels where subsequent testing verifies that soil gas levels are below screening levels.
- Install a physical vapor barrier beneath the structure foundation that prevents soil gas from seeping into breathing spaces inside the structure, or
- Install a passive or powered vapor mitigation system that draws soil gas out of the under-foundation base rock and directs that soil gas to a treatment system to prevent people from being exposed outdoors to the extracted soil gas.

Upon completion, UCSF BCH Oakland shall prepare a report documenting the testing results and installed vapor mitigation method and submit the report to the regulatory agency with jurisdiction (i.e., ACDEH~~DTSC~~). A copy of the report shall be provided to the UCSF Mitigation Monitor to inform them of compliance with this requirement. The implemented mitigation measure shall result in indoor air concentrations that do not exceed the screening levels provided in the DTSC Human Health Risk Assessment (HHRA) Note Number 3.

Draft EIR Chapter 3, Project Description

Draft EIR Chapter 3.0, *Project Description*, page 3-3, third paragraph, the reference to the UCSF BCH annex employee surface parking lot is hereby revised as a staff-initiated change as follows:

> "Also illustrated in Figure 3-1, there is a UCSF BCH annex employee surface parking lot (also known as the West Lot) located to the west across MLK Jr. Way between 47th and 51st Streets."

Draft EIR Chapter 3, *Project Description*, page 3-34, last paragraph, last sentence is hereby revised as a staff-initiated change:

> The new hospital building would comply with the applicable UC Policy on Sustainable Practices and would pursue a minimum level of LEED Gold Certification; as well as meet CalGreen requirements. ~~and City of Oakland Green Building Ordinance "Sustainable Green Building Requirements for Private Development."~~

Draft EIR Section 4.0, Introduction to the Environmental Analysis

Draft EIR Section 4.0, *Introduction to Environmental Analysis*, page 4.0-9, fifth paragraph, the date for implementation of the Replacement of Fuel Oil Underground Storage Tank Project is revised from early 2026 to early 2025 as a staff-initiated change:

> "UCSF will also implement the following cumulative project by early ~~2026~~ 2025:"

Draft EIR Section 4.1, Air Quality

Draft EIR Section 4.1, *Air Quality*, Table 4.1-6, third column, page 4.1-36 last sentence, and page 4.1-37, first sentence is hereby revised as a staff-initiated change:

> The new hospital building would comply with the applicable UC Policy on Sustainable Practices and would pursue a minimum level of LEED Gold Certification; as well as meet CalGreen requirements. ~~and City of Oakland Green Building Ordinance "Sustainable Green Building Requirements for Private Development."~~

Draft EIR Section 4.1, *Air Quality*, Table 4.1-6, page 4.1-37, third column, second full paragraph, last sentence is hereby revised as a staff-initiated change:

> The new hospital building would comply with the applicable UC Policy on Sustainable Practices and would pursue a minimum level of LEED Gold Certification; as well as meet CalGreen requirements. ~~and City of Oakland Green Building Ordinance "Sustainable Green Building Requirements for Private Development."~~

Draft EIR Section 4.1, *Air Quality*, Table 4.1-6, page 4.1-38, third column, fourth paragraph, last sentence is hereby revised as a staff-initiated change:

> The new hospital building would comply with the applicable UC Policy on Sustainable Practices and would pursue a minimum level of LEED Gold Certification; as well as

meet CalGreen requirements. ~~and City of Oakland Green Building Ordinance "Sustainable Green Building Requirements for Private Development."~~

Draft EIR Section 4.3, Cultural Resources and Tribal Cultural Resources

Mitigation Measure CUL-1a in Draft EIR Section 4.3, on page 4.3-17, paragraphs 3 and 4 is hereby revised in response to Comment O-OHA-7.

Mitigation Measure CUL-1a: Documentation of the A/B Wing

Prior to any demolition work initiated at the A/B Wing, UCSF shall ensure that a qualified architectural historian who meets the Secretary of the Interior's Professional Qualification Standards thoroughly documents the building and associated landscaping and setting. Documentation shall include still photography and a written documentary record of the building to the National Park Service's standards of the Historic American Buildings Survey (HABS), including accurate scaled mapping and architectural descriptions. If available, scaled architectural plans will also be included. Photographs include large-format (4"x5") black-and-white negatives and 8"x10" enlargements. Digital photography may be substituted for large-format negative photography if archived locally. The record shall be accompanied by a report containing site-specific history and appropriate contextual information relying as much as possible on previous documentation. Copies of the records, including photographs, shall be submitted to the Northwest Information Center at Sonoma State University, and the Oakland History Center ~~at~~, the Temescal Branch, and the proposed Hoover Branch of the Oakland Public Library. In addition, a complete documentation package will be offered to the Bancroft Library on the University of California, Berkeley Campus for inclusion in their digital repository.

Draft EIR Chapter 2, *Summary*, Table 2-2, page 2-9, third column, Mitigation Measure CUL-1b, hereby revised in response to Comment O-OHA-8:

Mitigation Measure CUL-1b: Public Interpretation and Salvage Plan for the A/B Wing

Prior to any demolition work that would remove character-defining features of the A/B Wing, UCSF shall prepare a Salvage Plan for those components of the building suitable for salvage and/or reuse. A Salvage Plan shall be prepared by a qualified architectural historian or historic architect who meets the Secretary of the Interior's Professional Qualification Standards and presented to UCSF Planning staff. This would be a feasibility study to determine the structural integrity of the character-defining features associated with the A/B Wing, identify environmental factors that may require remediation prior to salvage (e.g., lead paint, chemicals, etc.), and present potential new uses of the salvaged features. The Salvage Plan will identify opportunities for UCSF to reuse character-defining features in the NHB.

Prior to any demolition activities that would remove character-defining features of, or demolish, an individual historical resource on the project site, UCSF shall prepare a plan for interpretive displays. The specific location, media, and other characteristics of such interpretive display(s) shall be included in this proposal. The historic interpretation plan shall be prepared in coordination with an architectural historian or historian who meets the Secretary of the Interior's Professional Qualification Standards and an exhibit designer or landscape architect with historical interpretation design experience. Interpretive display(s) shall document the individually eligible resource to be demolished. The interpretative plan should also explore contributing to digital platforms that are publicly accessible. A proposal describing the general parameters of the interpretive program and the substance, media, and other elements of such interpretive display shall be approved by UCSF Planning staff prior to commencement of any demolition activities.

Following any demolition activities within the project site, UCSF shall provide within publicly accessible areas of the project site a permanent display(s) of interpretive materials concerning the history and architectural features of the individual historical resources. All materials will be made accessible to patients and visitors, and to the greatest extent possible, these materials will also be made accessible to the general public and passers-by.

Draft EIR Section 4.4, Energy

Draft EIR Section 4.4, *Energy*, page 4.4-20, second paragraph, last sentence, is hereby revised as a staff-initiated change:

The Project would also comply with CALGreen requirements~~ and be consistent with City of Oakland Green Building Ordinance "Sustainable Green Building Requirements for Private Development."~~

Draft EIR Section 4.4, *Energy*, page 4.4-22, first paragraph, first full sentence, is hereby revised as a staff-initiated change:

This estimate conservatively excludes the benefits of LEED and improvements in demand response due to future updates to the Title 24 energy standards, and CALGreen requirements ~~and City of Oakland Green Building Ordinance "Sustainable Green Building Requirements for Private Development."~~

Draft EIR Section 4.4, *Energy*, page 4.4-23, fourth paragraph, fifth sentence, is hereby revised as a staff-initiated change:

The Project would comply with the applicable UC Policy on Sustainable Practices and would pursue a minimum level of LEED Gold Certification for the new hospital building and in general would meet and exceed CALGreen mandatory standards~~ and City of Oakland Green Building Ordinance "Sustainable Green Building Requirements for Private Development."~~

Draft EIR Section 4.6, Greenhouse Gas Emissions

Draft EIR Section 4.6, *Greenhouse Gas Emissions*, page 4.6-41, fourth paragraph, fifth sentence, is hereby revised as a staff-initiated change:

> In addition, the Project would comply with the applicable UC Policy on Sustainable Practices and would pursue a minimum level of LEED Gold Certification for the new hospital building and in general would meet and exceed CALGreen mandatory standards. ~~and City of Oakland Green Building Ordinance "Sustainable Green Building Requirements for Private Development."~~

Draft EIR Section 4.7, Hazards and Hazardous Materials

The Draft EIR Section 4.7, *Hazards and Hazardous Materials* has been updated with a number of minor staff-initiated edits to reflect new information available in an updated Phase I Environmental Site Assessment (ESA) for the Project site that was completed by Ninyo and Moore for UCSF in April 2024. These updates are described below. The Phase I ESA is part of the administrative record, and available for review if requested.

Draft EIR Section 4.7, *Hazards and Hazardous Materials*, page 4.7-1, second paragraph, is revised as follows:

> The analysis of hazardous materials included in this section was developed based on current publicly available information from databases maintained by the State Water Resources Control Board (SWRCB), California Department of Toxic Substances Control (DTSC), and California Department of Forestry and Fire Protection (Calfire), as well as a Phase I Environmental Site Assessment (ESA) previously prepared for the Project site (The Source Group, 2008) as well as an updated Phase I ESA prepared for the Project site (Ninyo and Moore, 2024) (Phase I ESA). ~~Although the Phase I ESA was prepared in 2008, the conditions at and surrounding the Project site have not substantially changed and thus the Phase I ESA retains its informational value.~~

Draft EIR Section 4.7, *Hazards and Hazardous Materials*, page 4.7-7, first paragraph, last two sentences are revised as follows:

> In addition, ~~two~~three empty 55-gallon drums were observed ~~beneath the helistop structure in the construction materials storage area~~ on the Project site (~~The Source Group~~ Ninyo and Moore, ~~2008~~ 2024). ~~The contents of the drums are unknown but both drums were labeled as hazardous (The Source Group Ninyo and Moore, 2008).~~

Draft EIR Section 4.7, *Hazards and Hazardous Materials*, page 4.7-7, second paragraph, the following sentence is added to the end of the paragraph:

> As noted in Section 4.0 of this EIR, the removal and replacement of this tank is not part of the proposed Project.

Draft EIR Section 4.7, *Hazards and Hazardous Materials*, page 4.7-7, third paragraph, first sentence is revised as follows:

> The 2008 Phase I ESA reported that based on interviews with BCH Oakland facilities staff indicated that a UST was formerly located near the southern edge of the B/C Wing, and north of the existing large magnolia tree.

Draft EIR Section 4.7, *Hazards and Hazardous Materials*, page 4.7-7, last paragraph, first sentence is revised as follows:

> The portion of the UCSF BCH Oakland campus site north of 52nd Street (Outpatient Center) has been the subject of prior subsurface hazardous materials investigation.

Draft EIR Section 4.7, *Hazards and Hazardous Materials*, page 4.7-8, first full paragraph, first sentence is revised as follows:

> The last groundwater monitoring event for the ~~campus site~~ Outpatient Center was conducted on April 19, 2021, and sampled the eight groundwater monitoring wells located across 52nd Street north of the NHB Project site (Ninyo & Moore 2021).

Draft EIR Section 4.7, *Hazards and Hazardous Materials*, page 4.7-8, second to last paragraph is revised as follows:

> As part of the case closure process, the ~~campus site~~ Outpatient Center groundwater monitoring wells north of 52nd Street were destroyed under permit on January 17th and 18th, 2023, as directed by ACDEH (Ninyo & Moore, 2023). It is important to note that ACDEH is closing the case only relative to UCSF BCH Oakland because the ACDEH has concluded that UCSF BCH Oakland is not the responsible party for the residual contamination ~~in~~ detected in the groundwater monitoring wells. Soil vapor sampling was conducted on the Outpatient Center site in connection with this plume and the sampling showed that VOC concentrations were all below soil vapor environmental screening levels. Therefore based on these concentrations, there is not a significant vapor intrusion risk to users or occupants of the buildings on the Outpatient Center site (Ninyo & Moore, 2024). As such, the risk of vapor intrusion on the Project site is low.
>
> However, ~~T~~this does not mean that there are no residual chemicals in groundwater beneath the campus site. Given that the 2021 sampling event is relatively recent and that PCE and TCE are recalcitrant chemicals (i.e., they degrade very slowly), the risk that PCE and TCE ~~are expected to be present~~ in groundwater have migrated beneath the campus site, including the Project site, cannot be ruled out.

Draft EIR Section 4.7, *Hazards and Hazardous Materials*, page 4.7-9, the following new paragraph is inserted after the fourth bulleted paragraph as follows:

> The 2024 Phase I ESA also summarized the results of a Phase I ESA and Phase II ESA that were performed in 2018 on the eastern portion of the Project site, adjacent to SR-24. The

> 2018 Phase I and II ESAs were conducted for parcels owned by Caltrans, one of which, APN 14-1204-15, is now part of the Project site (the Caltrans Parcel). In connection with the 2018 Phase II, Ninyo & Moore advanced 9 soil borings, three of which (SB-7 through SB-9) were located on the vacant land on the eastern portion of the Project site. Concentrations of lead exceeding the Tier 1 environmental screening levels (ESLs) were detected in the surface soil samples in SB-1, SB-2, SB-4, SB-5, SB-8, and SB-9, and in the 2-foot sample from SB-5. Total petroleum hydrocarbons as diesel (TPHd) was detected above the Tier 1 ESL in SB-4, and dieldrin was detected above the Tier 1 ESL in the surface sample of SB-8. PCE was detected above the ESL in the groundwater sample from SB-3 (140 ft northeast of the Project site), but not in the groundwater sample on the Project site (SB-8) nor in the groundwater sample of SB-6 which is adjacent to the north of the Project site. The Phase I ESA found that, due to the lead contamination in SB-8 (120 milligrams per kilogram (mg/kg)) and SB-9 (83 mg/kg), and the dieldrin contamination in SB-8 (0.0033 mg/kg) exceeding their respective Tier 1 ESLs, these are considered a recognized environmental condition (REC).

Draft EIR Section 4.7, *Hazards and Hazardous Materials*, page 4.7-9, the first paragraph under the heading “Surrounding Area” is revised as follows:

> The 2008 and 2024 Phase I ESAs identified several nearby sites of concern as listed below. The GeoTracker dataset was checked as part of this EIR~~; several addresses and site numbers cited in the Phase I ESA were in error and have been corrected to match the GeoTracker database as~~ and the relevant results are ~~noted~~ summarized below.

Draft EIR Section 4.7, *Hazards and Hazardous Materials*, page 4.7-27, the following paragraph is inserted prior to the last paragraph as follows:

> Lastly, while not a case, the 2018 Phase II ESA for the Caltrans Parcel indicated that the lead contamination in two soil samples and the dieldrin contamination in one soil sample exceed their respective Tier 1 ESLs.

Draft EIR Section 4.7, *Hazards and Hazardous Materials*, page 4.7-27 last paragraph / page 4.7-28, first paragraph is revised as follows:

> As discussed above, there is some risk that residual levels of PCE and TCE ~~are~~ could be present in groundwater at the ~~campus~~ Project site and that lead and dieldrin may be present in the soil on the Caltrans Parcel. Construction workers may encounter contaminated soil and groundwater. While unlikely, future occupants of the Project site could be exposed to PCE and TCE vapors migrating from groundwater up into breathing spaces of structures. Construction activities may also encounter previously unidentified contamination. If not identified and managed appropriately, construction workers, campus employees, and the public could be exposed to contaminants through direct contact (construction workers) or through soil vapor intrusion. To mitigate the impact from exposure to contamination, the proposed Project would be required to implement **Mitigation Measures HAZ-4a, Soil and Groundwater Management Plan (SGMP) and HAZ-4b, Vapor Mitigation**, described below.

Draft EIR Section 4.7, *Hazards and Hazardous Materials*, Mitigation Measure HAZ-4b on pages 4.7-28 to 4.7-29 is revised as follows:

> **Mitigation Measure HAZ-4b: Vapor Mitigation**: To mitigate potential exceedances of indoor air standards, the Project shall incorporate at least one or more of the vapor mitigation methods listed below in areas determined to have soil gas concentrations above soil gas screening levels. The proposed work-specific vapor mitigation must be in accordance with vapor mitigation guidance provided by the Department of Toxic Substances Control (DTSC), which provides vapor guidance information at https://dtsc.ca.gov/vapor-intrusion/.
>
> - Excavate and remove contaminated materials (soil and, if needed, groundwater), to levels where subsequent testing verifies that soil gas levels are below screening levels.
> - Install a physical vapor barrier beneath the structure foundation that prevents soil gas from seeping into breathing spaces inside the structure, or
> - Install a passive or powered vapor mitigation system that draws soil gas out of the under-foundation base rock and directs that soil gas to a treatment system to prevent people from being exposed outdoors to the extracted soil gas.
>
> Upon completion, UCSF BCH Oakland shall prepare a report documenting the testing results and installed vapor mitigation method and submit the report to the regulatory agency with jurisdiction (i.e., ACDEH~~DTSC~~). A copy of the report shall be provided to the UCSF Mitigation Monitor to inform them of compliance with this requirement. The implemented mitigation measure shall result in indoor air concentrations that do not exceed the screening levels provided in the DTSC Human Health Risk Assessment (HHRA) Note Number 3.

Draft EIR Section 4.7, *Hazards and Hazardous Materials*, Section 4.7.4 *References*, page 4.7-31, the following reference is added as the sixth reference as follows:

> Ninyo & Moore, 2024. *Phase I Environmental Site Assessment, UCSF Benioff Children's Hospital Oakland, 747 52nd Street, Oakland, California.* March 22.

Draft EIR Section 4.12, Utilities and Service Systems

Draft EIR Section 4.12, *Utilities and Service Systems*, page 4.12-19, last paragraph is revised as follows:

> Finally, it should be noted that the estimated water demand associated with the proposed Project is conservative as the Project would comply with the applicable UC Policy on Sustainable Practices, as well as meet CalGreen requirements ~~and City of Oakland Green Building Ordinance "Sustainable Green Building Requirements for Private Development, which would reduce overall water demand~~.

8.6.3 Changes to the Draft EIR as a Result of NHB Project Refinements

Draft EIR Chapter 3, Project Description

Draft EIR Chapter 3, *Project Description*, presented on pages 3-1 through 3-54, is hereby revised to reflect the revised NHB Project. For clarity, the entirety of Section 3.6, *NHB Project*, and Section 3.7, *Revisions to the UCSF 2014 LRDP*, of Chapter 3 is reproduced below.

3.6 NHB Project

The Project consists of a new hospital building and associated improvements at the UCSF BCH Oakland campus site. The Project would address seismic safety requirements, other regulatory requirements, and industry standards for contemporary hospitals; increase inpatient beds; accommodate modern technologies; and enhance functionality and efficiency at the campus site.

Table 3-2 provides a detailed summary of proposed Project construction and demolition. The Project would include the construction of an approximate ~~332,523~~ 282,000 gross square foot (gsf) new hospital building with rooftop helistop; a ~~96,912~~ 103,180 gsf, 200 to 270-stall parking structure; a ~~6,100~~ 5,000 gsf site support structure ~~building~~; renovation and/or structural retrofitting of existing buildings within the Project site; and a variety of transportation, infrastructure, and landscape improvements. The Project would also involve demolition of 109,632 gsf of existing buildings, relocation of the 1,065 gsf MRI trailer on the Project site or on another portion of the campus site, and renovation of approximately ~~30,000~~ 12,000 gsf of existing building space.

New Figure 3-3 presents a conceptual site plan for the proposed Project. **New Figure 3-4** provides a conceptual massing diagram of the proposed buildings under the Project. **Figure 3-5** illustrates existing buildings and structures that would be demolished or relocated off-site under the Project. The following provides a description of the major Project components.

3.6.1 Proposed Use Program and Space Summary

The proposed new hospital building is planned to be constructed as an ~~8-story~~ 7-story above grade with rooftop helistop plus a full basement building. ~~Levels 1 through 6 of the new hospital building would be occupied upon completion in 2031, and Levels 7 and 8 would remain as shell space initially but would be occupied later on by the planned programs. The full occupancy of the new hospital building is referred to below as NHB Project buildout.~~

Table 3-3 presents an overview of the UCSF BCH Oakland hospital program, including the existing (2023) hospital program, the hospital program envisioned under the proposed Project buildout, and net change.

TABLE 3-2
SUMMARY OF BUILDING CONSTRUCTION AND DEMOLITION UNDER NHB PROJECT

Reference No.[a]	Building/Structure	Area (sq. ft.)
New Building Construction		
A	New Hospital Building with Rooftop Helistop	~~332,523~~ 282,000
B	Parking Structure	~~96,912~~ 103,180
C	Site Support Structure ~~Building~~	~~6,100~~ 5,000
		~~435,585~~ 390,180
Existing Buildings to Remain[b]		
1	Patient Tower	105,371
2	Ford Diagnostic and Treatment (D&T) Center	44,208
3	Cardiac Catheterization Lab	1,750
4	Cafeteria	7,779
5	Western Addition	7,715
6	Central Utility Plant	12,217
7	Chiller Building	1,050
		180,090
Demolition or Removal of Existing Buildings/Structures[c]		
8	Hospital Loading Dock	637
9	B/C Wing	33,510
10	A/B Wing	45,177
11	Bruce Lyon Memorial Research Laboratory	12,570
12	Bruce Lyon Addition (Hematology/Oncology Administrative offices)	4,500
13	Temporary Trailer (MRI)	1,065[d]
14	Temporary Trailer (Facilities Design and Construction)	480
15	Temporary Trailer (Ed Administration & Social Services)	2,108
16	Temporary Trailer (Offices)	1,772
17	Temporary Trailer (Center for Vulnerable Children [CVC])	4,555
20	Helistop Structure	4,323
		110,697

NOTE:

a. Please refer to Figure 3-2 and Figure 3-3 for location of buildings.
b. Approximately ~~30,000~~12,000 square feet within existing buildings would be renovated.
c. Existing Temporary Trailer No. 18 (Education/HIS) and Temporary Trailer No. 19 (Offices) are planned to be demolished separate from the NHB Project.
d. MRI Trailer to be removed and relocated on the Project site or elsewhere on the campus site.

SOURCE: UCSF, 2024 ~~2023~~

TABLE 3-3
UCSF BCH OAKLAND CAMPUS SITE LICENSED BED PROGRAM

Building	Existing (2023)	~~NHB Project (2031)~~	NHB Project ~~Buildout~~
Patient Tower and D&T Building	177	~~105~~	106
Proposed New Hospital Building	--	~~80~~	~~128~~ 104
Total	**177**	**~~185~~**	**210**

SOURCE: UCSF, ~~2023~~ 2024

NEW HOSPITAL BUILDING PROJECT

- **A** New Hospital Building
  - **A1** New Emergency Department Entrance
  - **A2** New Staff Entrance
  - **A3** New Ambulance Dropoff
  - **A4** New Loading Dock
  - **A5** New Rooftop Helistop
- **B** New Parking Garage
- **C** Site Support Structure

EXISTING BUILDINGS

1. Patient Tower
2. Ford Diagnostic and Treatment (D&T) Center
3. Cardiac Catheterization Lab
4. Cafeteria
5. Western Addition
6. Central Utility Plant
7. Chiller Building

New Buildings/ Structures

Existing Buildings

New Hospital Building Project Site

0 100 Feet

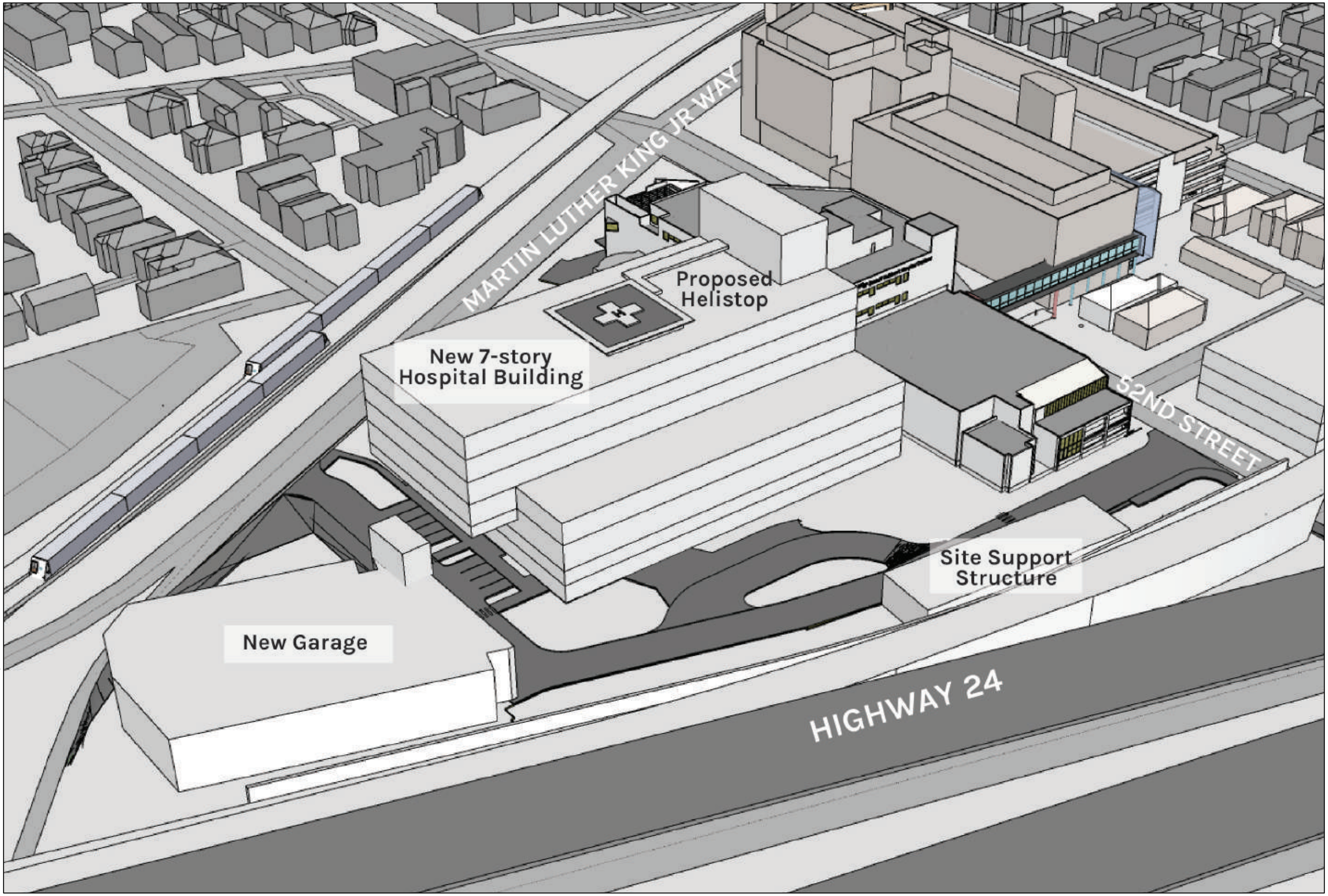
2022/D202201057.00 - UCSF BCH Oakland/02 Graphics/Illustrator

SOURCE: SmithGroup, 2024; ESA, 2024

UCSF BCH Oakland NHB Project EIR

New Figure 3-3
New Hospital Building Project Site Plan

ESA



2022/D202201057.00 - UCSF BCH Oakland/02 Graphics/Illustrator

SOURCE: SmithGroup, 2024

UCSF BCH Oakland NHB Project EIR

New Figure 3-4
Conceptual Massing of Proposed Buildings under NHB Project

ESA

SOURCE: ESA, 2023; Google Earth, 2023

Figure 3-5
Proposed Demolition Under
New Hospital Building Project

As shown in Table 3-3 above, there are currently 177 licensed inpatient beds in the Patient Tower and D&T Building. ~~In the first year of operation of the Project (2031), there would be 80 licensed beds in the new hospital building, and105 licensed beds in the Patient Tower and D&T Building, for a total of 185 licensed beds at the UCSF BCH Oakland campus site~~. Under ~~full buildout of~~ the NHB Project, the new hospital building ~~bed count would increase to~~ ~~128~~ would provide 104 licensed beds, and the number of beds in the Patient Tower and D&T Building would be reduced to 106 licensed beds, for a total of 210 inpatient beds at the BCH Oakland campus site. As such, the Project would result in a net increase in 33 licensed beds over existing conditions at the campus site. ~~As a conservative approach for addressing the Project's impacts in this EIR, the higher (buildout) estimate of 210 total licensed beds at the campus site is used for analysis in year 2031 as well.~~

Table 3-4 presents a building space summary estimate for the new hospital building. The proposed new hospital building would provide a comprehensive range of health care services: *Inpatient Nursing and Support Services* would include NICU and PICU, acute care services for medical/surgery and behavioral health, Child Life services, and on-call space. *Diagnostic and Treatment* would include the ED, including ED imaging, surgery, preparation and recovery, and cardiac catheterization and interventional radiology (Cath/IR) services. *Clinical Support Services* would include central sterile processing department (CSPD), inpatient pharmacy (IP); and resident and fellow support space. *General Support Services* would include materials management, medical equipment processing and staging, facilities management and engineering, environmental services, biomedical engineering, morgue and autopsy, security department, support administration, emergency food and water storage, loading dock receiving, transport lift, waste holding, bed storage and repair, and mailroom. *Building Infrastructure* would include mechanical, electrical, plumbing and communications infrastructure, radio and fire command rooms, fire protection and domestic water storage, and Nonstructural Performance Category-5 (NPC-5) tanks. Lastly, *Building Circulation* would include general circulation, including lobby and corridors, vertical circulation, and public restrooms.

The new hospital building would not contain a cafeteria or kitchen facilities. Rather, food services operations to serve the new hospital building would utilize the existing cafeteria/kitchen in the adjacent Patient Tower building. (Please see Section 3.6.11, *Renovation of Existing Project Buildings*, for a discussion of improvements proposed to existing Project site buildings under the Project.)

~~TABLE 3-4~~
~~NHB LAND USE PROGRAM / SPACE SUMMARY~~

~~Function~~	~~Size (GSF)~~
~~Inpatient Nursing and Support Services~~	
~~Acute Care, Medical/Surgery (Level 6)~~	~~21,907~~
~~Acute Care, Behavioral Health (Level 5)~~	~~21,906~~
~~Neonatal Intensive Care Unit (Level 5)~~	~~28,278~~
~~Shell – Support Space (Level 8)~~	~~22,323~~
~~Shell – Support Space (Level 7)~~	~~21,670~~
~~Child Life (Levels 5 and 6)~~	~~3,560~~
~~On-Call (Levels 4 and 5)~~	~~2,837~~
~~Unassigned~~	~~4,581~~
	~~127,062~~
~~Diagnostic and Treatment~~	
~~Surgery and Cardiac Catheterization-Interventional Radiology~~	~~20,440~~
~~Preparation/Recovery~~	~~12,806~~
~~Emergency Department (including Emergency Department Imaging)~~	~~32,101~~
	~~65,347~~
~~Clinical Support Services~~	
~~Shell – Support Space (Level 3)~~	~~6,166~~
~~Shell – Support Space (Basement Level)~~	~~6,648~~
~~Resident and Fellow Support~~	~~2,881~~
	~~15,695~~
~~General Support Services~~	
~~Bed Storage and Repair~~	~~1,003~~
~~Biomedical Engineering~~	~~1,809~~
~~Facilities Management/Engineering~~	~~2,537~~
~~Security Department (Basement)~~	~~937~~
~~Medical Equipment Processing and Staging~~	~~2,599~~
~~Materials Management~~	~~5,894~~
~~Shell – Support Space (Basement Level)~~	~~3,207~~
~~Transport/Lift~~	~~915~~
~~Emergency Food and Water Storage~~	~~389~~
~~Loading Dock Receiving Waste Holding, Support Administration Mailroom~~	~~3,537~~
	~~489~~
	~~23,316~~
~~Building Infrastructure~~	
~~Mechanical, Electrical, Plumbing (Basement, Level 2, Penthouse)~~	~~16,691~~
~~Communications Infrastructure~~	~~3,605~~
~~Radio Room, Fire Command Room~~	~~930~~
~~Fire Protection and Domestic Water Storage (Basement)~~	~~1,755~~
~~Electrical Rooms (all floors)~~	~~2,344~~
~~Nonstructural Performance Category-5 (NPC-5) Tanks~~	~~3,434~~
~~Other~~	~~7,780~~
	~~36,539~~
~~Building Circulation + Exterior Skin~~	
~~General Circulation, Vertical Transport, Public Restrooms~~	~~54,000~~
~~Exterior Skin~~	~~10,564~~
	~~64,564~~
~~Total~~	**~~332,523 GSF~~**

~~NOTE: Space summary square footages are estimated.~~
~~SOURCE: UCSF, 2023~~

TABLE 3-4
NHB LAND USE PROGRAM / SPACE SUMMARY

Function	Size (GSF)
Inpatient Nursing and Support Services	
Acute Care, Medical/Surgery (Level 7)	20,405
Acute Care, Medical/Surgery (Level 6)	20,405
Acute Care, Behavioral Health (Level 5)	21,195
Neonatal Intensive Care Unit (Level 4)	29,450
Child Life (Levels 4,6,7)	2,680
On-Call (Level 4)	2,660
	96,795
Diagnostic and Treatment	
Surgery and Cardiac Catheterization/ Special Procedures	24,725
Peri-Anesthesia/ Recovery	13,830
Emergency Department (including Emergency Department Imaging)	32,060
Shell (Future Cardiac Catheterization)	905
	71,520
Clinical Support Services	
Point of Care Lab/Stat Lab	**510**
General Support Services	
Bed Storage and Repair/ Transport/Lift	2,933
Biomedical Engineering	3,124
Facilities Management/Engineering	3,202
Security Department (Basement)	883
Materials Management/ Emergency Food and Water /Clean Linen/ Loading Dock Receiving Waste Holding/ Support Administration Mailroom	7,383
Shared Support	2,737
Helistop Support	219
Shell (Basement)	4,360
	24,841
Building Infrastructure	
Mechanical, Electrical, Plumbing (Basement, Level 2, Penthouse)	19,270
Communications Infrastructure (MDF, MPOE, IDF)	1,262
Radio Room, Fire Command Room	419
Fire Pump/Tank (Basement)	1,881
Electrical Rooms (all floors)	2,702
IDF (all floors)	2,071
Blower Room	1,322
Shafts	3,443
Elevator Machine Room	1,396
Other	2,930
Total	**36,696**
Building Circulation + Exterior Skin	
General Circulation, Vertical Transport, Public Restrooms	39,459
Exterior Skin	12,179
	51,638
Total	**282,000 GSF**

NOTE: Space summary square footages are estimated.
SOURCE: UCSF, 2024

3.6.2 New Hospital Design

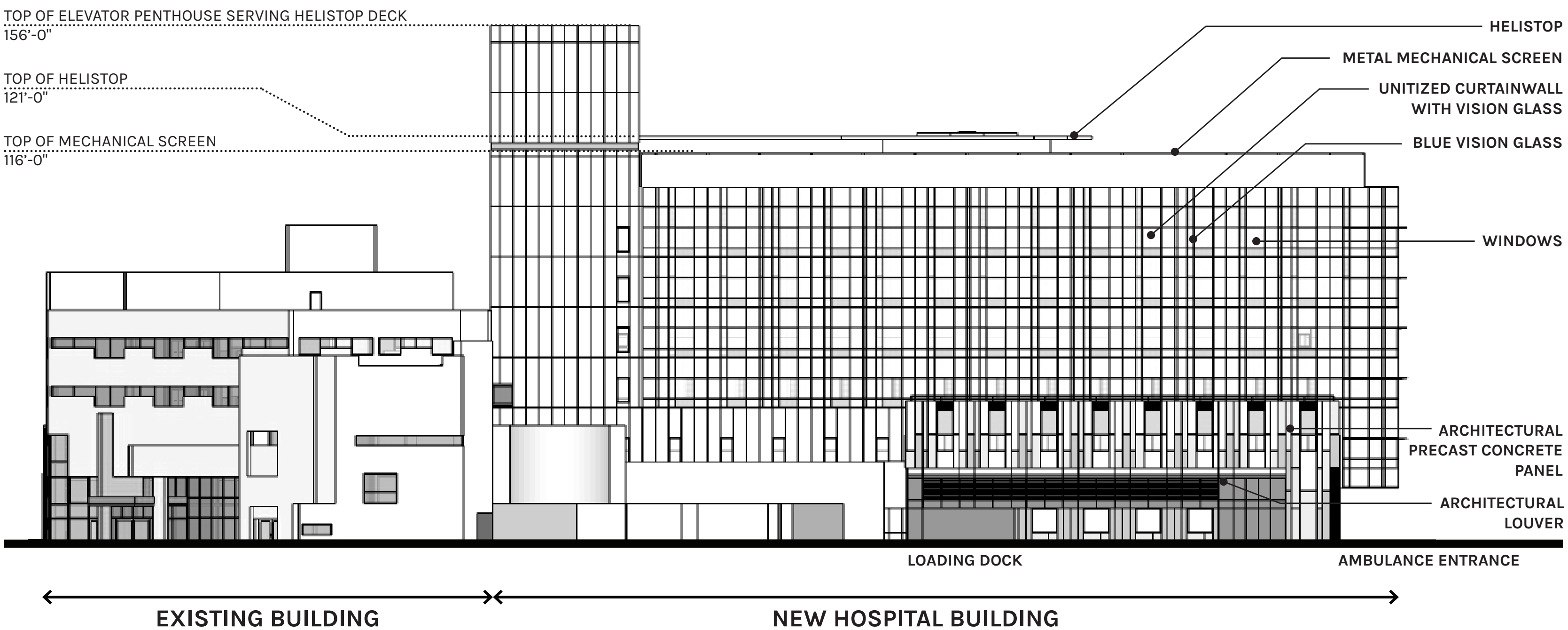
Figure 3-3 presents the proposed new hospital building site plan. As proposed, the new hospital building would be ~~332,523~~ 282,000 gsf, and consist of ~~8~~ 7 stories with rooftop helistop above grade plus a full basement. The new hospital building would be situated south of, and adjacent to, the existing Patient Tower and D&T Building. The new hospital building, and renovated Patient Tower and D&T Building would effectively function as one hospital. **New Figure 3-6** through **New Figure 3-9** present elevation drawings depicting the west, north, east and south elevations, respectively, of the new hospital building. The height of the building above ground level would be approximately ~~116~~ 101 feet above ground level (agl) to the building main roof, 116 ~~131~~ feet to the top of mechanical screen, and approximately ~~167~~ 156 feet agl to the top of helistop elevator overrun parapet.

~~**Figure 3-10** presents a stacking diagram of the new hospital building, and adjacent Patient Tower and D&T Building.~~ Due to the greater floor-to-floor heights of the new hospital building, only Level 1 through 3 of the new hospital building would horizontally connect to the adjacent Patient Tower and D&T Building. Final connection locations and floors would be confirmed during the design process. A transfer elevator core in the new hospital building would allow for connections to the remaining floors. See details of the proposed improvements to the Patient Tower and D&T Building, under *Renovation of Existing Buildings*, below.

Levels 1 and 2 in the new hospital building would primarily contain the ED and supporting services facilities, and ground-level loading dock. The ED would replace the existing ED with more appropriately sized rooms in contiguous space, with updated technologies for the emergency service needs and in support of Level 1 Trauma care. The ED and its access points for Ambulance and Ambulatory entries would fully relocate into the new hospital building. The new ED would be programmed with a total of 42 stations (including 4 treatment in triage stations); and augmented with additional imaging modalities, including ~~individual rooms for~~ magnetic resonance imaging (MRI), computed tomography (CT) scan, ultrasound, and general radiography.

Surgery, cardiac Cath/IR services, and preparation and recovery space would be located on Level 3. ~~Six~~ Seven (7~~6~~) new operating rooms and one new Cardiac Cath~~/IR~~ room would be provided to replace the existing 7 operating rooms and Cardiac Cath room. New nursing units would be located on the upper floors (Levels 4 through 8) of the new hospital building. Level 4 would contain the NICU, Child Life and ~~Graduate Medical Education on-call~~On-call space. The medical/surgical~~ery~~ and behavioral health nursing units, ~~and Child Life services~~ would be located on Levels 5~~ and 6~~-7. The new hospital building basement level would contain various mechanical space, emergency domestic/fire water ~~and wastewater~~ storage, and hospital supporting functions. Additional mechanical space would be located on an interstitial level on Level 2, and the building rooftop.

HOSPITAL PROPOSED PROJECT
WEST ELEVATION

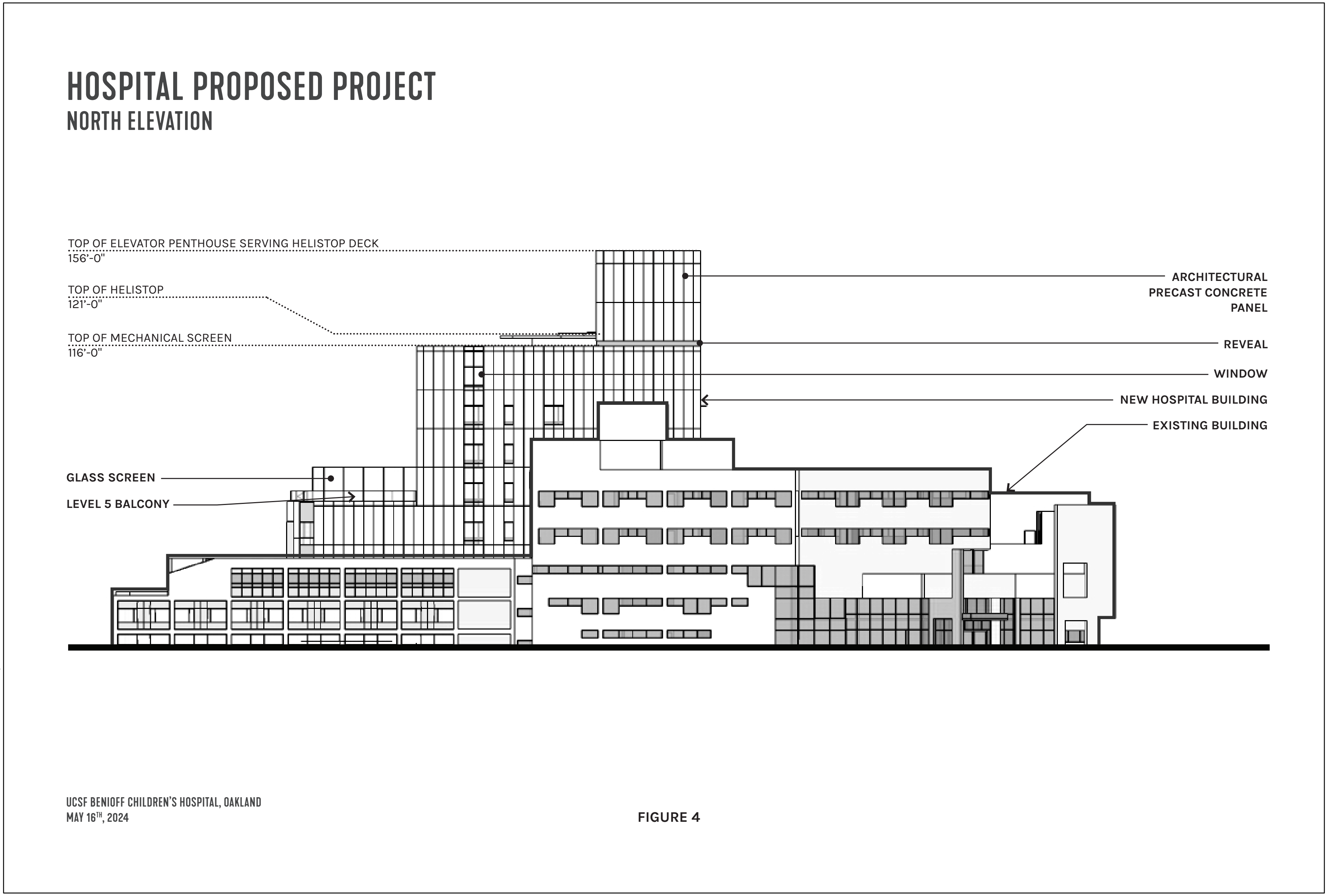


UCSF BENIOFF CHILDREN'S HOSPITAL, OAKLAND
MAY 16TH, 2024

FIGURE 3

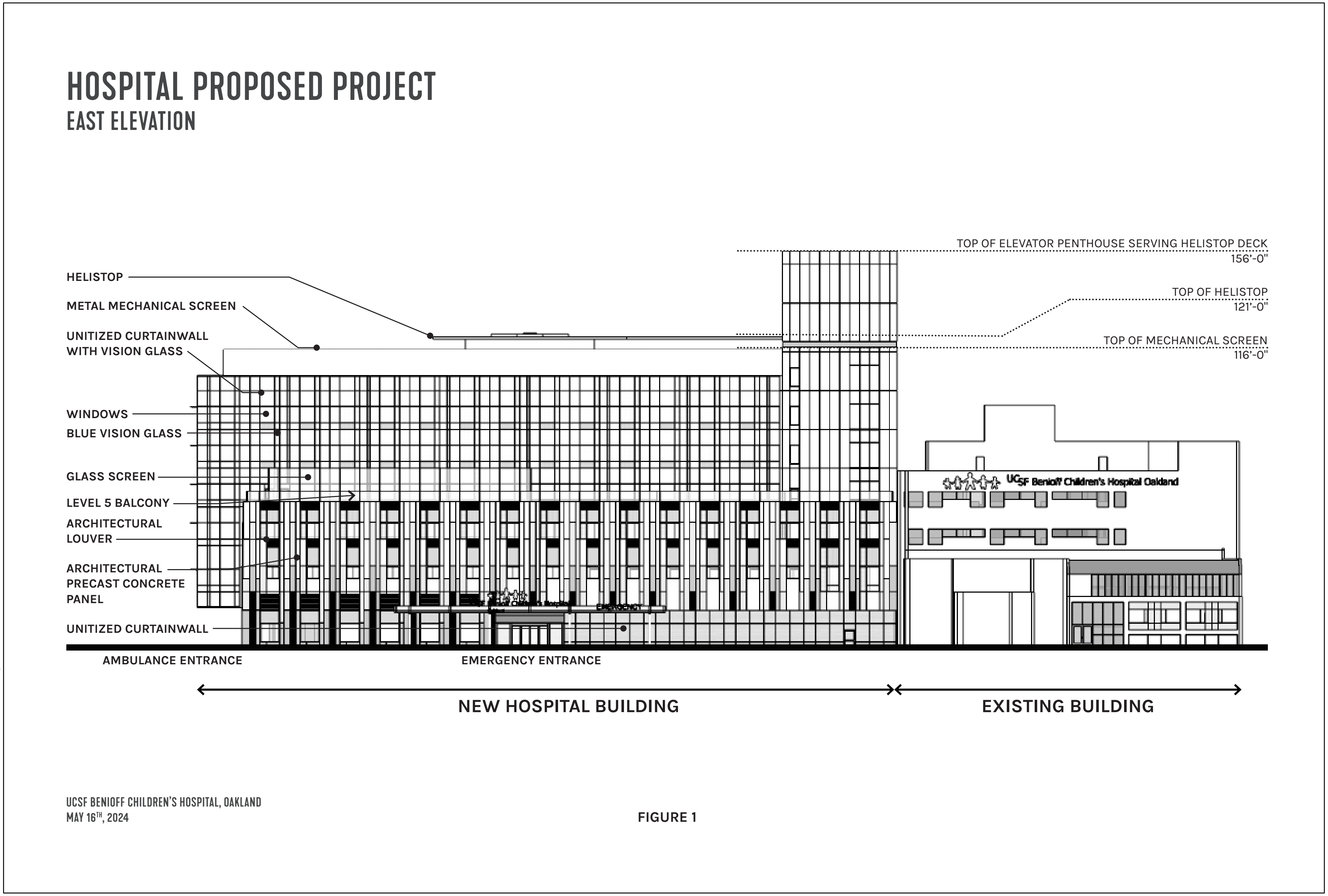
SOURCE: SmithGroup, 2024

New Figure 3-6
New Hospital Building – West Elevation



SOURCE: SmithGroup, 2024

New Figure 3-7
New Hospital Building – North Elevation



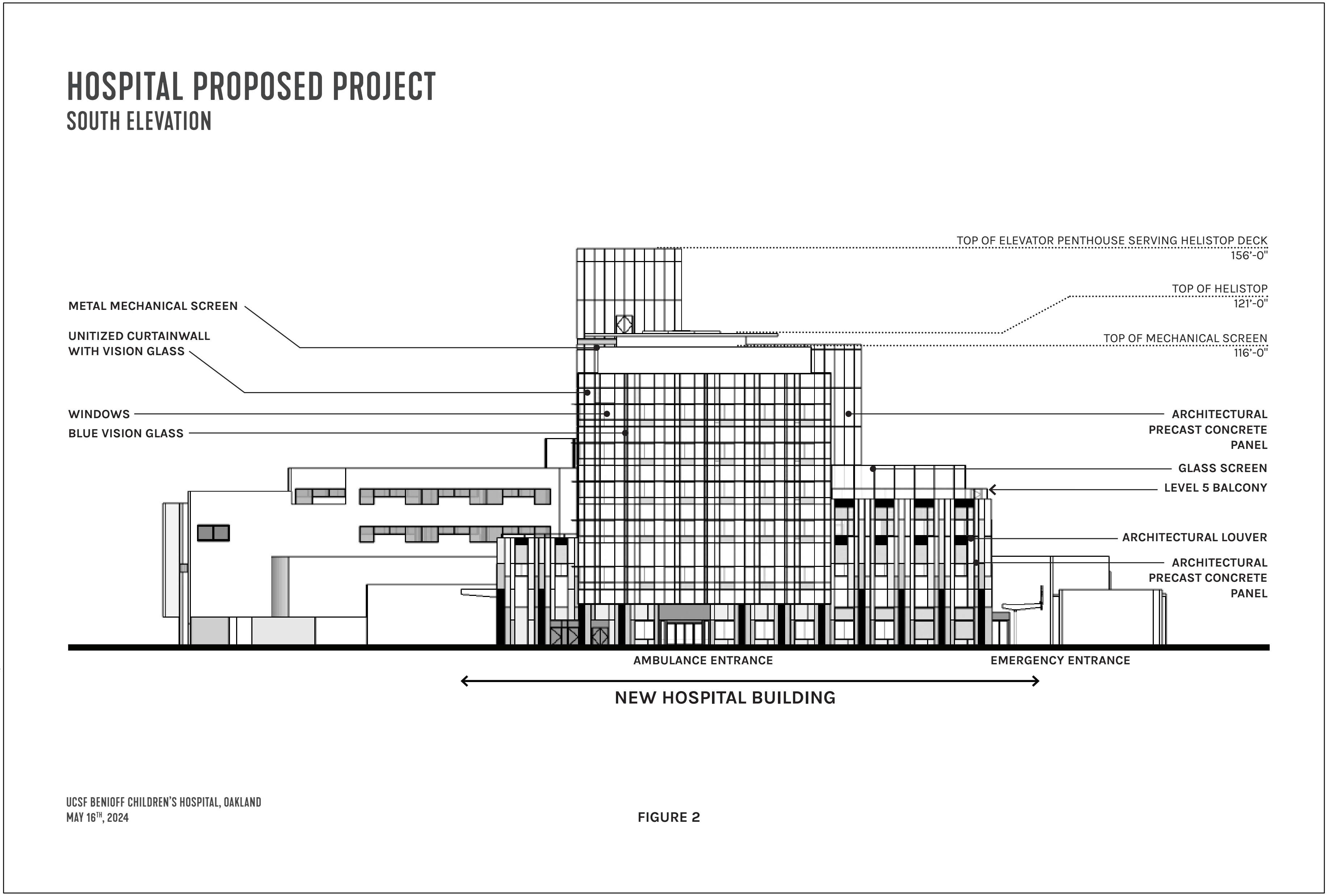
2022/D202201057.00 - UCSF BCH Oakland/02 Graphics/Illustrator

SOURCE: SmithGroup, 2024

UCSF BCH Oakland NHB Project EIR

New Figure 3-8
New Hospital Building – East Elevation

ESA



2022/D202201057.00 - UCSF BCH Oakland/02 Graphics/Illustrator

SOURCE: SmithGroup, 2024

UCSF BCH Oakland NHB Project EIR

New Figure 3-9
New Hospital Building – South Elevation

ESA

Each typical medical/surg<u>ical</u>~~ery and ICU~~ nursing unit floor would generally be composed ~~of two 12-bed pods for a total of~~ 24-beds per floor. The behavioral health unit and NICU units would have ~~different~~ <u>20 and 36</u> bed configurations ~~and counts~~<u>respectively</u>. All the medical/surg<u>ical</u> patient rooms are proposed to be private<u>.</u> ~~and be acuity convertible (ability to convert patient rooms from medical/surgery use to intensive care use with minimal additional construction).~~ The NICU would be all private, except for 3 twin-capable beds; the behavioral health floor would also be all private. Elevated outdoor access would be provided for the behavioral health unit (as required) and <u>common outdoor rooftop space</u>~~on the NICU floor~~ for use by all patients, visitors, and staff.

An up-to-15-foot-high metal rooftop penthouse screen would extend along the roof perimeter to ensure rooftop equipment would not be visible from off-site. Rooftop equipment would be located within enclosures to provide both noise attenuation and weather protection.

~~The new hospital building would incorporate a variety of exterior materials, textures and colors in its exterior design. The exterior material palette is proposed to be relatively neutral and light to complement the existing campus architecture. The preliminary design includes either a combination of panelized glass fiber reinforced concrete (GFRC) in 2 different neutral colors, with accents of metal panel and colored glass, or a unitized curtain wall system. Terraces and balconies would contain 6- to 8-foot-high glass rails for safety and protection from wind.~~

<u>The revised design of the new hospital building incorporates a variety of exterior materials, textures and colors in its exterior design. The exterior material palette is proposed to be relatively neutral and light to complement the existing campus architecture. The preliminary design includes a combination of precast concrete panels and unitized curtainwall systems with vision glass and accents of colored glass, metal panels and architectural louvers. Terraces and balconies would have tall glass rails for safety and protection from the wind.</u>

Rooftop Helistop Structure

The location of the helistop would be relocated to the roof of the new hospital building roof. The rooftop helistop landing would measure approximately 20 feet above the building roof deck (i.e., approximately ~~136~~ <u>121</u> feet agl, or <u>about</u> ~~96~~ <u>81</u> feet higher in elevation compared to the existing helistop landing[3]). A trauma elevator on the building roof serving the helistop deck would provide transport of patients to hospital floors. All supporting systems required for safe operation of the helistop, including lighting, fuel oil separation, and fire suppression would be provided.

After the existing helistop is demolished, helistop operations at the campus site would be temporarily suspended until relocation of the new helistop structure is completed atop the

3 Estimate accounts for differences in existing helistop ground elevation and proposed ground elevation for the new hospital building.

roof of the new hospital building. UCSF is considering a temporary off-site helistop location for this interim period, to maintain air ambulance service while construction occurs at the NHB Project site. Patient transport from the temporary helistop location to UCSF BCH Oakland would occur via ground ambulance. ~~The most likely location for the temporary helistop would be Oakland International Airport. However,~~ UCSF BCH Oakland ~~has come to an agreement~~is in discussions with the Peralta Community College District to use a vacant former parking lot site at the terminus of 4th Street (11 4th Street) adjacent to the I-880 freeway ~~is also under consideration. No location has been firmly identified, the appropriate level of environmental review would be completed by the appropriate CEQA lead agency at the time a location is proposed~~ for the construction of a temporary helistop that would be used until such time that the construction of the relocated helistop at the campus site is completed. If UCSF does not move forward with a temporary helistop at the Peralta Community College District property, then UCSF may seek the use of a temporary helistop at the Oakland International Airport.

Upon commencement of helistop operation, helicopters would use a similar east-west approach and takeoff zone as under existing conditions, but the operations would be relocated to the north in alignment with the new helistop site.

It is anticipated that the helicopter arrivals/departures may increase approximately 1 percent per year with or without the proposed Project.[4] Using the 786 helicopter operations (landing plus takeoffs) in 2022 as a baseline, the projected helicopter operations at the Project site in the first year of NHB operation (2031) would be approximately 858.

3.6.3 Parking Garage

Parking Garage

As shown in Figure 3-3, the proposed 5-~~4~~-level parking garage would be located at the south end of the Project site, with vehicular access provided via an existing driveway on 52nd Street and an internal access road on the north side of the garage. The parking garage would provide between 200 and 270 vehicle parking stalls, including stalls with electric vehicle charging stations. The provision of 200 parking spaces would be the minimum required to meet the estimated Project parking demand at current parking demand rates; the provision for up-to-270 spaces would allow for a buffer/flexibility and potential additional needs [e.g., additional Americans with Disabilities Act (ADA) spaces, surge demand during peak seasons, and/or additional demand for on-site parking due to increased enforcement of on-street parking] should additional demand materialize. For purposes of analysis, this EIR will address will conservatively address a 270-space parking garage as it would provide a worst-case assessment of potential environmental impacts.

4 The actual number of helicopter landings, and their timing, is a function of medical emergencies, which can vary daily and seasonally. Furthermore, landings can increase or decrease over time with changes in population, added or reduced medical specialties at the hospital, and the availability of competing services at other hospitals.

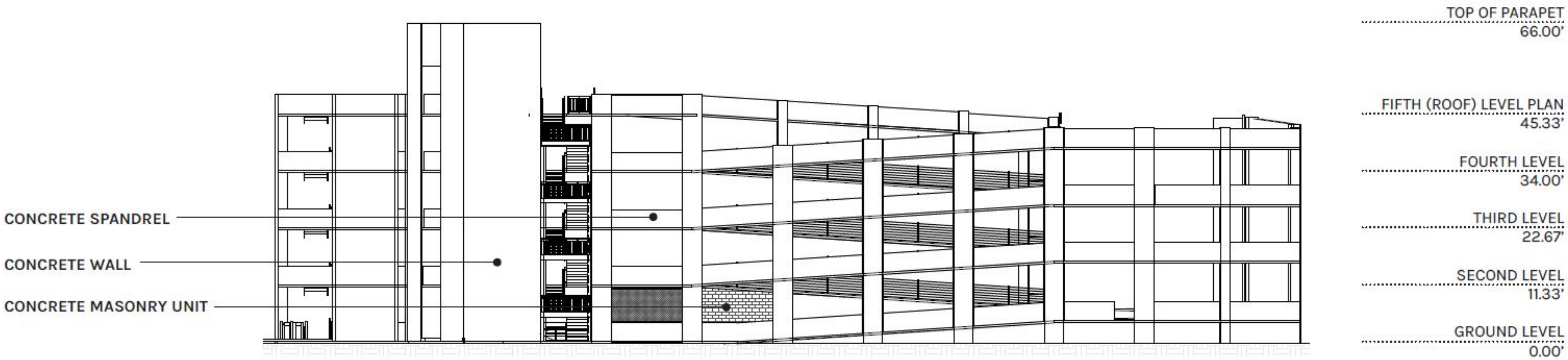
The 270-space parking garage would be ~~96,912~~ 103,180 gsf. The parking structure would be concrete with sloping decks and include two prefabricated exit stairs and two public elevators, lighting, fire protection, and parking control.

New Figure 3-10~~11~~ through **New Figure 3-13~~14~~** present elevation drawings depicting the west, north, east and south elevations, respectively, of the proposed parking garage. The parking garage would measure approximately ~~32~~ 45 feet agl to the top of 5th~~4th~~ level roof deck, and a maximum height of approximately 66 ~~50~~ feet agl when accounting for the top of elevator penthouse. The parking garage entry would be gated and controlled.

3.6.4 Site Support ~~Building~~ Structure and Permanent Loading Dock

As indicated in Figure 3-3, an approximate ~~6,100~~ 5,000 gsf site support ~~building~~ structure consisting of a trailer(s) would be ~~constructed~~located along the east side of the Project site that would be utilized for loading activities for the hospital after the existing loading dock is demolished and prior to completion of the permanent loading docks. The ~~building~~ structure would provide an elevated loading dock with 2 truck bays and areas for compactor/containers for trash and recycling waste. The site support structure ~~building~~ would also include a materials staging, warehouse and distribution area, and storage areas for hazardous and medical waste, medical gas cylinders, and emergency food and water. **~~Figure 3-15~~** ~~presents elevation drawings for the proposed site support building. The site support building would be pre-engineered, one-story in height and measure 22.5 feet agl (approximately 32.5 feet agl to top of rooftop mechanical screen).~~

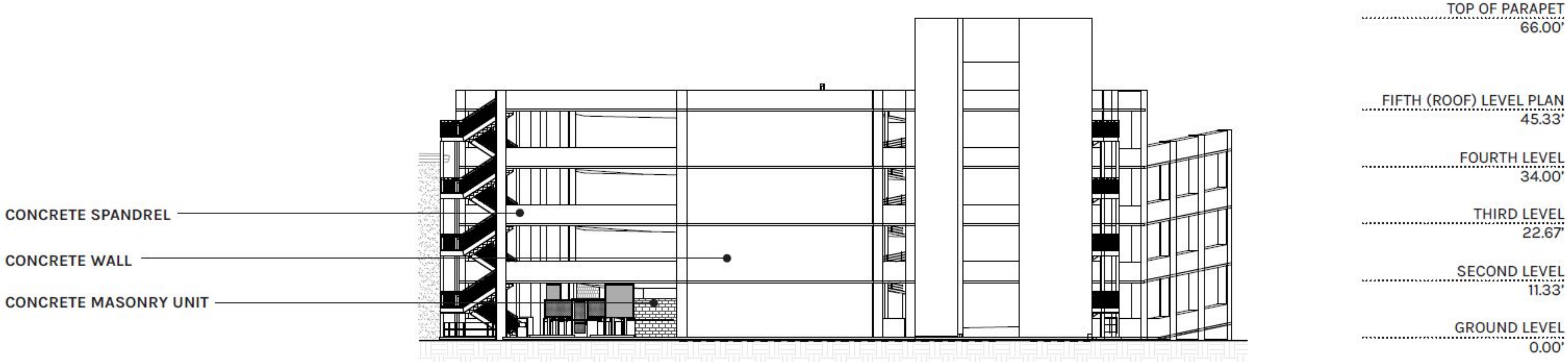
As depicted in Figure 3-3, permanent loading docks would be integrated into the west side of the new hospital building, in the same general location as the existing dock facilities. The proposed permanent loading docks would provide five~~four~~ dock bays (an increase over the two existing dock bays at the site). Three to four of the bays would be used for loading and one to two bays would be used for trash compactor pickup. Service elevators adjacent to the loading docks would facilitate the transport of clean supplies and materials to the clean supply warehouse in the new hospital building basement. As with the site dock structure~~building~~, the permanent loading dock facility would include hazardous and medical waste ~~storage holding~~. After the permanent loading docks are completed, the site support structure would be removed ~~building~~ ~~may remain and continue to be used as a supplemental facility~~.



SOURCE: SmithGroup, 2024

UCSF BCH Oakland NHB Project EIR

New Figure 3-10
Parking Garage – West Elevation

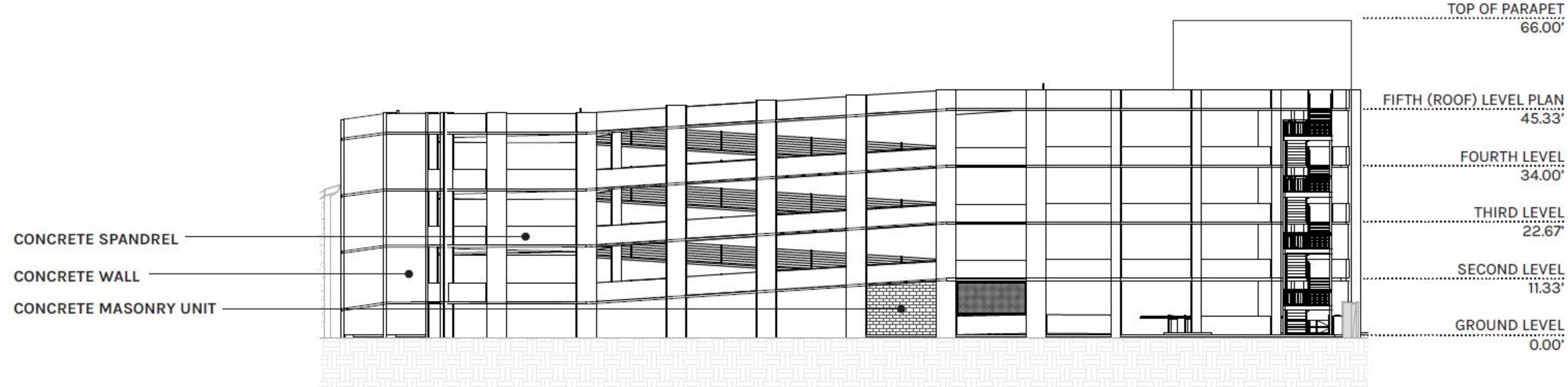


SOURCE: SmithGroup, 2024

UCSF BCH Oakland NHB Project EIR

New Figure 3-11
Parking Garage – North Elevation

ESA



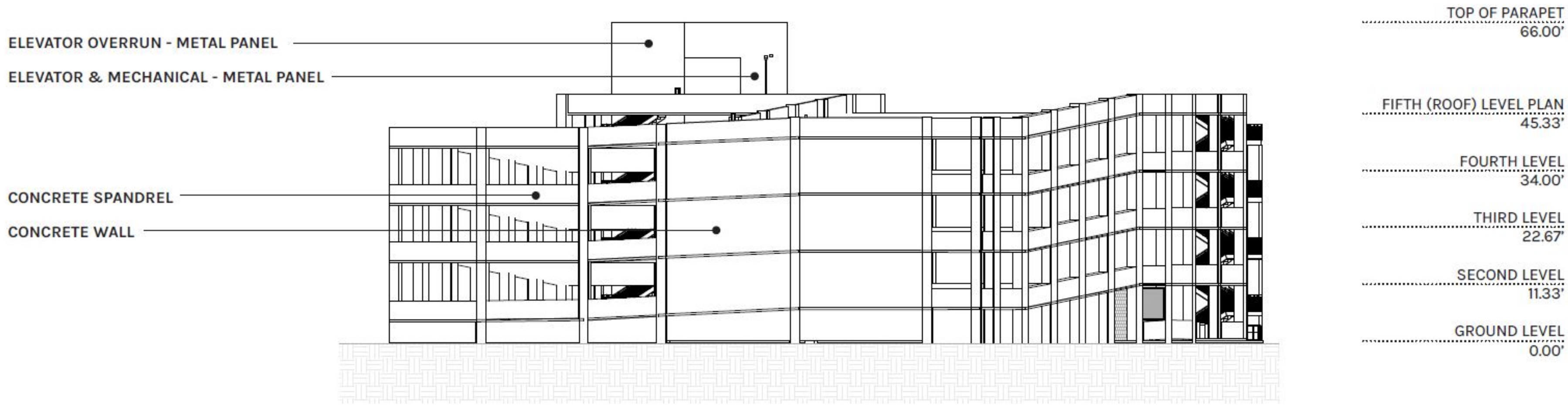
2022/D202201057.00 - UCSF BCH Oakland/02 Graphics/Illustrator

SOURCE: SmithGroup, 2024

UCSF BCH Oakland NHB Project EIR

New Figure 3-12
Parking Garage – East Elevation

ESA



SOURCE: SmithGroup, 2024

New Figure 3-13
Parking Garage – South Elevation

ESA

3.6.5 New Hospital Pedestrian and Vehicular Circulation

Figure 3-3 illustrates the preliminary internal circulation improvements proposed at the Project site. The Project would shift the ED access to the east side of the Project site while maintaining the main front entry access and passenger drop-off as is at the northwest corner of the hospital. The principal vehicular ingress/egress point to the Project site for the public, emergency, and delivery vehicles would be via the Dover Street extension at 52nd Street. An internal driveway would extend south from 52nd Street and access a passenger drop-off area for the ED entrance located along the east side of the new hospital building, and continue south to the parking garage entrance/exit.

An east-west drive-aisle between the parking garage entrance/exit and MLK Jr. Way would provide access for the ambulance patient drop-off and ambulance/ emergency vehicle parking areas located along the south side of the new hospital building. Access to this drive aisle would be limited to ambulances only. A new driveway on MLK Jr. Way would allow right-turn access to and from the Project site for ambulances only [emergency vehicles (police vehicles and fire trucks) would also be able to use this driveway and the east-west drive aisle south of the new hospital building in the event of Fencing and gates would be located strategically throughout the Project site to limit public access to select parts of the hospital and secure the Project site.

3.6.6 Utility Improvements

Utility upgrades for the new hospital building would include domestic water, fire water, wastewater, stormwater, electrical, medical gases (e.g., oxygen, nitrogen, and carbon dioxide) emergency fuel, telecommunications, steam and condensate, chilled water, and heating hot water.

Potable and Fire Water Distribution

A proposed new 8-inch potable/fire water distribution line would be extended south from an existing East Bay Municipal ~~Utilities~~ Utility District (EBMUD) water main in the Dover Street extension on the Project site and connected to the proposed new hospital building and parking structure, along with backflow valves and meters. The proposed site support structure ~~building~~ would tie into the existing water main in the Dover Street extension.

Sanitary Sewer Collection

The proposed new hospital building and site support structure ~~building~~ would connect to a proposed upsized (12-inch) sanitary sewer line installed on the Project site, which would extend north and discharge to an existing City sanitary sewer collection line in 52nd Street near the Dover Street entrance. The proposed parking structure would connect to a new 6-inch sanitary sewer line which would extend west and discharge to an existing City sanitary sewer collection line in MLK Jr. Way.

Electrical Distribution

An underground duct bank containing a 115 kilovolt (kV) line and communication cables runs within a Pacific Gas and Electric Company (PG&E) easement that extends east-west through the Project site. As explained in Section 4.0.4 in this EIR, separate from the proposed Project, this existing duct bank would be removed, and a new duct bank would be rerouted around the southern tip of the campus site. Under the proposed Project, new underground electrical lines would be extended west from rerouted electrical duct bank to the new hospital building and parking structure.

Stormwater Collection and Treatment

Under the Project, a number of stormwater infrastructure improvements would be implemented on the Project site to accommodate the Project development, and improve stormwater collection and treatment. Stormwater flows collected from the roofs of the new hospital building and site support structure ~~building~~, as well as from the parking structure and hardscaped areas, would be conveyed to proposed on-site bioretention areas for treatment, after which it would be routed via existing and new private and City storm drains to the ACFCWD culvert. Additional stormwater treatment facilities under consideration may include vegetated building roofs. An existing on-site 24-inch City storm drain line would be rerouted around the east side of the footprint of the proposed parking structure. Stormflows collected in the north and northwest portion of the Project site occupied by existing buildings and loading dock would be treated by bioretention and then discharged to an existing City storm drain in 52nd Street.

NPC-5 Emergency Potable Water and Wastewater Storage Tanks

The *Alquist Seismic Safety Act* and Senate Bill 1953 (SB 1953) require all hospital facilities to comply with seismic safety building standards as defined by the California Department of Health Care Access and Information (HCAI). HCAI has developed Nonstructural Performance Categories (NPCs) that establish various levels of seismic performance for nonstructural equipment, components and systems critical to patient care.

NPC-5 requires the ability of a hospital facility to support 72 hours of emergency operations, including for potable water and wastewater. Separate emergency potable water and wastewater storage tanks, each with a capacity of 60,000 gallons would be required to serve all of the BCH Oakland campus site acute care buildings. UCSF is evaluating if this storage would need to be split between multiple tanks on the Project site to serve these facilities; some or all of the water storage may occur within the new hospital building basement level.

In addition, NPC-5 improvements that may be required at existing hospital facilities on the Project site include potential bracing of sprinkler branch lines in the Central Utility Plant, Cafeteria, Cardiac Catheterization Lab, Western Addition, and Chiller Building; and potential anchorage bracing or restraints in the Patient Tower, Central Utility Plant, and D&T Building.

Fire Water Storage

A 40,000-gallon capacity fire water tank would be installed within the new hospital building basement.

Medical Gas Storage

The new hospital building would include systems for oxygen, nitrogen and carbon dioxide; medical air, medical vacuum, and waste anesthesia gas disposal systems; and nitrous oxide distribution. Existing oxygen bulk tanks, and nitrous oxide, nitrogen, and carbon dioxide cylinder manifolds would be adequate to serve the new development at the Project site.

Emergency Generators

Up to three new emergency generators would be installed at ground level ~~along the east side of the Project site adjacent to SR 24 to serve the proposed Project~~ in a utility yard located in the southwestern portion of the Project site. Each generator would provide 2,000 kW power. Each generator would be contained within enclosures that would provide weather protection and noise reduction features.

Utility Yard

As shown on the proposed site plan in Figure 3-3, a paved surface level utility yard would be developed at the southern end of the Project site, between MLK Jr. Way and the proposed parking garage. The utility yard would be accessed from the north via the Project site internal roadway.

The utility yard would contain up to three emergency generators described above, three heat pumps and cooling towers, and switchgear and transformer. Each of these equipment pieces would be contained within enclosures that would provide weather protection and noise reduction features. An 8-foot-high fence is proposed around the perimeter of the utility yard to provide visual screening. The proposed fence would be constructed of a metal frame with polycarbonate sheets/slats.

3.6.7 Proposed Lighting

The proposed new hospital building and parking structure would include exterior lighting at building entrances, drop-off areas, and pedestrian walkways for security and for wayfaring purposes. Proposed new exterior lighting fixtures would be properly shielded to prevent unnecessary glare onto adjacent properties.

3.6.8 Proposed Landscaping

New Figure 3-14~~16~~ presents the proposed Project landscaping plan. Approximately 0.67 acres of landscaping would be provided. New landscaping is proposed at passenger drop off areas and entrances to the new hospital building, and along internal roadways. Landscaping would include a variety of trees, shrubs and other groundcovers. The landscaping plan includes plant species that would be drought-tolerant and low-water use to reduce irrigation demand. Landscaped areas are proposed to drain or serve as stormwater filtration or storage, or include swales and/or drainage catch basins to drain excess runoff. Plantings would meet the requirements of state-mandated Water Efficient Landscape Ordinance, which limits the amount of irrigation water that can be used on-site.

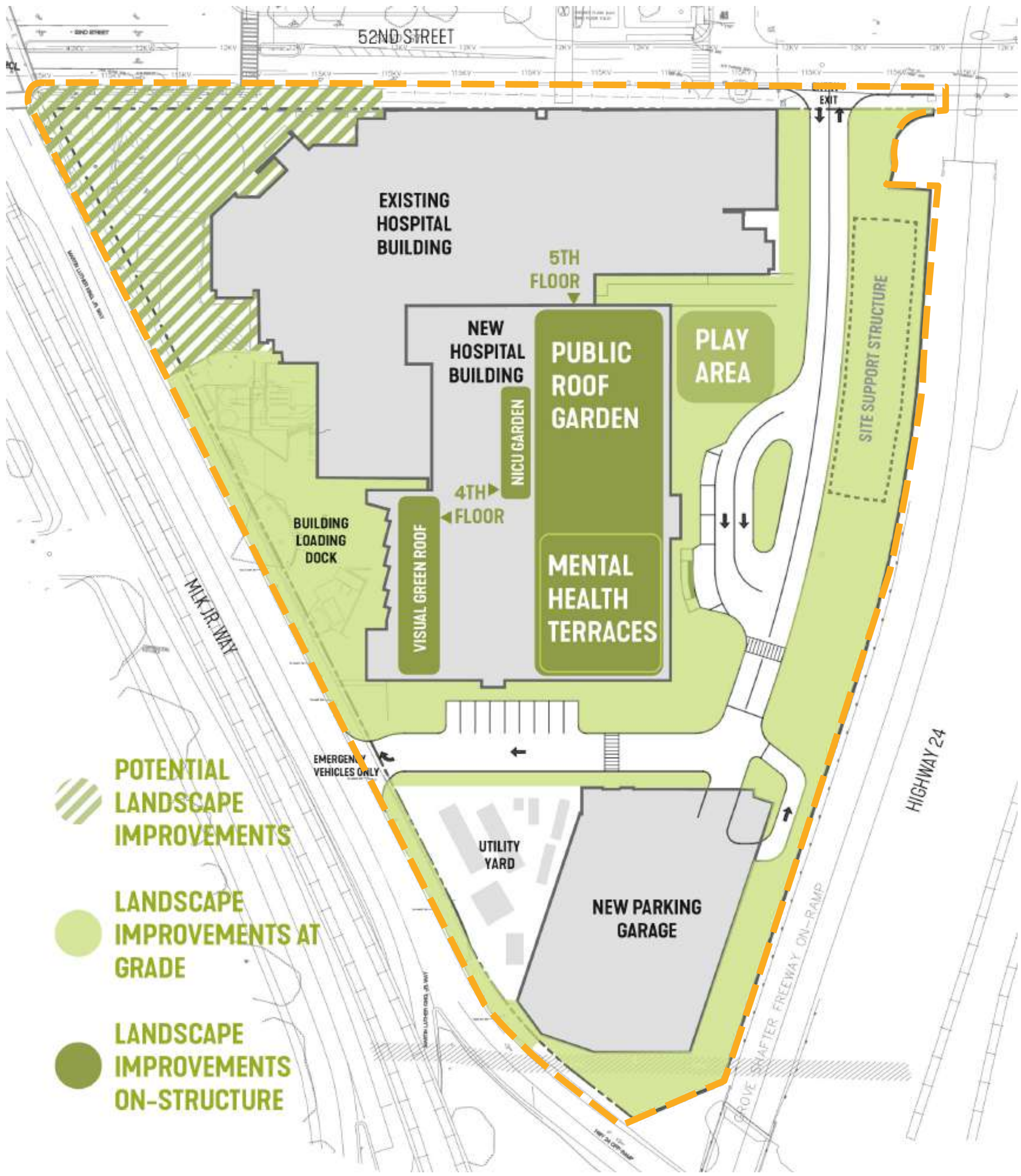
In addition, the new hospital building would provide elevated opportunities for outdoor space, including outdoor terraces. The behavioral health unit on Level 5 would have ~~two~~a private outdoor terrace~~s~~.~~; one for small groups on the west side, and one larger terrace for group activities on the southeast corner. These~~ This terraces would have ~~at minimum 8-foot~~ high glass barriers to ensure safety. Level 5 would also have a another publicly-accessible terrace and roof garden available to patients, staff and families adjacent to the public core and stair tower. In addition, Level 4 would have a publicly-accessible ~~terrace and~~ courtyard completely enclosed by the NICU unit and a non-accessible green roof ~~stormwater management and viewing by patients roof garden available to patients, staff and families adjacent to the public core and stair tower~~. ~~The additional bed floors on Levels 6, and 7 and 8 of the new hospital building would also have the potential to have balconies. In addition, the proposed site support building would have the potential to contain landscaping, including a greenwall and roof garden.~~

3.6.9 Building Bird-Safe Design

UCSF would implement building architectural features and operational strategies with respect to bird-safe design and practices. UCSF proposes to develop and incorporate bird-safe design features and measures in consultation with a qualified expert based on site-specific conditions.

3.6.10 Sustainability

The Project is being designed and developed to minimize its environmental impact and to support the health of its occupants and the well-being of the local community. Sustainability improvements under the NHB Project are focused on air quality, carbon emissions, water use, resources, biodiversity and open space, human health, and community well-being. The new hospital building would comply with the applicable University of California *Policy on Sustainable Practices* and would pursue a minimum level of LEED Gold Certification; as well as meet CALGreen requirements. ~~and City of Oakland Green Building Ordinance "Sustainable Green Building Requirements for Private Development."~~



SOURCE: SmithGroup, 2024

New Figure 3-14
Proposed Landscaping Plan

Also in keeping with the UC *Policy on Sustainable Practices*, BCH Oakland intends to purchase net zero carbon electricity, either from the UC Regents through the Direct Access Program, or from an alternative provider such as East Bay Community Energy. The UC Regents program is referred to as the UC Clean Power Program and contributes to achieving carbon neutrality in indirect emissions through the purchase of carbon-free electricity. As of 2019, the UC Clean Power Program became 100 percent carbon free. The UC Policy on Sustainable Practices now has a policy goal that each campus and health location obtain 100 percent clean electricity by 2025. BCH Oakland's purchase of net zero carbon electricity would result in reduced carbon dioxide emissions from existing conditions, even with the addition of the proposed Project energy use. Please refer to Section 4.4, *Energy*, and Section 4.6, *Greenhouse Gas Emissions*, for additional detail.

To improve air quality and reduce carbon emissions, the new hospital building would have no new natural gas infrastructure and all new facilities would be powered by electricity. The new hospital building is required to outperform the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) 90.1-2010 baseline energy code by at least 30 percent and would target to outperform the code by at least 40 percent.

UCSF proposes to reduce water use through the use of efficient plumbing fixtures and medical equipment, and native and adaptive landscaping.

To minimize resource consumption, sustainable materials would be selected in accordance with LEED Materials and Resources credit standards. The project would be planned to help UCSF meet and exceed its 50 percent operational solid waste diversion goals. The construction of Project would divert at least 75 percent of construction waste from landfill and incineration, with a target to exceed 85 percent.

To support occupant health and community well-being, Project building materials would meet stringent LEED indoor air quality requirements and minimize the use of harmful chemicals. Occupants of the new hospital building would have access to daylight and views of nature, with indoor design conditions that support human comfort.

3.6.11 Renovation of Existing Project Site Buildings

Under the Project, renovation of approximately ~~30,000~~ 12,000 gsf of existing building space on the Project site would be implemented. Renovations of space in the existing hospital are expected to occur on Levels 1 through 4~~3~~ and may include administrative, public spaces, treatment, procedure and clinical support areas. A new public corridor connection would be constructed through the vacated existing ED on the ground floor of the Patient Tower. Minor improvements would be implemented in the existing Kitchen and Cafeteria~~Clinical Nutrition department~~ on the second floor. Renovations on the third floor would occur for ~~existing GI/Endoscopy, Surgery Support, and~~ Respiratory Therapy ~~departments~~, and Graduate Medical Education (GME). One of the old NICU wards on Level 4 of the existing Patient Tower would be converted to PR/OT Support functions. ~~Physical, Occupational and Speech Therapy offices. The Western Addition Building~~

~~would receive some minor make-ready work to provide access to the Cafeteria and Kitchen. No renovations would occur in the existing D&T building under the Project.~~

3.6.12 52nd Street/MLK Jr. Way Entrance Improvements

Various improvements would occur at the existing hospital building entry and vehicular drop-off at 52nd Street and MLK Jr. Way, including potential additional planted areas and sidewalk and paving upgrades, and stormwater control.

3.6.13 Projected Patients, Visitors and Staff

The proposed increase in capacity and operations under the Project would result in an incremental increase in patients, visitors and staff at the BCH campus site. As shown in **Table 3-5**, the average daily population on the campus site would increase from 3,777 under existing conditions to 4,513 under the Project, for an increase of 736. About 75 percent of the population increase would be due to patients and visitors and about 25 percent due to additional physicians/faculty, staff, volunteers, vendors, and students (Blue Cottage, 2023).

TABLE 3-5
PROJECTED INCREASE IN DAILY PATIENTS, VISITORS AND STAFF UNDER NHB PROJECT

Building/Structure	Existing	Projected	Increase
Patients[a]	785	996	211
Visitors	1,332	1,675	343
Staff, Vendors and Volunteers	1,210	1,345	135
Physicians/Faculty	300	332	32
Students and Fellows	150	166	16
Total	**3,777**	**4,513**	**736**

NOTE:
a. Includes accompanying parents or other primary caretakers where necessary
SOURCE: UCSF, 2023

Following demolition of the A/B and B/C Wings, Bruce Lyon Memorial Research Laboratory and Addition, and trailers on the Project site, staff would be relocated to the planned ASB, OPC buildings and existing BCH Oakland properties and lease space as needed. In addition, remote working, hoteling workstations and traditional full-time workstations are proposed to facilitate the moves and work within space available. Certain occupants and functions from the OPC may be relocated to the off-campus UCSF properties or lease space.

3.6.14 NHB Construction

Construction Overview

As described in more detail below, construction of the Project would begin in Summer 2024 and be completed ~~and operated~~ by early 2031, with the exception of renovations to existing building renovations which would extend to early 2033. Construction activities would include, but not be limited to, demolition and/or removal of certain existing buildings and structures; excavation and grading activities at the Project site; building foundation and vertical construction; street and sidewalk construction; installation of utilities; building interior finishing; and exterior hardscaping and landscaping improvements. Project construction would generate temporary construction jobs on-site that would vary in number, depending on the specific construction activities being performed and overlap between construction of individual projects. Therefore, varying numbers of construction workers would be present on the Project site, depending on the phase of construction. Construction materials/construction worker staging areas would be located on the Project site, as feasible.

The proposed new hospital building would consist of a steel-frame structure with columns on a typical grid spacing of about 31 feet. The Level 1 floor slab would transfer lateral diaphragm forces from steel lateral resisting frames distributed around the building to the basement walls. The Level 1 slab would consist of normal weight concrete fill over a metal deck with two layers of reinforcing. Steel intermediate beams would support the floor slab, and steel girders on the gridlines would support the intermediate floor beams. Levels 2 through 7 ~~8~~ slabs would consist of light weight concrete fill supported by metal deck. The roof would be light weight concrete fill to support the various mechanical equipment. The proposed foundation for the new hospital building would consist of a reinforced concrete mat slab of approximately 4-foot thickness, with step downs at the elevator pits. The parking structure would be cast in place concrete.

A temporary shoring system would be required at the Project site to shore the excavation for the new hospital building basement and accommodate the proposed foundation. The shoring system would comprise soldier beams and lagging and would be in place for less than two years. This shoring system would serve to support soil lateral pressures, including hydrostatic pressure and lateral pressure from nearby building foundations. Depending on location within the Project site and depth of excavation, limited and temporary dewatering would be required during construction; the extracted water would be discharged to the City's sanitary sewer system, after treatment, if necessary. The proposed new hospital building basement would be designed for hydrostatic uplift and waterproofing to prevent the potential for groundwater infiltration into the basement following construction.

A variety of mobile and stationary construction equipment would be used on the Project site and/or immediate vicinity during construction. This is expected to include use of cranes for pier drilling for foundations, steel and/or precast erection, and building façades. Other mobile equipment such as excavators, scrapers, aerial lifts, rollers, sweepers, concrete boom trucks and forklifts would be used at the project site for a range of other construction tasks, including site clearing, excavation and grading, building construction, and/or hardscape and landscape materials installation. Project construction would generate truck trips for deliveries of concrete and other building materials, transportation of construction equipment to and from the project site, hauling of soils and debris from the site, and street sweepers. A variety of other smaller mechanical equipment would also be used at the Project site during the construction period, such as saw cutters, chopping saws, tile saws, stud impact guns, impact drills, torque wrenches, welding machines, concrete boom pumps, and dewatering pumps.

No pile driving activities are proposed during construction of the Project. Rather, foundations would be installed using drilled piers.

Estimated Project Construction Phasing and Timeline

It is anticipated that the proposed Project would be constructed along the approximate timeline presented in **Table 3-6**. Actual timelines for individual construction activities may be influenced by factors outside of UCSF's control, including, but not limited to, economic conditions, weather, and other considerations.

TABLE 3-6
PRELIMINARY NHB PROJECT CONSTRUCTION SCHEDULE

	NHB Construction Component	Estimated Construction Duration
1	Demolish A/B and B/C Wings, Bruce Lyon Memorial Research Laboratory and Addition, trailers, and helistop	August 2024 through March 2026 (23 months)
2	Build Site Support Structure ~~Building~~, Site Utilities I	December 2024 through September 2025 (10 months)
3	Parking Garage / Rooftop Helistop	January 2025 through January 2026 (13 months)
4	New Hospital Building	April 2026 through January 2030 (46 months)
5	Site Utilities II - Connections	December 2027 through November 2028 (13 months)
6	NPC-5 Upgrades at Existing Hospital Facilities	April 2028 through March 2029 (12 months)
7	Site Hardscape and Landscape Improvements	September 2028 through December 2029 (16 months)
8	Site Improvements – Main Entry	August 2030 through January 2031 (6 months)
9	Renovation of Existing Buildings	August 2030 through January 2033 (30 months)

SOURCE: UCSF, 2023

Construction, Demolition, and Excavation

As discussed above, the Project would involve approximately ~~435,600~~ 390,180 gsf of new building construction (~~332,523~~ 282,000 gsf for the new hospital building, ~~96,912~~ 103,180 gsf for the proposed parking structure, and ~~6,100~~ 5,000 gsf for the site support structure ~~building~~). In addition, approximately ~~30,000~~ 12,000 gsf of space in the existing buildings would be renovated. Approximately 109,600 gsf of existing buildings would be demolished. Maximum excavation on the Project site for the proposed new hospital building would be up to approximately 28 feet in depth, and for the parking structure would be up to 8 feet in depth. The Project would require approximately 55,000 cubic yards (cy) of excavated materials, including existing demolished building materials and soil, to be off-hauled from the site. Approximately 4,500 cy of materials are anticipated to be imported to the Project site, consisting of aggregate base, topsoil, bioretention soil and rock, and trench bedding and backfill.

Off-site Construction

While the great majority of construction under the Project is proposed within the Project site boundary, certain Project elements would require construction off-site. This includes sidewalk improvements along the 52nd Street and MLK Jr. Way frontage adjacent to the Project site and a new driveway curb cut on MLK Jr. Way; improvements at the intersection of 52nd Street and Dover Street entrance; and utility extensions and connections in 52nd Street and MLK Jr. Way. Depending on activity, off-site construction may result in temporary partial public road lane closure.

Tree Removal

Tree and vegetation removal would be required under the Project as a result of clearing, excavation, regrading, and/or other activities. Twenty-eight (28) trees on the Project site (including the mature magnolia trees in the courtyard located between the A/B and B/C Wings) and adjacent public right-of-way would require removal for construction of the Project (this excludes 50 trees located within the eastern portion of the Project site occupied by the SR 24 embankment, which would be removed separate from the Project). As discussed above, the Project would include a variety of landscaping, including new trees, on the Project site.

3.6.15 Activities on NHB Project Site That Were Previously Addressed and/or Are Required to Comply with Applicable Regulations

Certain activities that were previously proposed under the 2015 CHRCO CMP and analyzed in the CHRCO CMP Project FEIR will be implemented in the near-term and are not reanalyzed as part of the proposed Project in this EIR; this includes the relocation of the existing retaining wall in the vicinity of SR 24 (inclusive of related tree and vegetation removal within this work site); and relocation of the PG&E underground electrical duct bank.

UCSF is also required to remove the existing fuel oil underground storage tank (UST) on the NHB Project site by early ~~2026~~ 2025 in accordance with State UST regulations, which will be replaced with a new 12,000-gallon above ground storage tank. This undertaking is not associated with the proposed NHB Project, and accordingly, will not be analyzed as part of the proposed Project in this EIR.

Any of the aforementioned activities that are not associated with the NHB Project will, however, be considered along with the proposed Project in the cumulative impact analysis in this EIR, as applicable.

3.6.16 Project Variant – Parking Structure Rooftop Helistop

A Project variant is analyzed in this EIR at an equal level of detail as the proposed Project. The Project variant involves a design change in which the proposed helistop structure would be constructed on top of the parking structure.

New Figure 3-15~~17~~ presents the Project variant site plan. The ground level site plan for the Project variant, including building footprints, vehicular and pedestrian access and circulation, would be identical to that of the proposed Project. However, as New Figure 3-17 shows, the helistop would be biased to the west side of ~~centrally located on~~ the parking structure roof. **New Figure 3-16~~18~~** provides a conceptual massing diagram of the proposed buildings under the Project variant.

New Figure 3-17~~19~~ through **New Figure 3-20~~22~~** present elevation drawings depicting the west, north, east and south elevations, respectively, of the new hospital building under the Project variant. The height to the new hospital building roof (~~116~~ 101 feet agl) and to top of mechanical screen (116 ~~131~~feet agl) under the Project variant would be the same as that under the Project. However, the new hospital building under the Project variant would not include a helistop structure or require a~~n~~ trauma elevator on the building rooftop.

New Figure 3-21~~23~~ through **New Figure 3-24~~26~~** present elevation drawings depicting the west, north, east and south elevations, respectively, of the Project variant parking garage. The rooftop helistop landing under this variant would measure approximately ~~10~~ 12 feet above the roof of the parking structure (i.e., approximately ~~42~~ 57 feet agl, or ~~2~~ 17 feet higher in elevation than the existing helistop landing at the Project site[5]). A trauma elevator above the ~~4th~~ roof level of the parking structure serving the helistop deck would provide transport of patients from the helistop to ground level. The maximum height of the parking structure would measure approximately 89 ~~74~~ feet agl when accounting for the top of elevator penthouse.

As is the case with the proposed Project, all supporting systems required for safe operation of the helistop under this variant, including lighting, fuel oil separation, and fire suppression would be provided.

5 Estimate accounts for differences in existing helistop ground elevation and proposed ground elevation for the proposed parking garage.

PROJECT VARIANT

- **A** New Hospital Building
  - **A1** New Emergency Department Entrance
  - **A2** New Staff Entrance
  - **A3** New Ambulance Dropoff
  - **A4** New Loading Dock
- **B** New Parking Garage
  - **B1** New Rooftop Helistop
- **C** Site Support Structure

EXISTING BUILDINGS

1. Patient Tower
2. Ford Diagnostic and Treatment (D&T) Center
3. Cardiac Catheterization Lab
4. Cafeteria
5. Western Addition
6. Central Utility Plant
7. Chiller Building

New Buildings/ Structures

Existing Buildings

New Hospital Building Project Site

0 100 Feet

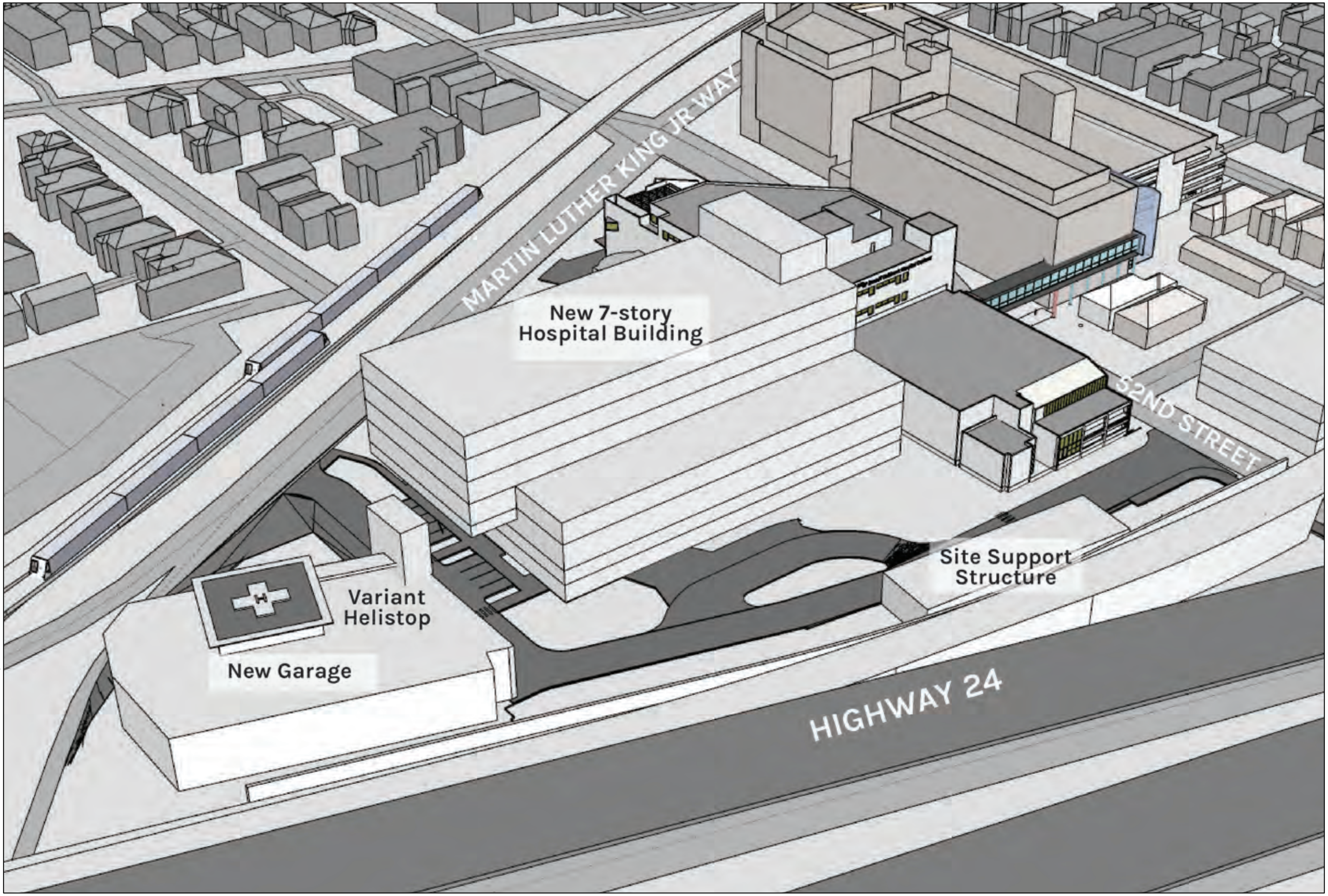
2022/D202201057.00 - UCSF BCH Oakland/02 Graphics/Illustrator

SOURCE: SmithGroup, 2024; ESA, 2024

UCSF BCH Oakland NHB Project EIR

New Figure 3-15
New Hospital Building Project Variant Site Plan

ESA

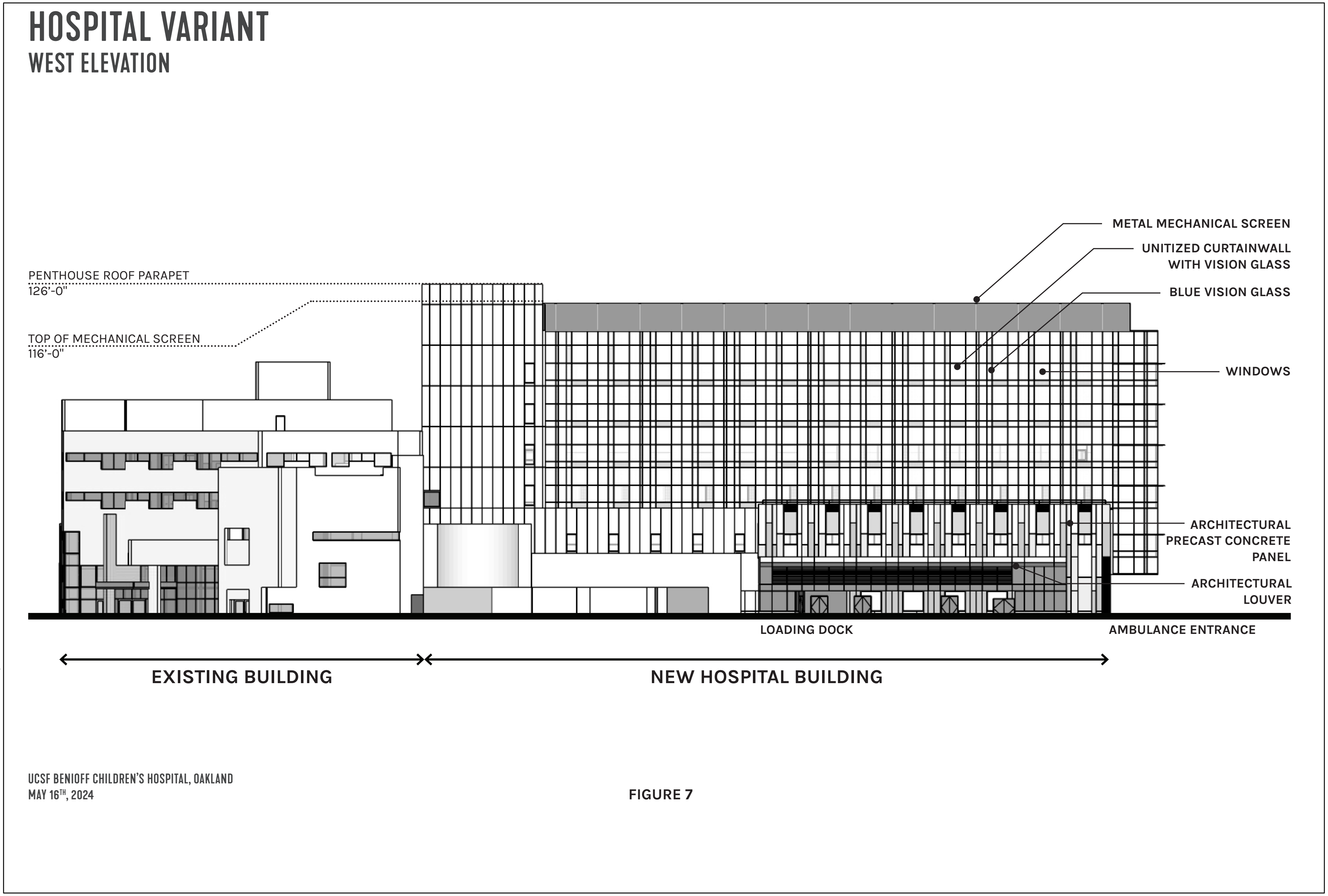


SOURCE: SmithGroup, 2024

UCSF BCH Oakland NHB Project EIR

New Figure 3-16
Conceptual Massing of Proposed Buildings under NHB Project Variant

ESA

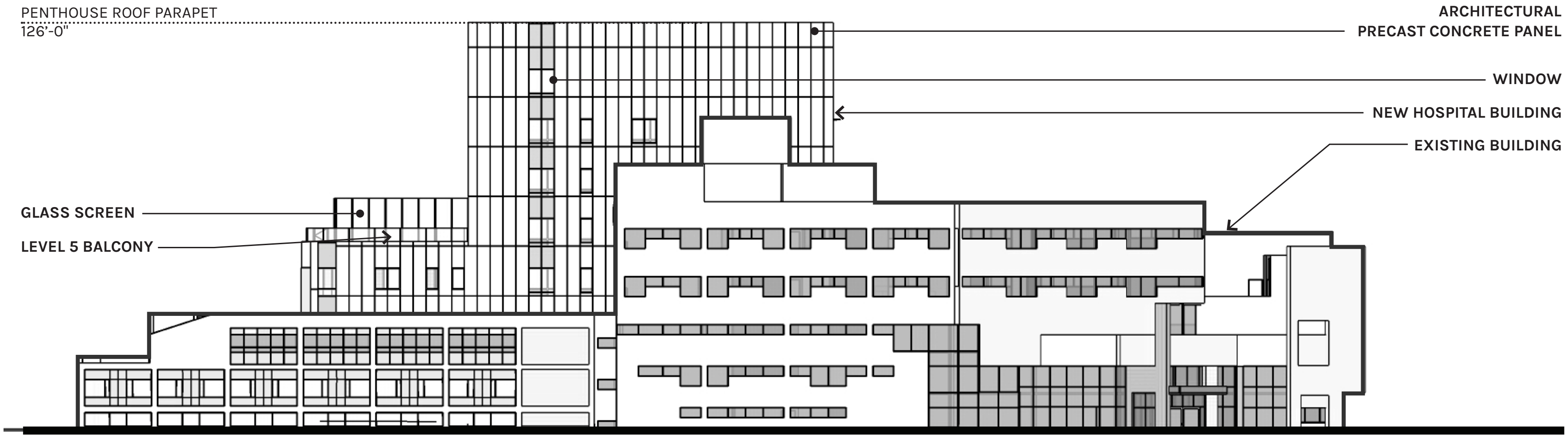


SOURCE: SmithGroup, 2024

UCSF BCH Oakland NHB Project EIR

New Figure 3-17
Project Variant New Hospital Building – West Elevation

HOSPITAL VARIANT
NORTH ELEVATION

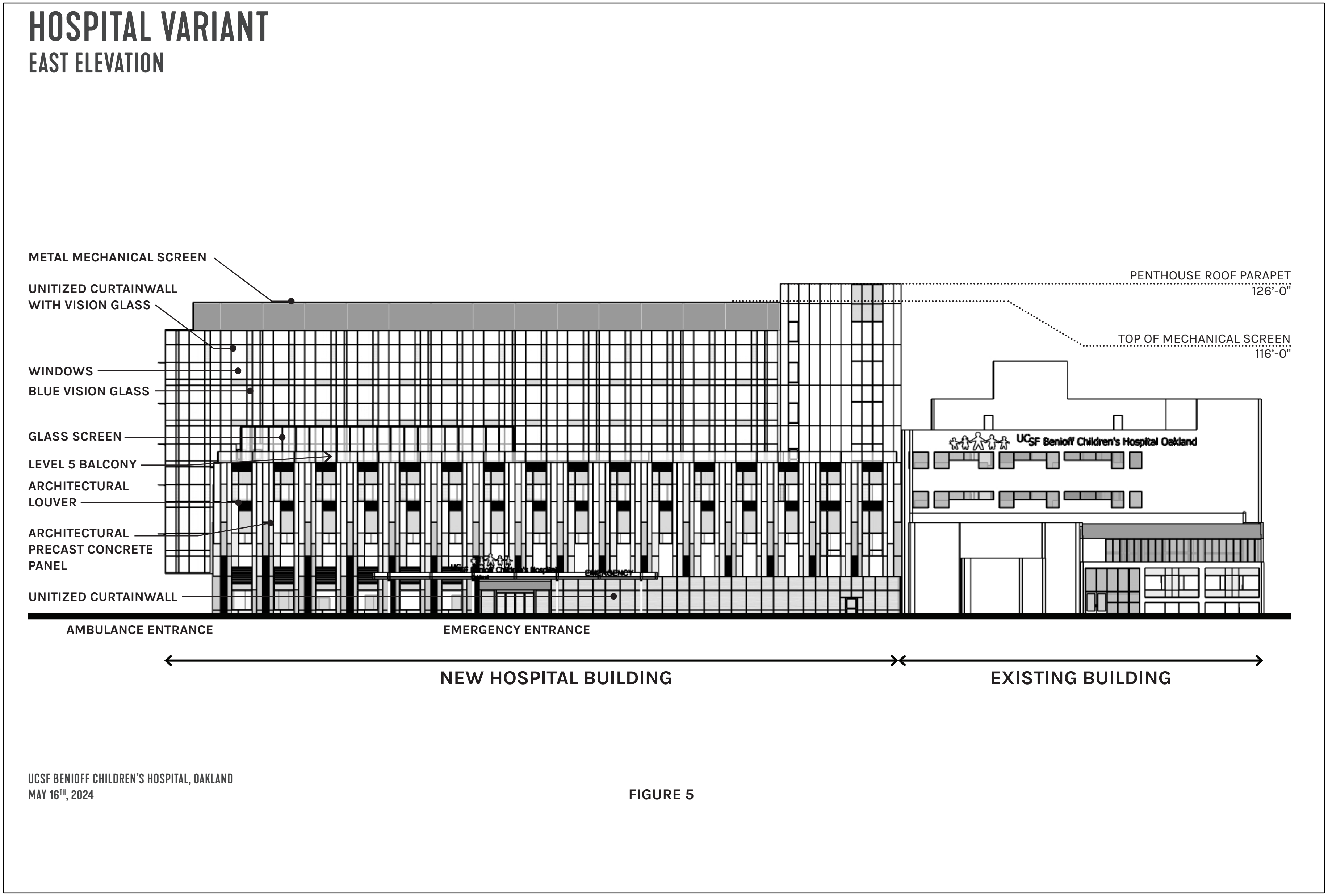


UCSF BENIOFF CHILDREN'S HOSPITAL, OAKLAND
MAY 16TH, 2024

FIGURE 8

SOURCE: SmithGroup, 2024

New Figure 3-18
Project Variant New Hospital Building – North Elevation



2022/D202201057.00 - UCSF BCH Oakland/02 Graphics/Illustrator

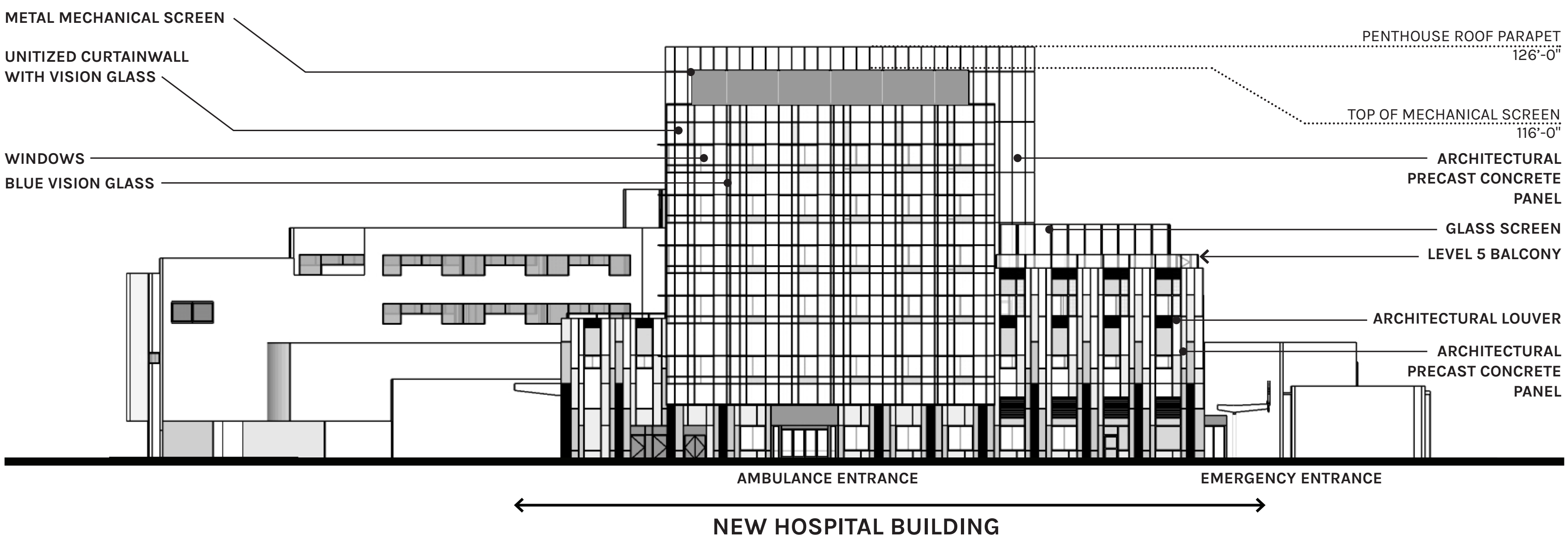
SOURCE: SmithGroup, 2024

UCSF BCH Oakland NHB Project EIR

New Figure 3-19
Project Variant New Hospital Building – East Elevation

ESA

HOSPITAL VARIANT
SOUTH ELEVATION

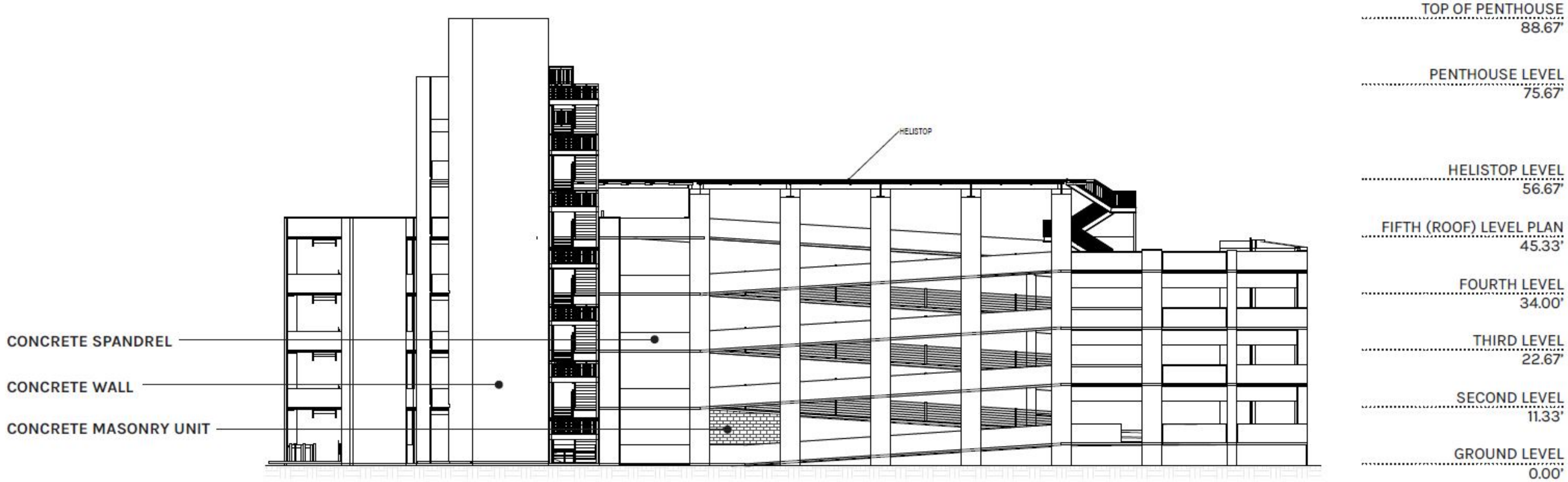


UCSF BENIOFF CHILDREN'S HOSPITAL, OAKLAND
MAY 16TH, 2024

FIGURE 6

SOURCE: SmithGroup, 2024

New Figure 3-20
Project Variant New Hospital Building – South Elevation



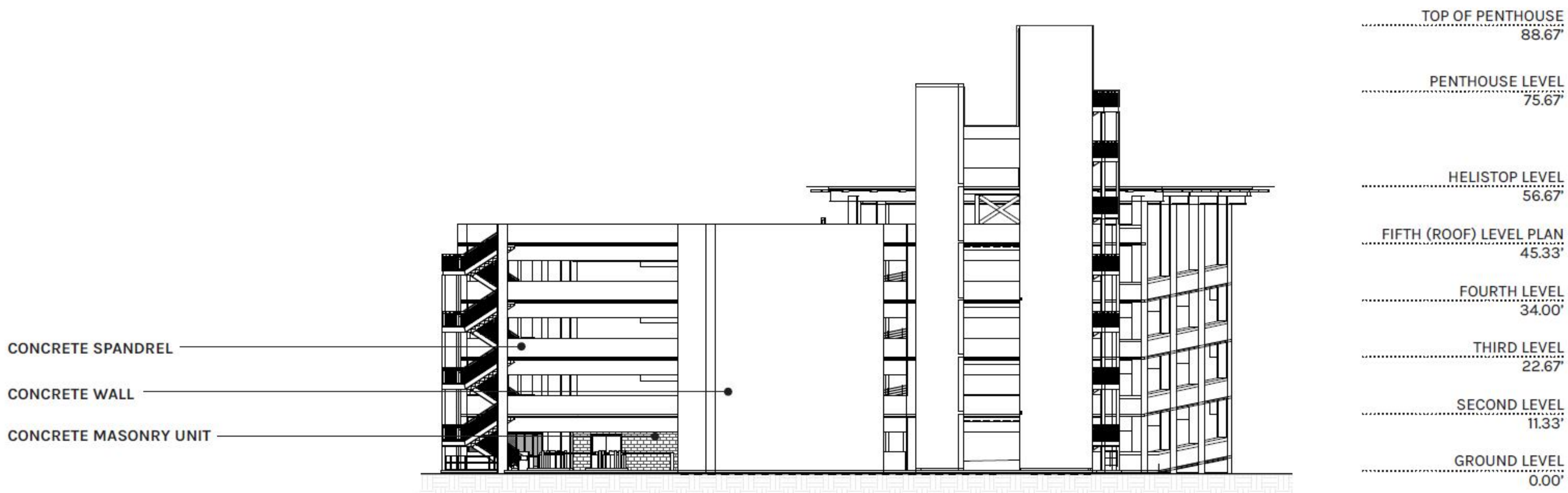
2022\D202201057.00 - UCSF BCH Oakland\02 Graphics\Illustrator

SOURCE: SmithGroup, 2024

UCSF BCH Oakland NHB Project EIR

New Figure 3-21
Project Variant Parking Garage – West Elevation

ESA



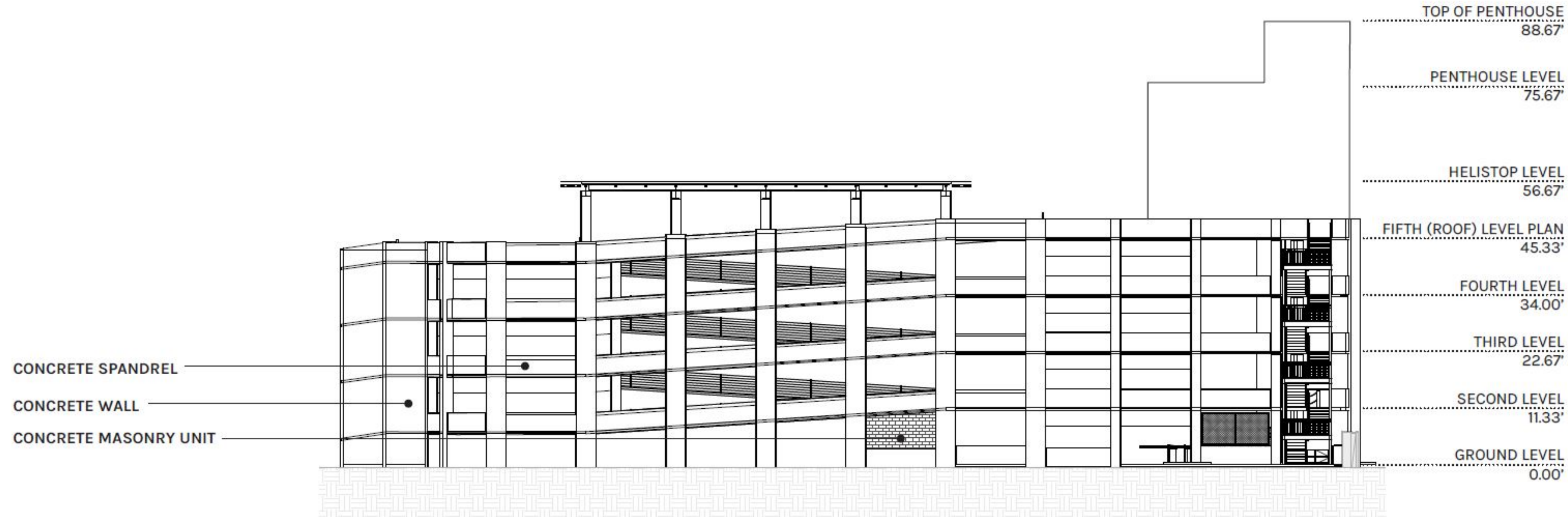
2022/D202201057.00 - UCSF BCH Oakland/02 Graphics/Illustrator

SOURCE: SmithGroup, 2024

UCSF BCH Oakland NHB Project EIR

New Figure 3-22
Project Variant Parking Garage – North Elevation

ESA



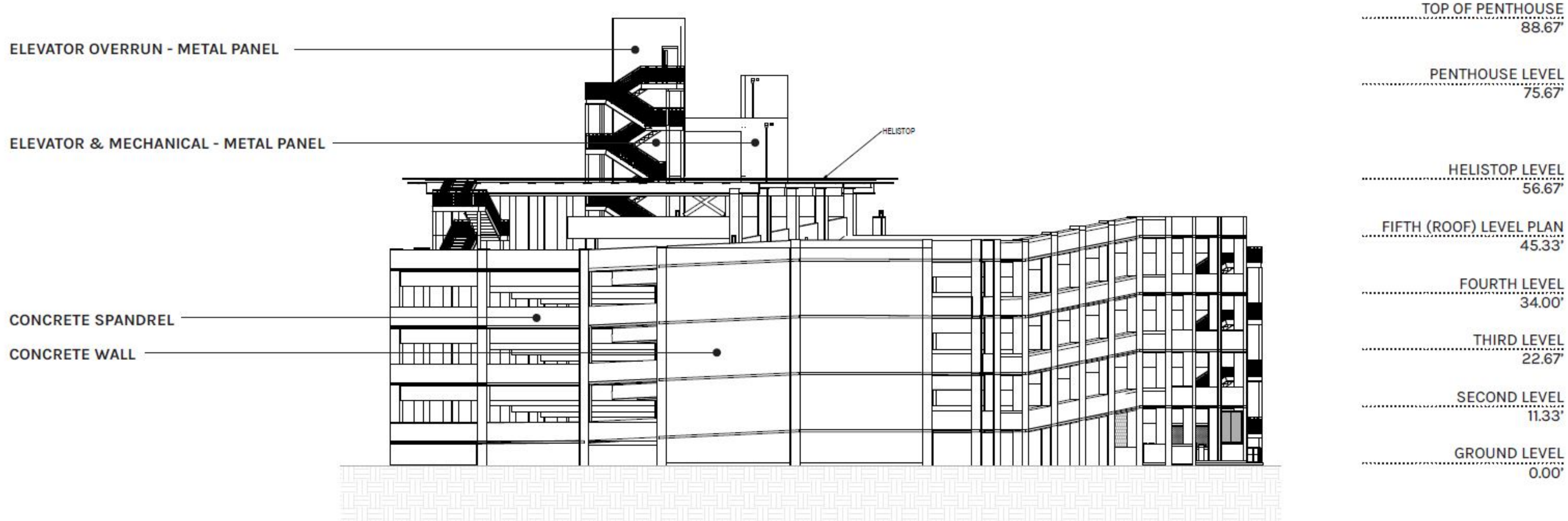
2022/D202201057.00 - UCSF BCH Oakland/02 Graphics/Illustrator

SOURCE: SmithGroup, 2024

UCSF BCH Oakland NHB Project EIR

New Figure 3-23
Project Variant Parking Garage – East Elevation

ESA



2022/D202201057.00 - UCSF BCH Oakland/02 Graphics/Illustrator

SOURCE: SmithGroup, 2024

UCSF BCH Oakland NHB Project EIR

New Figure 3-24
Project Variant Parking Garage – South Elevation

ESA

Similar to the proposed Project, after the existing helistop is demolished, helistop operations at the campus site would be temporarily suspended until the new helistop structure is completed atop the roof of the proposed parking structure. As discussed above~~, the most likely location for the temporary helistop would be Oakland International Airport, however, a vacant site at 11 4th Street adjacent to the I-880 freeway is also under consideration. During this interim period, UCSF would use the selected temporary helistop location, and transport patients from there to UCSF BCH Oakland via ambulance~~ a temporary helistop may be constructed on the former parking lot owned by Peralta Community College District and used for the duration of construction of the NHB Project to transport patients from there to UCSF BCH Oakland via ambulance. If UCSF does not move forward with a temporary helistop at the Peralta Community College District property, then UCSF may seek the use of a temporary helistop at the Oakland International Airport.

Upon commencement of helistop operation, helicopters would use a similar east-west approach and takeoff zone as under existing conditions, with operations relocated to the south in alignment with the new helistop site.

3.7 Revisions to the UCSF 2014 LRDP

UCSF is one of 10 campuses in the University of California system. Each UC campus is required periodically to prepare a Long Range Development Plan (LRDP) to guide campus growth and future physical development. On November 20, 2014, the Regents adopted the UCSF 2014 LRDP. The 2014 LRDP serves as a comprehensive physical land use plan and policy document to guide the physical development of the San Francisco campus at all its campus sites, accommodating future increases in enrollment and clinical, academic, and research activities, and increased housing demand at UCSF; and meeting its projected clinical, educational and research demand. The 2014 LRDP addresses development over an approximate 20-year period, or an approximate horizon year of 2035.[6] The 2014 LRDP also included a Greenhouse Gas Reduction Strategy (GHGRS), last amended in 2021, and a commitment to continue to enhance UCSF's Transportation Demand Management (TDM) Program.

The 2014 LRDP currently includes UCSF's three primary campus sites in San Francisco at Parnassus Heights, Mission Bay and Mount Zion; buildings owned by UCSF in San Francisco (at Mission Center, 654 Minnesota Street, animal care and research facilities at Hunters Point, and Buchanan Dental Center) and a material management facility in South San Francisco; and more than a million square feet of space leased by UCSF for a variety of purposes at numerous locations in San Francisco.

The UCSF BCH Oakland campus site is not included in the UCSF 2014 LRDP at the present time, and consequently, it is not subject to the LRDP's campus-wide or site-specific planning objectives. As the UCSF BCH Oakland campus site is controlled by the

[6] With the exception of the Parnassus Heights campus site, which has an approximate horizon of 2050.

University, UCSF proposes to amend the 2014 LRDP to include the UCSF BCH Oakland campus site. Approval of an amendment of the 2014 LRDP will be requested from the UC Regents and other smaller BCH Oakland properties at the same time that the NHB Project is presented to the Regents for approval.

As part of the proposed 2014 LRDP amendment, the BCH Oakland facilities would be included in the UCSF 2014 LRDP space program. This would include the main BCH Oakland campus, and smaller-owned off-site locations (MLK Jr. Way Building, 5220Claremont Avenue, 5400 Telegraph Avenue, 4701 Shattuck Avenue, and the Walnut Creek Outpatient Center). **Table 3-7** summarizes the associated size (in gsf) associated with each site under existing conditions, and with the Project under buildout (2035) of the 2014 UCSF LRDP. As shown in Table 3-7, with the NHB Project, clinical space at the BCH Oakland main campus would increase by 207,500 ~~259,100~~ gsf over existing conditions to a total of 736,300 ~~772,500~~ gsf; housing (Family House) would remain at 12,600 ~~16,300~~ gsf; and structured parking would increase by approximately ~~96,900~~ 103,180 gsf over existing conditions to ~~351,900~~ 358,180 gsf.

The proposed LRDP amendment would also incorporate certain text changes to the UCSF 2014 LRDP, including context for the UCSF BCH campus site in Chapter 2, *Planning Context*; and adding the UCSF BCH Oakland campus site in a new Chapter 9, *Benioff Children's Hospital Oakland*, including existing setting discussion, site-specific objectives, plan elements (for land use; open space; circulation, transportation and parking; utilities and infrastructure; and population).

Proposed site-specific objectives for BCH Oakland campus to be included in the proposed LRDP amendment, including the following:

A. Modernize the campus to ensure compliance with regulatory requirements and improve the level of services to patients and their families.
B. Address seismically compromised and obsolete buildings.
C. Develop new facilities to accommodate programmatic needs.

New Figure 3-~~14~~25 illustrates the proposed UCSF BCH Oakland campus functional zone map, reflecting the planned predominant land uses for the campus site.

The proposed LRDP amendment would also add a discussion of the smaller BCH Oakland owned sites within a renumbered Chapter 10, *Smaller Owned Sites*, in the UCSF 2014 LRDP.

TABLE 3-7
UCSF BCH OAKLAND CAMPUS SITE EXISTING AND PROJECTED SPACE PROGRAM

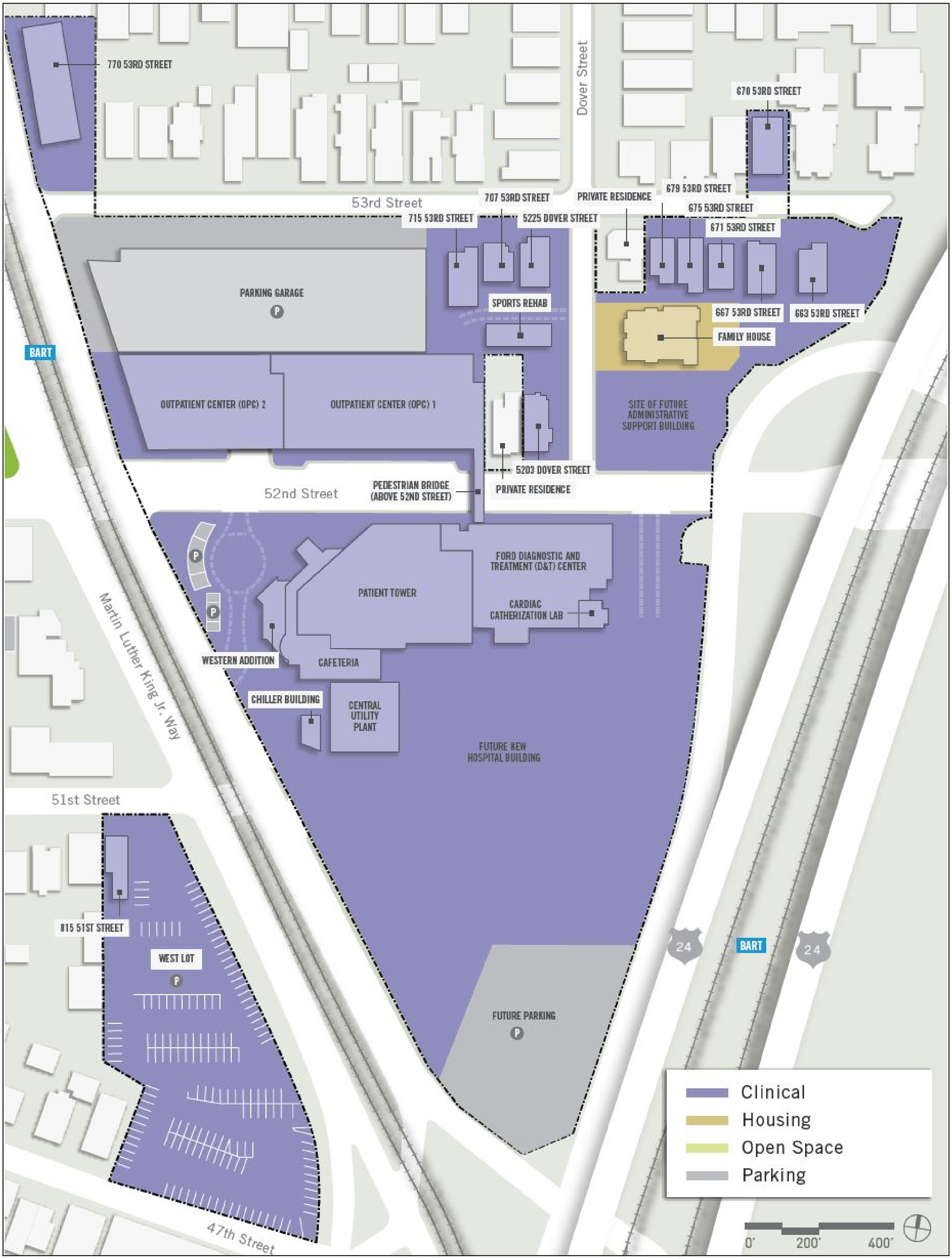
LRDP Space Category	BCH Oakland Main Campus	Smaller Owned Sites[a]	Leased Sites[b]
Existing (GSF)			
Research	--	87,500	--
Clinical	516,200 ~~513,400~~	134,100~~290,200~~	42,100
Academic & Campus Administration	--	3,000	--
Campus Community	--	27,900	--
Housing	12,600 ~~16,300~~	--	--
Vacant/Alteration	--	37,600	--
Total Space Excluding Parking	**528,800 ~~529,700~~**	**290,100 ~~290,200~~**	**42,100**
Structured Parking	**255,000**	**--**	**--**
Proposed 2035 (GSF)			
Research	--	87,500	--
Clinical	723,700~~772,500~~	134,100~~290,200~~	42,100
Academic & Campus Administration	--	3,000	--
Campus Community	--	27,900	--
Housing	12,600~~16,300~~	--	--
Vacant/Alteration	--	37,600	--
Total Space Excluding Parking	**736,300 ~~788,800~~**	**290,100 ~~290,200~~**	**42,100**
Structured Parking	**358,180 ~~351,900~~**	**--**	**--**

NOTE:

All gsf numbers rounded to the nearest 100.

a. Smaller owned sites includes MLK Jr. Way Building (156,000 gsf), 5200 Claremont Avenue (20,500 gsf), 5400 Telegraph Avenue (17,300 gsf), 4701 Shattuck Avenue (16,700 gsf), and the Walnut Creek Outpatient Center (79,600 gsf).
b. For the sake of simplicity, the LRDP refers to all space, owned and leased, in terms of gsf, even though leased space is sometimes measures in sf, rather than gsf, depending on space and/or lease.
c. The UCSF 2014 LRDP does not need to be updated to reflect BCH Oakland leased sites. The LRDP only includes leased locations over 10,000 sf, and the only BCH Oakland leased site greater than 10,000 sf is 6425 Christie Street which is already in the UCSF 2014 LRDP.

SOURCE: UCSF, 2024 ~~2023~~



SOURCE: UCSF, 2024

UCSF BCH Oakland NHB Project EIR

New Figure 3-25
Proposed Functional Zones at UCSF BCH Oakland Campus Site

ESA

Draft EIR Section 4.1, Air Quality

Impact AIR-3, presented on pages 4.1-42 through 4.1-44 of the Draft EIR, is hereby revised to reflect the impact of the revised NHB Project.

Impact AIR-3: Implementation of the NHB Project would not expose sensitive receptors to substantial pollutant concentrations. *(Less than Significant)*

Construction Health Risk

Project health risks from construction-phase emissions of TACs (DPM and $PM_{2.5}$) were calculated using the methodology detailed in the *Approach to Analysis*, above. Please refer to Appendix AIR for details of calculations of health risk values. The results of the construction HRA for the Project are summarized in **Table 4.1-9**. As shown in the table, the unmitigated incremental lifetime cancer risk, non-cancer chronic Hazard Index, and annual average $PM_{2.5}$ concentrations at all receptor types analyzed would be below the respective BAAQMD project-level thresholds. Therefore, Project construction would result in a less than significant impact with respect to exposure of sensitive receptors to substantial TAC concentrations.

TABLE 4.1-9
UNMITIGATED HEALTH RISKS FROM NHB PROJECT CONSTRUCTION

Receptor Type/Emissions Source	Cancer Risk (# in 1 million)	Chronic HI (unitless)	Annual Average $PM_{2.5}$ Concentration ($\mu g/m^3$)
MEI – Resident Infant Receptor [a]			
Project Construction	6.5 ~~6.1~~	0.004	0.04
Significance Threshold	10	1.0	0.3
MEI – Daycare Infant Receptor [b]			
Project Construction	8.6 ~~8.2~~	0.001	0.01
Significance Threshold	10	1.0	0.1
MEI – Worker Receptor [c]			
Project Construction	0.6	0.003	0.03
Significance Threshold	10	1.0	0.3

NOTES:

$\mu g/m^3$ = micrograms per cubic meter; HI = Hazard Index; MEI = Maximally Exposed Individual; $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter

a. The resident child MEI for cancer risk, chronic HI and annual average $PM_{2.5}$ concentration is located in the residential neighborhood between SR 24 and Shattuck Avenue to the east of the Project site. Exposure is assumed to begin at the start of the third trimester of an unborn child.
b. The daycare MEI for cancer risk, chronic HI and annual average $PM_{2.5}$ concentration is located at the Mechita Daycare along Shattuck Avenue approximately 750 feet east of the Project site. Daycare exposure is conservatively assumed to begin at 6 weeks of age and end at 5 years of age when the children transition to school.
c. The worker MEI for cancer risk, HI and annual average $PM_{2.5}$ concentration is located at the UCSF BCH Oakland Outpatient Center 2 (OPC 2), located north of the Project site across 52nd Street.

SOURCE: Table compiled by ESA in 2024 ~~2023~~ based on Appendix AIR-R of this EIR.

Operational Health Risk

Operational sources of health risk associated with the Project would primarily include up to three diesel fueled emergency generators and an increase in the number of trucks and TRUs idling at the proposed loading dock facilities. Operational incremental lifetime cancer risk, chronic hazard index and annual average $PM_{2.5}$ concentrations associated with the Project at all receptor types would be below the respective BAAQMD thresholds, as shown in **Table 4.1-10**. Therefore, health risks associated with operational sources included in the Project would be less than significant.

TABLE 4.1-10
UNMITIGATED HEALTH RISKS FROM NHB PROJECT OPERATION

Receptor Type/Emissions Source	Cancer Risk (# in 1 million)	Chronic HI (unitless)	Annual Average $PM_{2.5}$ Concentration ($\mu g/m^3$)
MEI – Resident Infant Receptor [a]			
Project Operations	5.3 ~~5.1~~	0.001	0.007
Significance Threshold	10	1.0	0.3
MEI - Daycare Infant Receptor [b]			
Project Operations	6.9 ~~7.5~~	0.001	0.004
Significance Threshold	10	1.0	0.3
MEI – Worker Receptor [c]			
Project Operations	1.1 ~~1.7~~	0.001	0.007
Significance Threshold	10	1.0	0.3

NOTES:

$\mu g/m^3$ = micrograms per cubic meter; HI = Hazard Index; MEI = Maximally Exposed Individual; $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter

a. The resident child MEI for cancer risk, chronic HI and annual average $PM_{2.5}$ concentration is located in the residential neighborhood between SR 24 and Shattuck Avenue east of the Project site. Exposure is assumed to begin in the third trimester of an unborn child.
b. The daycare MEI for cancer risk, chronic HI and annual average $PM_{2.5}$ concentration is located at the Mechita Daycare along Shattuck Avenue approximately 750 feet east of the Project site. Daycare exposure is conservatively assumed to begin at 6 weeks of age and end at 5 years of age when they transition to school.
c. The worker MEI for cancer risk, HI and annual average $PM_{2.5}$ concentration is located at business along Shattuck Avenue east of the Project site.

SOURCE: Table compiled by ESA in 2024 ~~2023~~ based on Appendix AIR-R of this EIR.

Combined Construction and Operational Health Risk

Table 4.1-11 shows the combined construction and operational health risks for the various receptor types. The combined health risks were estimated assuming that the maximally exposed receptor for construction would continue to be exposed to the Project's operational emissions once construction has ended. As shown in the table, the incremental lifetime cancer risk, chronic hazard index and annual average $PM_{2.5}$ concentrations for all receptor types would be below the applicable BAAQMD thresholds. Therefore, the Project would result in a less than significant health risk impact when construction and operation are considered together.

TABLE 4.1-11
UNMITIGATED COMBINED HEALTH RISKS FROM NHB PROJECT CONSTRUCTION AND OPERATION

Receptor Type/Emissions Source	Cancer Risk [a] (# in 1 million)	Chronic HI [b] (unitless)	Annual Average $PM_{2.5}$ Concentration [b] ($\mu g/m^3$)
MEI – Resident Infant Receptor [c]			
Project Construction + Operations	8.1 ~~7.5~~	0.004	0.04
Significance Threshold	10	1.0	0.3
MEI – Daycare Infant Receptor [d]			
Project Construction + Operations	8.6 ~~8.2~~	0.001	0.01
Significance Threshold	10	1.0	0.3
MEI – Worker Receptor [e]			
Project Construction + Operations	0.6	0.004	0.03
Significance Threshold	10	1.0	0.3

NOTES:

$\mu g/m^3$ = micrograms per cubic meter; HI = Hazard Index; MEI = Maximally Exposed Individual; $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter

a. The combined cancer risk shown is at the construction MEI assuming that the receptor continues to be exposed to the Project's operational emissions once construction has ended. It is not the sum of the Project's maximum construction and maximum operational risks. The operational risk does not contribute to the combined risk at the daycare MEI as the exposure duration for daycare receptors is between 6 weeks and 5 years of age, after which they transition to school and are no longer at the MEI location. During this period, they are only exposed to 5 years of construction emissions. For residential and worker MEI, the combined risk is the sum of construction risk and operational risk at that location (not the maximum operational risk) with age of operational exposure adjusted to start after construction ends.
b. The combined chronic HI and annual average $PM_{2.5}$ concentrations are annual numbers and not the sum of construction and operation as construction and operations will not take place simultaneously. It is determined using the higher value of construction and operations.
c. The resident child MEI for cancer risk, chronic HI and annual average $PM_{2.5}$ concentration is located in the residential neighborhood between SR 24 and Shattuck Avenue to the east of the Project site. Construction exposure is assumed to begin at the start of the third trimester of an unborn child and operational exposure will start at 8.5 years of age after end of construction.
d. The daycare MEI for cancer risk, chronic HI and annual average $PM_{2.5}$ concentration is located at the Mechita Daycare along Shattuck Avenue approximately 750 feet east of the Project site. Daycare exposure is conservatively assumed to begin at 6 weeks of age and end at 5 years of age when they transition to school.
e. The worker MEI for cancer risk, HI and annual average $PM_{2.5}$ concentration is located at the UCSF BCH Oakland OPC 2 building north of the Project site across 52nd Street.

SOURCE: Table compiled by ESA in 2024 ~~2023~~ based on Appendix AIR-R of this EIR.

Mitigation: None required.

Impact C-AIR-1, presented on pages 4.1-44 through 4.1-48 of the Draft EIR, is hereby revised to reflect the cumulative impact of the revised NHB Project.

Impact C-AIR-1: The health risk from the NHB Project combined with health risk impacts from other sources in the Project vicinity would result in significant cumulative health risk impacts. ***(Significant and Unavoidable)***

Table 4.1-12 tabulates health risks from existing permitted stationary sources and mobile sources (highways, major streets and rail) within 1,000 feet of the residential MEI. Though the daycare MEI shows a higher Project-level risk, the daycare receptors would be located at that location for a maximum of 5 years after which they would not be

TABLE 4.1-12
SUMMARY OF CUMULATIVE EXCESS LIFETIME CANCER RISK, NON-CANCER CHRONIC RISK, AND ANNUAL AVERAGE $PM_{2.5}$ CONCENTRATION AT THE EXISTING OFF-SITE RESIDENTIAL MEI [A]

Emissions Source/Receptor Type	Excess Lifetime Cancer Risk (per million)	Non-Cancer Chronic Hazard Index (unitless)	Annual Average $PM_{2.5}$ Concentration ($\mu g/m^3$)
Project Contribution			
Project Construction [b] + Operations	<u>8.1</u> ~~7.5~~	0.004	0.04
Background Contributions from BAAQMD Permitted Stationary Sources within 1,000 feet of the Project MEI [c]			
UCSF BCH Oakland [d]	83.6	0.055	0.6
City of Oakland Environmental Services Division – Emergency Generator	0.3	<0.001	<0001
ARCO Facility – Gasoline Station	0.4	0.002	0.0
Background Contribution from Mobile Sources at the Project MEI [e]			
Roadways, Highways and Major Streets	92.4	0.34	2.1
Cumulative – Project Plus Background			
Background Total	**176.8**	0.34	**2.64**
Project Contribution	<u>8.1</u> ~~7.5~~	0.004	0.04
Cumulative Total	<u>184.9</u> ~~184.3~~	0.35	**2.68**
Cumulative Significance Thresholds	100	10.0	0.8
Significant?	Yes	No	Yes

NOTES:
$PM_{2.5}$ = particulate matter that is 2.5 microns or less in diameter; = $\mu g/m^3$ micrograms per cubic meter; MEI = maximally exposed individual
Bold values = threshold exceedance
a. The resident child MEI for cancer risk, chronic HI and annual average $PM_{2.5}$ concentration is located in the residential neighborhood between SR 24 and Shattuck Avenue to the east of the Project site.
b. For onsite construction, $PM_{2.5}$ concentrations include exhaust and fugitive dust emissions as required by the most recent BAAQMD Guidelines.
c. Health risks from BAAQMD permitted stationary sources available through the BAAQMD's Stationary Source Screening Map.
d. Please see Table 4.1-3.
e. Background health risks from mobile sources derived from BAAQMD's Mobile Source Screening Map.
SOURCE: Table compiled by ESA in <u>2024</u> ~~2023~~ based on Appendix AIR-<u>R</u> of this EIR.

exposed to health risks from the Project or background sources. On the other hand, the HRA assumes that the residential receptors would be at the same location for a period of 30 years. Therefore, from a cumulative standpoint, the exposure to residential receptors would be higher over the lifetime.

As shown in the table, existing background health risks without the Project already exceed the BAAQMD's cumulative thresholds for incremental lifetime cancer risk and annual average $PM_{2.5}$ concentration of 100 in one million and 0.8 $\mu g/m^3$, respectively. The existing cumulative chronic non-cancer Hazard Index is less than the cumulative threshold of 10.0. Therefore, a significant cumulative health risk impact already exists in the area. Construction and operation of the Project would further contribute to this existing significant cumulative impact. As the Project's health risks, when combined with background health risks, would exceed the BAAQMD's cumulative thresholds for incremental lifetime cancer risk and annual average $PM_{2.5}$ concentration, the cumulative impact would be significant. It should be noted that, as shown in Table 4.1-12, the Project's contribution to the cumulative impact at the off-site residential MEI is a maximum cancer risk level of ~~7.5~~ 8.1 per million and 0.04 µg/m^3 in annual average $PM_{2.5}$ concentration, both of which are below the Project-level health risk thresholds. Therefore, the Project's contribution to the cumulative health risk would be relatively minor. Nevertheless, Mitigation Measure C-AIR-1: Clean Construction Equipment has been identified to further reduce the Project's contribution to the cumulative health risk.

Mitigation Measure C-AIR-1: Clean Construction Equipment

a. Electric engines shall be used for all equipment that is commercially available as plug-in or battery-electric equipment during each construction phase and activity. Portable equipment shall be powered by grid electricity if available. Electric equipment shall include, but not be limited to, concrete/industrial saws, sweepers/scrubbers, aerial lifts, welders, air compressors, fixed cranes, forklifts, and cement and mortar mixers, pressure washers, and pumps. To qualify for an exception, UCSF shall require construction contractors to provide evidence supporting the conclusion that electric equipment is not commercially available and shall use the next cleanest piece of off-road equipment in terms of DPM and $PM_{2.5}$. "Commercially available" is defined as either: (1) being used for other large-scale projects in the region occurring at the same time; (2) can be obtained without significant delays to critical-path timing of construction; or (3) available within the larger northern California region. UCSF shall be responsible for the final determination of commercial availability, based on all the facts and circumstances at the time the determination is made. For UCSF to make a determination that such equipment is commercially unavailable, the operator must submit documentation from a minimum of three (3) electric off-road equipment dealers demonstrating the inability to obtain the required electric equipment needed within 6 months.

b. The construction contractor shall ensure that all diesel off-road equipment shall have engines that meet the Tier 4 Final off-road emission standards, as certified by CARB, except as provided for in this section. This requirement shall be verified through submittal of an equipment inventory that includes the following information: (1) Type of Equipment, (2) Engine Year and Age, (3) Number of Years Since Rebuild of Engine (if applicable), (4) Type of Fuel Used, (5) Engine HP, (6) Verified Diesel Emission Control Strategy (VDECS) information if applicable and other related equipment data. A Certification Statement is also required to be made by the contractor for documentation of compliance and for future review by the BAAQMD as necessary. The Certification Statement shall state that the contractor agrees to compliance and acknowledges that a violation of this requirement shall constitute a material breach of contract.

   The requirement for Tier 4 Final equipment may be waived only under the following unusual circumstances: if a particular piece of off-road equipment with Tier 4 Final standards is technically not feasible or not commercially available; 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 other alternate off-road equipment. For purposes of this mitigation measure, "commercially available" shall mean the availability of Tier 4 Final engines similar to the availability for other large-scale construction projects in the region occurring at the same time and taking into consideration factors such as (i) potential significant delays to critical-path timing of construction for the project and (ii) geographic proximity to the project site of Tier 4 Final equipment. Sufficient documentation must be provided when seeking any waiver described above. If the waiver is granted, the contractor must use the next cleanest piece of off-road equipment that is commercially available, or another alternative that results in comparable reductions of DPM and $PM_{2.5}$ emissions.

Significance after Mitigation: Implementation of Mitigation Measure C-AIR-1 would require the use of clean construction equipment which would substantially reduce the Project's contribution to cumulative health risks. Proposed back-up power generators would already meet tier 4 engine standards. Additional mitigation measures are not available. As shown in **Table 4.1-13**, even with mitigation, the combined health risk impact of the Project and background sources in the area would exceed the BAAQMD's cumulative thresholds for incremental lifetime cancer risk and annual average $PM_{2.5}$ concentration. Therefore, this impact would remain significant and unavoidable.

TABLE 4.1-13
SUMMARY OF MITIGATED CUMULATIVE EXCESS LIFETIME CANCER RISK, NON-CANCER CHRONIC RISK, AND ANNUAL AVERAGE $PM_{2.5}$ CONCENTRATION AT THE EXISTING OFF-SITE RESIDENTIAL MEI [A]

Emissions Source/Receptor Type	Excess Lifetime Cancer Risk (per million)	Non-Cancer Chronic Hazard Index (unitless)	Annual Average $PM_{2.5}$ Concentration (µg/m³)
Background Total [b]	**176.8**	0.34	**2.64**
Project Contribution as Mitigated [c]	<u>3.4</u> ~~3.0~~	0.003	0.02
Cumulative Total	**<u>180.2</u> ~~179.8~~**	0.34	**2.66**
Cumulative Significance Thresholds	100	10.0	0.8
Significant?	Yes	No	Yes

NOTES:

$PM_{2.5}$ = particulate matter that is 2.5 microns or less in diameter; = µg/m³ micrograms per cubic meter; MEI = maximally exposed individual

Bold values = threshold exceedance

a. The resident child MEI for cancer risk, chronic HI and annual average $PM_{2.5}$ concentration is located in the residential neighborhood between SR 24 and Shattuck Avenue to the east of the Project site.
b. See Table 4.1-11 for details.
c. Mitigated risk from implementation of Mitigation Measure C-AIR-1.

SOURCE: Table compiled by ESA in ~~2023~~ <u>2024</u> based on Appendix AIR<u>-R</u> of this EIR.

Draft EIR Section 4.10, Noise and Vibration

The following clarification is made as a staff-initiated change to the assessment of Project noise impacts from operation of the relocated helistop in Draft EIR Impact NOI-2, page 4.10-34, Table 4.10-12:

TABLE 4.10-12
MODELED CNEL VALUES AT NOISE IMPACT ASSESSMENT SITES FOR PROPOSED NHB PROJECT HELISTOP

Site	Land Use	Existing Helistop CNEL (dB)	Proposed Project Helistop" CNEL (dB)	
		2022	2031	Project-Related Change
LT-1	Hospital	59.0	64.6	5.6
LT-2	Residential	56.9	56.0	-0.9
ST-1	Residential	53.8	52.7	-1.1 ~~1.01~~
ST-2	Residential	50.8	52.6	1.8
ST-3	Residential	52.3	51.3	-1.0
ST-4	Residential	52.2	54.6	2.4
SOURCE: ESA, 2023				

The following clarifications are made as a staff-initiated change to the assessment of Project noise impacts from operation of the relocated helistop in Draft EIR Impact NOI-2, page 4.10-34, second paragraph:

> It should be noted that site-specific noise monitoring conducted at Location LT-1 indicates that the noise levels at this location are approximately 71 dBA CNEL. Assuming ambient conditions at Location LT-1 are 71 dBA CNEL, the combined noise level (helicopter noise of ~~65.5~~ 64.6 dBA CNEL and traffic noise of 71 dBA CNEL) would be ~~72.1~~ 71.9 dBA, for a maximum increase in ambient noise of ~~1.1~~ 0.9 dBA. Only noise level increases of 3 dBA or more are considered perceptible by the human ear. Therefore, Project helicopter operations would not result in a substantial permanent increase in noise levels at sensitive receptors in the Project area, and the impact would be less than significant.

The following clarifications are made as a staff-initiated change to the supplemental discussion of Project noise effects on speech interference from operation of the relocated helistop in Draft EIR, page 4.10-37, Table 4.10-14:

TABLE 4.10-14
CALCULATED TIME ABOVE (TA) AND SPEECH INTERFERENCE FOR THE PROPOSED NHB PROJECT

Site	Land Use	Existing Helistop		Proposed Project Helistop		Project Related Change (min/day)
		Lmax (dB)[a]	2022 TA65 (min/day)	Lmax (dB)[a]	2031 TA65 (min/day)	
LT-1	Hospital	~~99.4~~ 98.7	~~11.1~~ 0.4	~~102.6~~ 98.4	~~12.3~~ 0.3	~~1.2~~ -0.1
LT-2	Residential	~~95.3~~ 101.0	~~9.7~~ 0.1	~~93.0~~ 104.7	~~8.9~~ 0.2	~~-0.8~~ 0.1
ST-1	Residential	~~98.1~~ 100.6	~~10.6~~ 102.4	~~95.3~~ 102.4	~~9.7~~ 0.1	~~-1.0~~ 0.1
ST-2	Residential	~~91.0~~ 85.1	~~8.2~~ 82.4	~~93.2~~ 82.8	~~9.0~~ 0.1	~~0.7~~ 0.1
ST-3	Residential	~~94.2~~ 90.4	~~9.3~~ 97.5	~~87.6~~ 97.5	~~7.2~~ 0.1	~~-2.1~~ 0.0
ST-4	Residential	~~87.4~~ 88.1	~~7.1~~ 85.7	~~90.4~~ 85.7	~~8.0~~ 0.2	~~0.9~~ 0.1

NOTES:
a. AEDT calculated SEL value for the A-109 on flight track closest to receiver.
SOURCE: ESA, 2023.

Impact NOI-2, presented on pages 4.10-27 through 4.10-43 of the Draft EIR, is hereby revised to reflect the operational noise impacts of the revised NHB Project.

Impact NOI-2: Implementation of the NHB Project would not generate a substantial permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. *(Less than Significant)*

Proposed Project

Stationary Noise Sources

Operation of the Project would increase ambient noise levels in the immediate campus site vicinity, primarily from the operation of new building stationary equipment such as HVAC systems and new emergency generators proposed at the Project site.

The proposed HVAC system for the new hospital building would include air handling units (AHUs), exhaust fans, cooling towers and heat pumps. HVAC equipment would be mounted on the new hospital building rooftop as well as internally within the building on the 2nd floor and basement. While mechanical equipment is also proposed for the second floor and basement of the new hospital building, this equipment would be located within enclosures and include baffling and louvers sufficient to ensure these internal noise sources do not generate substantial exterior noise. Consequently, this analysis focuses on noise from the operation of roof top mechanical equipment and new emergency generators. Up to three new emergency backup diesel generators would be installed at ground level along the east side of the Project site adjacent to SR 24 to serve the proposed Project.

Rooftop HVAC equipment would be shielded from nearby receptors with a penthouse screen that would extend 15 feet above the roofline. As project-specific noise specifications for proposed equipment are not currently available, noise levels generated from this equipment were conservatively calculated based on representative sound power specifications for a large hospital with all-electric powered equipment and diagrams of the proposed locations of HVAC units and generators provided by UCSF. A conservative 5 dB reduction was assumed for noise emanating from the rooftop to account for restricted line-of-sight for rooftop sources and the presence of the penthouse screen. Modeled noise from the proposed HVAC units (AHUs and exhaust fans), cooling towers and heat pumps) on the proposed new hospital building rooftop are presented in **Table 4.10-11** below.

TABLE 4.10-11
NHB PROJECT STATIONARY NOISE SOURCES AND OPERATIONAL NOISE LEVELS

Source	# of Units	Sound Power Level (dB per unit)	A-weighted sound Pressure Level at the nearest Residential Property Line	Residential Standard per City Noise Ordinance
~~New Hospital Building Rooftop~~				
HVAC Exhaust	8 on new hospital building roof	80	45 Leq	
AHUs (Supply)	6 on new hospital building roof	83	47 Leq	
Cooling Towers	~~4~~ 3 in utility yard 1 on new hospital building roof	102 102	~~58~~ 54 Leq 49 Leq	
Air Source Heat Pumps	3 in utility yard	93	~~49~~ 51 Leq	
~~Ground-Level~~				
Emergency Generators	~~2~~ 3 in utility yard	75	~~34~~ 38 Leq	
Total Stationary Sources	~~11~~	--	**~~59~~ 57 dBA**	61 dBA

SOURCE: SmithGroup, ~~2023~~ 2024; Stantec, 2023; ESA, ~~2023~~ 2024 (Appendix NOI-R).

The City of Oakland establishes its most stringent noise limits for nighttime (10:00 PM to 7:00 AM) noise at 45 dBA for residential properties as a receiving land use. However, the noise ordinance further states that if the measured ambient noise level already exceeds the applicable standard in any category, then the stated applicable noise level shall be adjusted so as to equal the ambient noise level. In other words, if existing noise is measured to be louder than the maximum allowed (i.e., the "applicable noise level standard"), the existing noise level shall be considered the maximum allowed, or the applicable noise level standard. As shown in Table 4.10-3, the existing nighttime average noise levels monitored on the Project site perimeter were 65 and 61 dBA. Hence the most conservative applicable stationary source noise standard would be 61 dBA.

The aggregate impact of these rooftop units would be a noise level of ~~59~~ 57 dBA at the nearest residential property lines, respectively. These noise levels would not exceed the existing nighttime hourly average noise level of 61 dBA at the nearest residential land use which, per the City's noise ordinance would be the applicable noise standard. Based on the above, Project stationary equipment noise from the new hospital building HVAC rooftop mechanical equipment and the emergency generators would not result in a significant operational noise impact.

Each emergency generator would provide 2,000 kW power and be equipped with a 21-foot-tall exhaust stack. The proposed emergency generators would be located within enclosures to provide both noise attenuation and weather protection. Typically, the Bay Area Air Quality Management District permits emergency backup generators to be tested for up to 50 hours per year, or on average about 1 hour per week, to limit emissions of pollutants from diesel-powered generators. Therefore, regular maintenance operation testing of the emergency standby generators would occur for approximately four daytime hours per month (50 hours annually). Given the limited duration of noise events for testing, it would not substantially increase ambient noise levels. Furthermore, as shown in Table 4.10-11, the noise from testing would be well below the applicable noise standard at the nearest residential property lines. It should also be noted that operation of the proposed generators during a power failure or other emergency would be exempt from the restrictions of the City's noise ordinance.

Mitigation: None required.

Traffic Noise Increases from Loading Docks, Including from Trucks

The proposed Project would demolish the existing loading dock facilities and replace them with a new permanent loading dock integrated with the new hospital building and located in the same approximate area as the existing loading docks. As with the existing loading dock facilities, the proposed new hospital building loading dock would be directly accessed from MLK Jr. Way. Consequently, the location of noise from truck loading activities at the new hospital building is not expected to change compared to existing conditions once the new hospital building is operational. Currently, the existing hospital generates about 30 trucks on a typical weekday. Assuming that truck traffic would increase at the same rate as regular traffic generated by the Project (about 16 percent) the total number of daily trucks would increase to 35 per day at buildout. This incremental Project increase of 5 daily truck trips over existing conditions would be spread throughout the day and, therefore, would not meaningfully increase noise levels along access roadways, primarily MLK Jr. Way.

Prior to demolition of the existing hospital loading dock, the site support <u>structure</u> ~~building~~, which would include a loading dock would be constructed on the eastern side of the Project site, adjacent to SR 24. This site support <u>structure</u> ~~building~~ would provide all delivery loading services for the existing hospital while the new hospital building is being built; and afterwards the building may remain and continue to be used as a supplemental facility. Consequently, during new hospital building construction, all delivery trucks would shift to access the site support <u>structure</u> ~~building~~ via 52nd Street and the Dover Street extension; and following construction, some delivery truck traffic would continue to occur on these roadways. As such, residential uses on 52nd Street would be exposed to an increase in Project truck noise generated by truck travel which currently does not occur. (Vehicular traffic on 52nd Street would also increase compared to existing conditions associated with operation of the proposed parking structure on the Project site because the structure would be accessed via 52nd Street and Dover Street extension. The traffic noise impact of that traffic increase, including delivery truck traffic, is analyzed below under Impact NOI-4).

It should be noted that of the four existing residential structures located on 52nd Street across from the Project site, three are currently owned by UCSF and not used for residential purposes; furthermore, two of the UCSF residential structures will be relocated to 53rd Street as part of UCSF's planned Administrative Support Building (ASB) Project, prior to the start of NHB Project construction. Therefore, only one privately-owned residential structure on 52nd Street would be directly exposed to an increase in noise from delivery trucks traveling via 52nd Street to and from the site loading dock building.

Assuming up to 35 delivery truck round trips per day would access the Project site from 52nd Street and Dover Street extension, based on existing truck temporal distribution, about 40 percent would occur in the early morning (before 8:00 AM), 40 percent would occur during late morning (8:00 AM to noon) and 20 percent would occur in the afternoon to evenings (noon to midnight). As under existing conditions, Project delivery trucks would consist of a range of vehicle sizes, consisting primarily of small and medium two-axle trucks, and more infrequently, larger trucks with three or more axles.

Noise levels from the Project-related truck traffic on 52nd Street were calculated using the algorithms of the FHWA Traffic Noise Prediction Model. This model takes into account the increases in vehicle trips, including trucks, and vehicle speed and noise emission characteristics from medium and heavy-duty trucks. Existing noise levels from traffic at the nearest residential structures on 52nd Street (60.9 dB Leq) do not exceed general plan noise standards. Based on the estimated Project increase in truck volumes on 52nd Street, noise levels would increase from 60.9 dB Leq to 61.4 dB Leq at the nearest residential structures on 52nd Street. Accordingly, the Project truck traffic noise levels increases along 52nd Street would be well below 3 dBA, which would be an increase that would be barely perceptible to the human ear. Consequently, the noise impact from the increase in delivery truck travel on 52nd Street would be less than significant.

Mitigation: None required.

Ambulance Related Noise

At the Project site, emergency vehicles currently access the existing emergency room near the corner of 52nd Street and MLK Jr. Way. Under the Project, internal circulation improvements would result in ambulances using 52nd Street and the Dover Street extension, or MLK Jr. Way, to access an ambulance patient drop-off located along the south side of the new hospital building.

UCSF BCH Oakland indicates that based on a review of available 2023 data, there is currently an average of approximately 5.4 daily ambulance visits. Of these, approximately 0.6 ambulances per day used their siren. Under the Project, UCSF BCH Oakland estimates that emergency department visits would increase by 3.5 percent between 2022 and 2032. As under existing conditions, an increase in ambulance siren activity under the Project would be most prevalent on arterials and collector streets leading to the Project site, particularly 52nd Street, and MLK Jr. Way.

As the Project would only marginally increase the frequency of emergency vehicle visits at the Project site, these increased visits would be spread out throughout the day, and only a fraction of the additional daily emergency vehicle visits would occur during the nighttime hours, the operational impact of additional siren noise from ambulance arrivals under the Project would be less than significant.

Mitigation: None required.

Noise Impacts from Operation of the Relocated Helistop under the Project

The existing UCSF BCH Oakland helistop is located on a 46-foot-tall helistop structure located in the southern portion of the Project site. The annual average CNEL contours from helistop operations under existing (2022) conditions are shown in Figure 4.10-2. In 2022, 786 helicopter operations occurred at the existing helistop,[72] which amounts to an average of 2.2 daily helicopter operations. Helicopter activity is expected to grow at approximately 1 percent per year with or without the proposed Project. The projected number of annual helistop operations would be 858 by 2031, which amounts to an average of 2.4 daily helicopter operations.

Under the proposed Project, the helistop would be relocated approximately 160 feet to the north of the existing helistop, atop the new hospital building roof. The proposed rooftop helistop landing would measure approximately ~~136~~ <u>121</u> feet above ground level (agl), or ~~100~~ <u>85</u> feet higher in elevation compared to the existing helistop.

New Figure 4.10-4 illustrates the changed arriving and departing flight tracks for helicopters that would use the relocated helistop atop the new hospital building. Similar to existing conditions, under the Project, helicopters would typically arrive from the east and depart to the west, and when feasible, fly over SR 24 and hospital property when landing at or departing from the helistop in an effort to minimize noise impacts on the surrounding community.

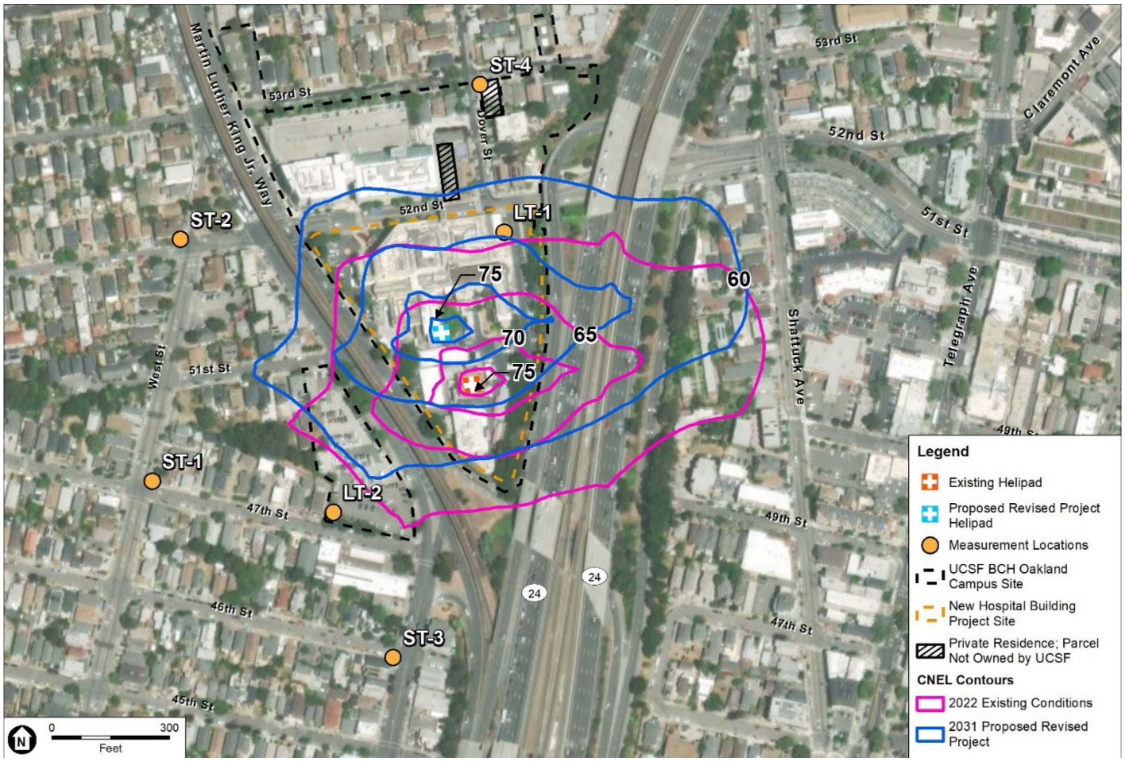
[72] Each helicopter landing/takeoff is counted as an aircraft operation.

SOURCE: AEDT, 2023; Environmental Science Associates, 2024 UCSF BCH Oakland NHB Project EIR

New Figure 4.10-4
Helicopter Flight Tracks Using
Proposed UCSF BCH Oakland Helistop atop New Hospital Building

ESA prepared a Technical Noise Memorandum (see Appendix NOI-R) that assessed the proposed shift in flight tracks and increase in helicopter activity at the relocated helistop atop the new hospital building under the Project. CNEL noise contours were produced and analyzed for two scenarios: 2022 Existing Conditions and 2031 with the Proposed Project Conditions, as summarized below.

New Figure 4.10-5 presents CNEL contours under Existing Conditions and 2031 Project Conditions for the existing and relocated helistops. As illustrated in New Figure 4.10-5, noise monitoring sites LT-1, ST-2, and ST-4 are located to the north of both the existing and relocated helistops, while LT-2, ST-1 and ST-3 are located to the south of both the existing and relocated helistops.



SOURCE: AEDT, 2024; Environmental Science Associates, 2024

UCSF BCH Oakland NHB Project EIR

New Figure 4.10-5
Existing and 2031 Proposed Project
CNEL Contours Comparison for UCSF BCH Oakland Helistop

Table 4.10-12 summarizes and compares calculated helicopter CNEL values at the helicopter noise impact assessment sites under Existing Conditions and 2031 Project Conditions.

TABLE 4.10-12
MODELED CNEL VALUES AT NOISE IMPACT ASSESSMENT SITES FOR PROPOSED NHB PROJECT HELISTOP

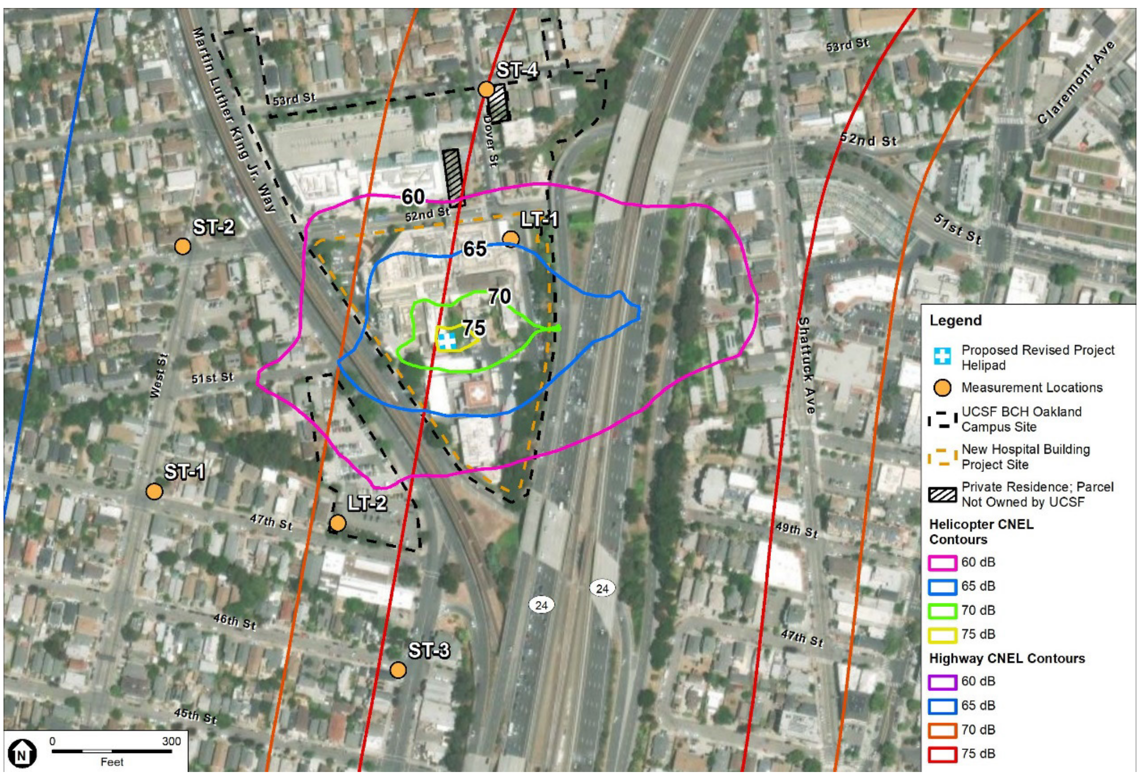
Site	Land Use	Existing Helistop CNEL (dB)	Proposed Project Helistop CNEL (dB)	
		2022	2031	Project-Related Change
LT-1	Hospital	59.0	64.6	5.6
LT-2	Residential	56.9	56.0	-0.9
ST-1	Residential	53.8	52.7	-1.1 ~~1.01~~
ST-2	Residential	50.8	52.6	1.8
ST-3	Residential	52.3	51.3	-1.0
ST-4	Residential	52.2	54.6	2.4

SOURCE: ESA, ~~2023~~ 2024

Overall Project-related changes show increases in noise exposure ranging from 1.8 dB to ~~5.5~~ 5.6 dB at sensitive land uses to the north of the helistops and decreases in noise exposure ranging from -0.9 dB to ~~-1.01~~ -1.1 dB at sensitive land uses to the south of the helistops.

Impacts related to the increase in aggregate noise increases in terms of the CNEL noise metric are assessed relative to an increase of 3 dBA which is an increase that is considered to be barely perceptible to the human ear. As shown in Table 4.10-12, the only receptors that would experience an increase of greater than 3 CNEL would be the hospital itself (Location LT-1[73]). However, as explained below, the increases in helicopter noise at Location LT-1 would not be perceived due to the substantial contribution of background highway traffic noise at the location.

New Figure 4.10-6 graphically displays the 2031 Project CNEL contours for the relocated helistop, along with CNEL contours for the adjacent SR 24 freeway background traffic. Location LT-1 is located approximately 275 feet from the centerline of SR 24.



SOURCE: AEDT, 2023; Environmental Science Associates, 2024

UCSF BCH Oakland NHB Project EIR

New Figure 4.10-6
2031 Proposed Project CNEL Contours for UCSF BCH Oakland Helistop Compared with CNEL Contours for SR 24 Background Traffic

[73] It should be noted that the predicted CNEL increase at the hospital is an impact of the Project on itself, which would be a non-CEQA impact that would be addressed by UCSF BCH Oakland through implementation of an acoustical study to ensure that building materials are of sufficient design to maintain interior hospital noise to acceptable levels.

It should be noted that site-specific noise monitoring conducted at Location LT-1 indicates that the noise levels at this location are approximately 71 dBA CNEL. Assuming ambient conditions at Location LT-1 are 71 dBA CNEL, the combined noise level (helicopter noise of 65.5 dBA CNEL and traffic noise of 71 dBA CNEL) would be 72.1 dBA, for a maximum increase in ambient noise of 1.1 dBA. Only noise level increases of 3 dBA or more are considered perceptible by the human ear. Therefore, Project helicopter operations would not result in a substantial permanent increase in noise levels at sensitive receptors in the Project area, and the impact would be less than significant.

Supplemental Helistop Noise Analysis for the Proposed Project

For informational purposes, alternative metrics were considered to estimate speech interference and sleep disturbance associated with operation of the proposed Project helistop. While there are no accepted thresholds, methodology or metrics that may be used to evaluate potential speech interference and sleep disturbance impacts under CEQA (LAWA, 2020), the Technical Noise Memorandum (Appendix NOI-R) provides a helistop noise analysis using the SEL), L_{max} and TA metrics to evaluate how speech interference and sleep disturbance could occur with the proposed relocation of the helistop under the Project. That assessment is summarized in this Noise section.

The assessment of helicopter single event noise exposure was analyzed by using the AEDT to calculate SEL, L_{max} and TA values at the helicopter noise impact assessment sites. The SEL values were used to assess the potential for sleep disturbance, and L_{max} and TA values were used to assess the potential for speech interference. Single event metrics such as SEL and L_{max} represent worst-case noise exposure for a single noise event, and as such, are not affected by changes to the total number of annual operations.

Sleep Disturbance Assessment

Sleep disturbance is often expressed as “maximum percent awakened,” and represents the potential for sleep disturbance within the population residing beneath a specific flight path, indicating the maximum percentage expected to be awakened. For example, if a city block houses 200 individuals and the maximum percent awakened is 10 percent, this implies that up to 20 people may be awakened due to a passing flight during nighttime hours (10 p.m. to 7 a.m.). As it relates to project-related change, a 1 percent increase would equate to an additional two (2) people potentially being awakened during nighttime hours.

To determine potential sleep disturbance, an outdoor-to-indoor noise level reduction (NLR) is applied. A typical NLR for a residence in the project area with windows open is 10-15 dB and 15-20 dB when windows and doors are closed. For this analysis, an NLR of 15 dB was applied to modeled results. For example, a single event with an exterior SEL of 90 dB would result in an interior SEL of 75 dB.

Table 4.10-13 summarizes the calculated SEL values at each noise impact assessment site location for potential sleep disturbance for the proposed Project. The 15 dB NLR was

TABLE 4.10-13
MODELED SEL VALUES AND SLEEP DISTURBANCE SITES FOR THE PROPOSED NHB PROJECT

Site	Land Use	Existing Helistop			Proposed Project Helistop			Project Related Change in Maximum Awakened (%)
		Exterior SEL (dB)[a]	Interior SEL (dB)[b]	Maximum % Awakened[c]	Exterior SEL (dB)[a]	Interior SEL (dB)[b]	Maximum % Awakened[c]	
LT-1	Hospital	99.4	84.4	11.1	102.6	87.6	12.3	1.2
LT-2	Residential	95.3	80.3	9.7	93.0	78.0	8.9	-0.8
ST-1	Residential	98.1	83.1	10.6	95.3	80.3	9.7	~~-1.0~~ <u>-0.9</u>
ST-2	Residential	91.0	76.0	8.2	93.2	78.2	9.0	0.7
ST-3	Residential	94.2	79.2	9.3	87.6	72.6	7.2	-2.1
ST-4	Residential	87.4	72.4	7.1	90.4	75.4	8.0	0.9

NOTES:
a. AEDT calculated SEL value for the A-109 on flight track closest to receiver.
b. Outdoor-to-indoor noise level reduction of 15 was applied to all receivers.
c. Maximum percent awakened calculated using FICAN dose-response curve.
SOURCE: ESA, <u>2024</u> ~~2023~~.

subtracted from the exterior SEL and the Federal Interagency Committee on Aviation Noise (FICAN) dose response was calculated based on the interior SEL (FICAN, 1997).

As shown in Figure 4.10-1, sites LT-1, ST-2, and ST-4 are located to the north of the helistop, while LT-2, ST-1 and ST-3 are located to the south of the helistop. Overall, as shown in Table 4.10-13, project-related changes (i.e., relocation of the helistop from its current position) show an increase in maximum percent awakened north of the existing helistop, from 0.7 dB to 1.2 dB, and a decrease in maximum percent awakened south of the existing helistop, from -0.8 dB to -2.1 dB.

As indicated in Table 4.10-13, relocation of the helistop would result in a shift of SEL values, with values increasing for residences to the north and values decreasing for residences to the south. In addition, as discussed previously, flights to and from the helistop would increase by 72 annual operations by 2031, a 9.2 percent increase. The potential increases and decreases in nighttime awakenings presented in Table 4.10-13 that would occur with the Project are dependent on a number of factors. First, of the estimated increase in helicopter flights, 22 annual operations would occur during nighttime hours (10:00 PM to 7:00 AM), and consequently, potentially result in nighttime awakenings. Of these additional flights during nighttime hours, approximately 20 percent (or 5 annual operations) would be along the east-west flight track, where the vast majority of residences are located. In contrast, increased flight activity that would operate over SR 24 (i.e., along the north-south flight tracks) would account for approximately 40 percent (or 9 annual operations) in each direction of travel (i.e., 40 percent north and 40 percent south). Consequently, while the proposed relocation of the helistop would result in some new residential land uses to experience an increase in single event noise, the occurrence during which the increase might be experienced would be infrequent.

Speech Interference Assessment

Table 4.10-14 summarizes calculated exterior L_{max} values at the helicopter noise impact assessment sites for the closest modeled flight route and the potential for speech interference when all modeled flight routes are taken into consideration. Potential speech interference is assumed to occur when interior noise levels are at or above 65 dB. The AEDT was used to calculate exterior noise levels that exceeded 80 dB, (e.g., TA 80 dB in minutes per day) to account for the 15 dB NLR inside the residence. The data in Table 4.10-14 shows that the Project would not result in a change in the existing potential speech interference duration at any of the modeled residential site locations, and would result in a small decrease at LT-1.

TABLE 4.10-14
CALCULATED TIME ABOVE (TA) AND SPEECH INTERFERENCE FOR THE PROPOSED NHB PROJECT

Site	Land Use	Existing Helistop		Proposed Project Helistop		Project Related Change (min/day)
		Lmax (dB)[a]	2022 TA65 (min/day)	Lmax (dB)[a]	2031 TA65 (min/day)	
LT-1	Hospital	98.7 ~~99.4~~	0.4 ~~11.1~~	97.4 ~~102.6~~	0.4 ~~12.3~~	0.0 ~~1.2~~
LT-2	Residential	101.0 ~~95.3~~	0.1 ~~9.7~~	101.9 ~~93.0~~	0.2 ~~8.9~~	0.1 ~~-0.8~~
ST-1	Residential	100.6 ~~98.1~~	0.0 ~~10.6~~	93.8 ~~95.3~~	0.1 ~~9.7~~	0.1 ~~-1.0~~
ST-2	Residential	85.1 ~~91.0~~	0.0 ~~8.2~~	89.3 ~~93.2~~	0.1 ~~9.0~~	0.1 ~~0.7~~
ST-3	Residential	90.4 ~~94.2~~	0.1 ~~9.3~~	85.5 ~~87.6~~	0.1 ~~7.2~~	0.0 ~~-2.1~~
ST-4	Residential	88.1 ~~87.4~~	0.1 ~~7.1~~	93.1 ~~90.4~~	0.2 ~~8.0~~	0.1 ~~0.9~~

NOTES:
a. AEDT calculated SEL value for the A-109 on flight track closest to receiver.
SOURCE: ESA, 2024 ~~2023~~.

Operational Vibration Assessment for the Proposed Project

Helicopter noise contains substantial energy in the frequency range of 10–80 Hz. This energy has the potential to produce rattling of windows or objects within buildings that are located within close proximity to helistops or other areas with nearby helicopter operations. Vibration effects from project-related helicopter operations would be airborne and would affect windows first, and then potentially, walls and objects located on shelves or picture frames affixed to walls.

Vibration effects are more likely to occur in older residential buildings or in buildings of relatively light-weight construction. In contrast, these effects are less likely to occur within commercial or institutional buildings such as hospitals, that are typically made of heavier construction, including more substantial windows.

Due to proximity, low frequency and vibration effects would be more pronounced within the Project site than within the surrounding areas off-campus. Since the proposed replacement helistop would be at a higher elevation (100 feet higher) than the existing helistop, it is expected that the helicopters would be operating at a higher altitude over surrounding off-campus residential areas, and therefore, would result in fewer potential low frequency or vibration effects at sensitive uses than under existing conditions.

Project Variant

Stationary Noise Sources

The Project variant would locate the helistop atop the parking garage instead of the roof of the new hospital building. As such, there could be some minor variation with the configuration of rooftop HVAC equipment atop the new hospital building under the Project variant compared to the proposed Project. However, the new hospital building under the Project variant would require the same type of rooftop equipment as under the proposed Project, and correspondingly, would have the similar stationary source operational noise impacts at nearby receptors as the proposed Project.

Mitigation: None required.

Traffic Noise Increases from Loading Docks, including from Trucks

The Project variant proposes a site loading dock building and permanent loading dock facilities in the same locations as under the proposed Project. In addition, overall operational activities, including loading activities and daily truck deliveries under the Project variant would be the same as under the Project. Consequently, the Project variant would have the same less than significant operational noise impacts from truck loading activities as the proposed Project.

Mitigation: None required.

Ambulance Related Noise

The Project variant would have the same level of emergency department facilities, and the same entrance points for ambulances to access the Project site. Consequently, the Project variant would have the same less than significant operational noise impacts from ambulance activities as the proposed Project.

Mitigation: None required.

Noise Impacts from Operation of the Relocated Helistop under the Project Variant

Under the Project variant, the helistop would be relocated approximately 125 feet to the south of the existing helistop and installed atop the parking garage, instead of on the roof of the new hospital building. The proposed helistop landing atop the parking garage would measure approximately ~~42~~ 57 feet agl, or approximately ~~6~~ 15 feet higher in elevation than the existing helistop and about ~~94~~ 64 feet lower than the proposed helistop atop the new hospital building under the Project.

New Figure 4.10-7 illustrates the arriving and departing flight tracks for helicopters that would use the relocated helistop atop the proposed parking garage. As under the proposed Project, under the Project variant, helicopter operations (landing plus takeoffs) are projected to increase compared to existing conditions.

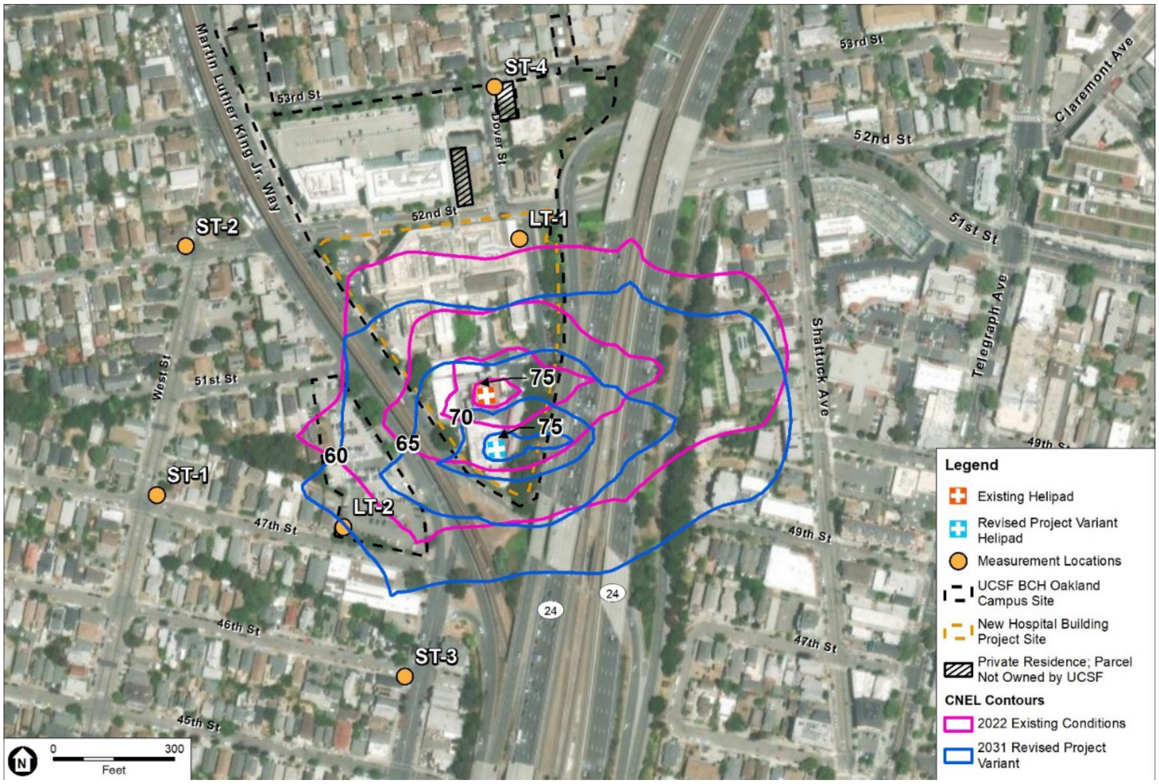
SOURCE: AEDT, 2024; Environmental Science Associates, 2024 UCSF BCH Oakland NHB Project EIR

New Figure 4.10-7
Helicopter Flight Tracks Using
Proposed UCSF BCH Oakland Helistop atop Parking Garage

ESA prepared a Technical Noise Memorandum (see Appendix NOI-R) that assessed the shift in helistop location and increase in helicopter activity at the relocated helistop atop the proposed garage under the Project variant; see. **New Figure 4.10-8** presents Existing Conditions and 2031 Project Variant Conditions CNEL contours for the existing and relocated helistops. **Table 4.10-15** summarizes and compares calculated helicopter CNEL values at the helicopter noise impact assessment sites under Existing Conditions and 2031 Project Variant Conditions.

Overall project variant-related changes show decreases in noise exposure ranging from -0.4 dB to -2.5 dB at sensitive land uses to the north of the helistops and increases in noise exposure ranging from 0.2 dB to 2.8 dB at sensitive land uses to the south of the helistops. As shown in Table 4.10-15, no receptors would experience a noise increase of greater than 3 CNEL.

New Figure 4.10-9 graphically displays the 2031 Project Variant CNEL noise levels for the relocated helistop, along with CNEL contours for the adjacent SR 24 freeway background traffic. For the same reasons discussed above for the proposed Project, the estimated increases in helicopter noise under the Project variant would not be perceived due to the substantial contribution of background highway traffic noise from the adjacent SR 24. Therefore, the Project variant would have a less than significant operational noise impact with respect to helicopter noise.



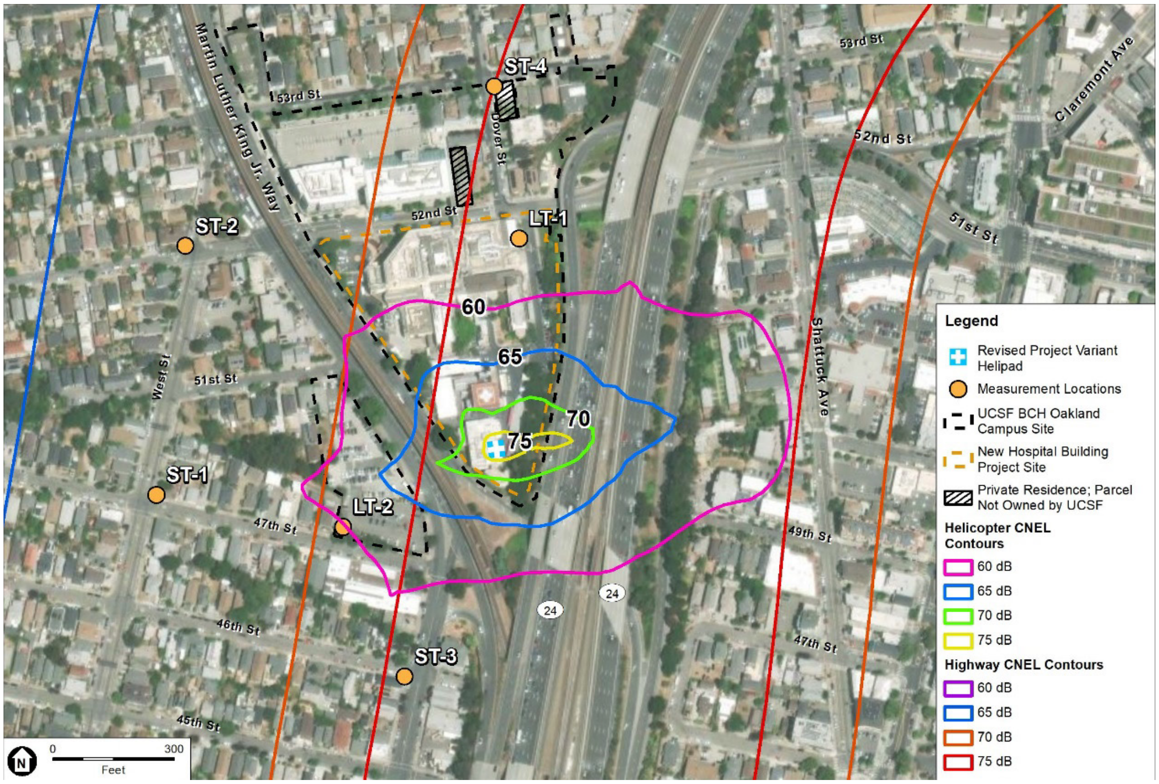
SOURCE: AEDT, 2024; Environmental Science Associates, 2024 UCSF BCH Oakland NHB Project EIR

New Figure 4.10-8
Existing and 2031 Project Variant
CNEL Contours Comparison for UCSF BCH Oakland Helistop

TABLE 4.10-15
MODELED CNEL VALUES AT NOISE IMPACT ASSESSMENT SITES FOR NHB PROJECT VARIANT HELISTOP

		Existing Helistop CNEL (dB)	Project Variant Helistop CNEL (dB)	
Site	**Land Use**	**2022**	**2031**	**Project-Related Change**
LT-1	Hospital	59.0	56.5	-2.5
LT-2	Residential	56.9	59.7	2.8
ST-1	Residential	53.8	54.0	0.2
ST-2	Residential	50.8	50.4	-0.4
ST-3	Residential	52.3	54.5	2.2
ST-4	Residential	52.2	51.3	-0.9

SOURCE: ESA, ~~2023~~ 2024



SOURCE: AEDT, 2024; Environmental Science Associates, 2024

UCSF BCH Oakland NHB Project EIR

New Figure 4.10-9
2031 Project Variant CNEL Contours for Helistop
Compared with CNEL Contours for SR 24 Background Traffic

The relative difference between existing, Project variant, and proposed Project helistop elevation poses no significant change in CNEL noise exposure. All noise exposure is a result of the helicopter flight performance, flight track geometry, flight track use, and land uses the aircraft overflies.

Mitigation: None required.

Supplemental Helistop Noise Analysis for the Project Variant

Similar to that provided for the Project, for informational purposes, alternative metrics were considered to estimate speech interference and sleep disturbance associated with operation of the proposed Project variant helistop. The Technical Noise Memorandum (Appendix NOI-R) provides a helistop noise analysis using the Sound Exposure Level (SEL) and Time Above (TA) metrics to evaluate how speech interference and sleep disturbance could be affected by the proposed relocation of the helistop under the Project variant. That assessment is summarized below.

Sleep Disturbance Assessment

Table 4.10-16 summarizes the calculated SEL values at each noise impact assessment site location for potential sleep disturbance under the Project variant.

TABLE 4.10-16
MODELED SEL VALUES AND SLEEP DISTURBANCE SITES FOR THE NHB PROJECT VARIANT

Site	Land Use	Existing Helistop			Project Variant Helistop			Project Variant Related Change in Maximum Awakened (%)
		Exterior SEL (dB)[a]	Interior SEL (dB)[b]	Maximum % Awakened[c]	Exterior SEL (dB)[a]	Interior SEL (dB)[b]	Maximum % Awakened[c]	
LT-1	Hospital	99.4	84.4	11.1	98.2	83.2	10.7	-0.4
LT-2	Residential	95.3	80.3	9.7	98.3	83.3	10.7	1.0
ST-1	Residential	98.1	83.1	10.6	97.5	82.5	10.4	-0.2
ST-2	Residential	91.0	76.0	8.2	89.6	74.6	7.8	-0.4
ST-3	Residential	94.2	79.2	9.3	91.8	76.8	8.5	-0.8
ST-4	Residential	87.4	72.4	7.1	85.5	70.5	6.6	-0.5

NOTES:
a. AEDT calculated SEL value for the A-109 on flight track closest to receiver.
b. Outdoor-to-indoor noise level reduction of 15 was applied to all receivers.
c. Maximum percent awakened calculated using FICAN dose-response curve.
SOURCE: ESA, 2024 ~~2023~~.

Overall, as shown in Table 4.10-16, Project variant-related changes show a decrease in maximum percent awakened from -0.2 dB to -0.8 dB at all modeled site locations except one. An increase of 1.0 percent is expected at LT-2, southwest of the hospital.

As indicated in Table 4.10-16, relocation of the helistop would result in a shift of SEL values, with values increasing for residences to the south and values decreasing for residences to the north. Similar to the case discussed for the Project, above, only a fraction of the total increase in helicopter flights would occur during nighttime hours (10:00 PM to 7:00 AM), and thus potentially could result in nighttime awakenings. Furthermore, only a fraction of that number would occur along the east-west flight track, where the vast majority of residences that would experience an increase in SEL are located. Consequently, while the relocation of the helistop would result in some new residential land uses to experience an increase in single event noise, the occurrence during which the increase might be experienced would be infrequent.

Speech Interference Assessment

Table 4.10-17 summarizes calculated exterior L_{max} values at the helicopter noise impact assessment sites for the closest modeled flight route and the potential for speech interference when all modeled flight routes are taken into consideration. The data in Table 4.10-17 shows that overall the Project variant would result in only a small increase in the existing speech interference duration at the modeled residential site locations, and would result in a small decrease at LT-1.

TABLE 4.10-17
CALCULATED TIME ABOVE (TA) AND SPEECH INTERFERENCE FOR THE NHB PROJECT VARIANT

Site	Land Use	Existing Helistop		Project Variant Helistop		Project Variant Related Change (min/day)
		Lmax (dB)[a]	2022 TA65 (min/day)	Lmax (dB)[a]	2031 TA65 (min/day)	
LT-1	Hospital	98.7	0.4	98.4	0.3	-0.1
LT-2	Residential	101.0	0.1	104.7	~~0.2~~ 0.1	~~0.1~~ 0.0
ST-1	Residential	100.6	0.0	102.4	~~0.1~~ 0.0	~~0.1~~ 0.0
ST-2	Residential	85.1	0.0	82.8	~~0.1~~ 0.0	~~0.1~~ 0.0
ST-3	Residential	90.4	0.1	97.5	0.1	0.0
ST-4	Residential	88.1	0.1	85.7	~~0.2~~ 0.1	~~0.1~~ 0.0

NOTES:
a. AEDT calculated SEL value for the A-109 on flight track closest to receiver.
SOURCE: ESA, ~~2023~~ 2024.

Operational Vibration Assessment for the Project Variant

As discussed above, helicopter noise contains substantial energy in the frequency range of 10-80 Hz. This energy has the potential to produce rattling of windows or objects within buildings that are located within close proximity to helistops or other areas with nearby helicopter operations. Vibration effects are more likely to occur in older residential buildings or in buildings of relatively light-weight construction, as opposed to commercial or institutional buildings such as hospitals, that are typically made of heavier construction.

Similar to that discussed for the Project, due to proximity, low frequency and vibration effects would be more pronounced within the Project site than within the surrounding areas off-campus. Since the proposed helistop under the Project variant would be located at approximately the same elevation as the existing helistop within the Project site, it is expected that the Project variant would result in similar level of low frequency or vibration effects at off-campus sensitive uses as under the existing conditions.

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CHAPTER 9
Mitigation Monitoring and Reporting Program

9.1 Introduction

The California Environmental Quality Act (CEQA) requires that a Lead Agency establish a program to monitor and report on mitigation measures adopted as part of the environmental review process to avoid or reduce the severity and magnitude of potentially significant environmental impacts associated with project implementation. CEQA (Public Resources Code Section 21081.6 (a)(1)) requires that a Mitigation Monitoring and Reporting Program (MMRP) be adopted at the time that the agency determines to carry out a project for which an Environmental Impact Report (EIR) has been prepared, to ensure that mitigation measures identified in the EIR are fully implemented.

This MMRP includes the mitigation measures identified in the NHB Project EIR which are required to address the significant impacts associated with the proposed Project. The required mitigation measures are summarized in this program; the full text of the impact analysis and mitigation measures are presented in the Final EIR.

9.2 Format

The MMRP is organized in a table format (see Table 9-1), keyed to each significant impact and each mitigation measure. Only mitigation measures adopted to address significant impacts are included in this program. Each mitigation measure is set out in full, followed by a tabular summary of monitoring requirements. The column headings in the tables are defined as follows:

- **Environmental Impact:** This column presents the environmental impacts identified in the EIR.
- **Mitigation Measures:** This column identifies the mitigation measures associated with the impacts identified in the EIR.
- **Implementation Procedure:** This column identifies the procedure for implementing each mitigation measure.
- **Responsible Unit:** This column contains an assignment of responsibility for the monitoring and reporting tasks.
- **Report Mechanism:** This column refers to the outcome from implementing the mitigation measure.

9.3 Enforcement

If the proposed Project is approved, the MMRP would be adopted by the Regents. Therefore, all mitigation measures for significant impacts must be carried out in order to fulfill the requirements of approval. A number of the mitigation measures would be implemented during the course of the development review process. These measures would be checked on plans, in reports, and in the field prior to construction. Most of the remaining mitigation measures would be implemented during the construction or Project implementation phase.

TABLE 9-1
NHB PROJECT MITIGATION MONITORING AND REPORTING PROGRAM

Environmental Impact	Mitigation Measures	Implementation Procedure	Responsible Unit	Report Mechanism
EIR Section 4.1 Air Quality				
Impact C-AIR-1: The health risk from the NHB Project combined with health risk impacts from other sources in the Project vicinity would result in significant cumulative health risk impacts.	**Mitigation Measure C-AIR-1: Clean Construction Equipment** a. Electric engines shall be used for all equipment that is commercially available as plug-in or battery-electric equipment during each construction phase and activity. Portable equipment shall be powered by grid electricity if available. Electric equipment shall include, but not be limited to, concrete/industrial saws, sweepers/scrubbers, aerial lifts, welders, air compressors, fixed cranes, forklifts, and cement and mortar mixers, pressure washers, and pumps. To qualify for an exception, UCSF shall require construction contractors to provide evidence supporting the conclusion that electric equipment is not commercially available and shall use the next cleanest piece of off-road equipment in terms of DPM and $PM_{2.5}$. "Commercially available" is defined as either: (1) being used for other large-scale projects in the region occurring at the same time; (2) can be obtained without significant delays to critical-path timing of construction; or (3) available within the larger northern California region. UCSF shall be responsible for the final determination of commercial availability, based on all the facts and circumstances at the time the determination is made. For UCSF to make a determination that such equipment is commercially unavailable, the operator must submit documentation from a minimum of three (3) electric off-road equipment dealers demonstrating the inability to obtain the required electric equipment needed within 6 months. b. The construction contractor shall ensure that all diesel off-road equipment shall have engines that meet the Tier 4 Final off-road emission standards, as certified by CARB, except as provided for in this section. This requirement shall be verified through submittal of an equipment inventory that includes the following information: (1) Type of Equipment, (2) Engine Year and Age, (3) Number of Years Since Rebuild of Engine (if applicable), (4) Type of Fuel Used, (5) Engine HP, (6) Verified Diesel Emission Control Strategy (VDECS) information if applicable and other related equipment data. A Certification Statement is also required to be made by the contractor for documentation of compliance and for future review by the BAAQMD as necessary. The Certification Statement shall state that the contractor agrees to compliance and acknowledges that a violation of this requirement shall constitute a material breach of contract.	Include instructions in the construction bid package for the contractor to incorporate the required clean construction equipment plan.	UCSF Project Manager and Construction Teams	Provide written verification in report form to the Monitor for the contract bid on each phase to certify that selected bid includes provision for construction emissions reduction. Provide a report on construction emissions reduction strategies and report to Monitor upon request; but no less than quarterly after beginning each construction phase.

TABLE 9-1 (CONTINUED)
NHB PROJECT MITIGATION MONITORING AND REPORTING PROGRAM

Environmental Impact	Mitigation Measures	Implementation Procedure	Responsible Unit	Report Mechanism
EIR Section 4.1 Air Quality (cont.)				
	The requirement for Tier 4 Final equipment may be waived only under the following unusual circumstances: if a particular piece of off-road equipment with Tier 4 Final standards is technically not feasible or not commercially available; 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 other alternate off-road equipment. For purposes of this mitigation measure, "commercially available" shall mean the availability of Tier 4 Final engines similar to the availability for other large-scale construction projects in the region occurring at the same time and taking into consideration factors such as (i) potential significant delays to critical-path timing of construction for the project and (ii) geographic proximity to the project site of Tier 4 Final equipment. Sufficient documentation must be provided when seeking any waiver described above. If the waiver is granted, the contractor must use the next cleanest piece of off-road equipment that is commercially available, or another alternative that results in comparable reductions of DPM and $PM_{2.5}$ emissions.			
EIR Section 4.2 Biological Resources				
Impact BIO-1: Implementation of the NHB Project could have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.	**Measure BIO-1a: Protection of Nesting Birds** • To the extent feasible, removal of any tree and/or other vegetation suitable for nesting of birds shall not occur during the bird breeding season of February 1 to August 15. If tree removal must occur during the bird breeding season, all trees to be removed shall be surveyed by a qualified biologist to verify the presence or absence of nesting raptors or other birds. Pre-removal surveys shall be conducted within 15 days prior to the start of work and shall be submitted to UCSF for review and approval. • If the survey indicates the potential presence of nesting raptors or other birds, the biologist shall determine an appropriately sized buffer around the nest in which no work will be allowed until the young have successfully fledged. The size of the nest buffer will be determined by the biologist in consultation with the California Department of Fish and Wildlife, and will be based to a large extent on the nesting species and its sensitivity to disturbance. In general, buffer sizes of 200 feet for raptors and 50 feet for other birds should suffice to prevent disturbance to birds nesting in the urban environment, but these buffers may be increased or decreased, as appropriate, depending on the bird species and the level of disturbance anticipated near the nest.	Include instructions in the construction bid package for the contractor to incorporate the mitigation measure. The contractor will demonstrate knowledge of appropriate timing for tree and vegetation removal for protection of nesting birds.	UCSF Project Manager and Construction Teams	Provide written verification in report form to the Monitor on each phase to certify that provisions are included for implementation of mitigation measure. Provide construction status report to Monitor upon request.

TABLE 9-1 (CONTINUED)
NHB PROJECT MITIGATION MONITORING AND REPORTING PROGRAM

Environmental Impact	Mitigation Measures	Implementation Procedure	Responsible Unit	Report Mechanism
EIR Section 4.2 Biological Resources (cont.)				
	Mitigation Measure BIO-1b: Protection of Roosting Bats • Prior to project construction, a qualified bat biologist shall conduct a pre-construction survey for roosting bats in trees to be removed or pruned and structures to be demolished within the work area and within a 50-foot radius of the work area. If no roosting bats are found, no further action is required. • If a non-maternal roost of bats is found in a tree or structure to be removed or demolished as part of project construction, the individuals shall be safely evicted, under the direction of a qualified bat biologist, by opening the roosting area to allow airflow through the cavity. Removal or demolition should occur no sooner than at least two nights after the initial minor site modification (to alter airflow). This action allows bats to leave during darkness, thus increasing their chance of finding new roosts with a minimum of disturbance. Departure of the bats from the construction area shall be confirmed with a follow-up survey by a qualified bat biologist prior to start of construction. • If active maternity roosts are found in trees or structures that will be removed or demolished as part of project construction, tree removal or demolition of that tree or structure shall commence and be completed before maternity roosting colonies form (generally before March 1), or shall not commence until after young are flying (generally after July 31). Active maternity roosts shall not be disturbed between March 1 and July 31.	Include instructions in the construction bid package for the contractor to incorporate the mitigation measure. The contractor will demonstrate knowledge of appropriate procedures for protection of roosting bats.	UCSF Project Manager and Construction Teams	Provide written verification in report form to the Monitor that provisions are included for implementation of mitigation measure. Provide construction status report to Monitor upon request.
Impact BIO-2: Implementation of the NHB Project could interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.	**Mitigation Measure BIO-2: Bird Collision Reduction Measures.** Bird safe measures would be developed in consultation with a qualified expert based on site-specific conditions. Preliminary construction and operational bird safe measures may include, but not limited to, the following: • Construction areas requiring lights shall implement the following measures to the extent feasible: – Construction-related lighting shall be fully shielded and focused down to ensure no significant illumination passes beyond the immediate work area. – Yellow or orange light shall be used where possible. – Construction personnel shall reduce the amount of lighting to the minimum necessary to safely accomplish the work.	Include instructions in the construction bid package for the contractor to incorporate the mitigation measure. The contractor will demonstrate knowledge of appropriate procedures for construction lighting and night construction activity to protect migrating birds.	UCSF Project Manager and Construction Teams	Provide written verification in report form to the Monitor for each phase to certify that provisions are included for implementation of mitigation measure. Provide construction status report to Monitor upon request.

TABLE 9-1 (CONTINUED)
NHB PROJECT MITIGATION MONITORING AND REPORTING PROGRAM

Environmental Impact	Mitigation Measures	Implementation Procedure	Responsible Unit	Report Mechanism
EIR Section 4.2 Biological Resources (cont.)				
	Building design shall: • Avoid installation of lighting in areas where not required for public safety. • Consider alternatives to all-night, floor-wide lighting when interior lights would be visible from the exterior or when exterior lights must be left on at night, including: – Installing motion-sensitive lighting – Installing task lighting – Installing programmable timers • Installing lower-wattage, sodium, and yellow-red spectrum lighting fixtures (if compatible with personnel safety requirements) • Use fully shielded exterior safety lights to contain and direct light away from the sky. • Employ glazing options, such as use of either fritted glass, Dichroic glass, etched glass, translucent glass, or glass that reflects ultraviolet light in appropriate portions of the building façades.	Issue instructions to design team to incorporate bird-safe building and lighting treatments in design. Require architects and design professionals to document use of bird-safe treatments and review project plans to ensure that such features have been incorporated in the design.	UCSF Project Manager and Design Teams	Verify that project incorporates treatments prior to final project approval. After construction, the Project Manager shall provide written verification to the Monitor that treatments were installed according to the design.
EIR Section 4.3 Cultural Resources and Tribal Cultural Resources				
Impact CUL-1: Implementation of the NHB Project would result in a substantial adverse change in the significance of known historical resources.	**Mitigation Measure CUL-1a: Documentation of the A/B Wing** Prior to any demolition work initiated at the A/B Wing, UCSF shall ensure that a qualified architectural historian who meets the Secretary of the Interior's Professional Qualification Standards thoroughly documents the building and associated landscaping and setting. Documentation shall include still photography and a written documentary record of the building to the National Park Service's standards of the Historic American Buildings Survey (HABS), including accurate scaled mapping and architectural descriptions. If available, scaled architectural plans will also be included. Photographs include large-format (4"x5") black-and-white negatives and 8"x10" enlargements. Digital photography may be substituted for large-format negative photography if archived locally. The record shall be accompanied by a report containing site-specific history and appropriate contextual information relying as much as possible on previous documentation. Copies of the records, including photographs, shall be submitted to the Northwest Information Center at Sonoma State University, and the Oakland History Center, the Temescal Branch, and the proposed Hoover Branch of the Oakland Public Library. In addition, a complete documentation package will be offered to the Bancroft Library	Engage, or cause to be engaged by the design team, a qualified architectural historian to document the resources to be demolished or significantly altered. Ensure that the resulting documentation is submitted to the repositories specified.	UCSF Project Manager and Design Teams	Provide written verification to the Monitor that documentation has been prepared and submitted to the repositories.

TABLE 9-1 (CONTINUED)
NHB PROJECT MITIGATION MONITORING AND REPORTING PROGRAM

Environmental Impact	Mitigation Measures	Implementation Procedure	Responsible Unit	Report Mechanism
EIR Section 4.3 Cultural Resources and Tribal Cultural Resources (cont.)				
	on the University of California, Berkeley Campus for inclusion in their digital repository.			
	Mitigation Measure CUL-1b: Public Interpretation and Salvage Plan for the A/B Wing Prior to any demolition work that would remove character-defining features of the A/B Wing, UCSF shall prepare a Salvage Plan for those components of the building suitable for salvage and/or reuse. A Salvage Plan shall be prepared by a qualified architectural historian or historic architect who meets the Secretary of the Interior's Professional Qualification Standards and presented to UCSF Planning staff. This would be a feasibility study to determine the structural integrity of the character-defining features associated with the A/B Wing, identify environmental factors that may require remediation prior to salvage (e.g., lead paint, chemicals, etc.), and present potential new uses of the salvaged features. The Salvage Plan will identify opportunities for UCSF to reuse character-defining features in the NHB Project. Prior to any demolition activities that would remove character-defining features of, or demolish, an individual historical resource on the project site, UCSF shall prepare a plan for interpretive displays. The specific location, media, and other characteristics of such interpretive display(s) shall be included in this proposal. The historic interpretation plan shall be prepared in coordination with an architectural historian or historian who meets the Secretary of the Interior's Professional Qualification Standards and an exhibit designer or landscape architect with historical interpretation design experience. Interpretive display(s) shall document the individually eligible resource to be demolished. The interpretative plan should also explore contributing to digital platforms that are publicly accessible. A proposal describing the general parameters of the interpretive program and the substance, media, and other elements of such interpretive display shall be approved by UCSF Planning staff prior to commencement of any demolition activities. Following any demolition activities within the project site, UCSF shall provide within publicly accessible areas of the project site a permanent display(s) of interpretive materials concerning the history and architectural features of the individual historical resources. All materials will be made accessible to patients and visitors and to the greatest extent possible, these materials will also be made accessible to the general public and passers-by.	Engage, or cause to be engaged by the design team, a qualified architectural historian to determine whether any character-defining features of resources to be demolished or significantly altered are salvageable. If salvage is feasible, prepare, or cause to be prepared by the design team, a Salvage Plan developed by a qualified architectural historian. Engage, or cause to be engaged by the design team, a qualified architectural historian to prepare an interpretive plan for public display concerning the character-defining features of resources to be demolished or significantly altered. Identify appropriate location(s) for the display(s) and ensure that they are installed no later than six months after demolition or after issuance of a certificate of occupancy for replacement structure(s), whichever is later.	UCSF Project Manager and Design Teams	Provide written verification to the Monitor of the results of the evaluation of salvage potential, verification of the preparation of a Salvage Plan, if applicable, and verification of installation of interpretive display(s).

TABLE 9-1 (CONTINUED)
NHB PROJECT MITIGATION MONITORING AND REPORTING PROGRAM

Environmental Impact	Mitigation Measures	Implementation Procedure	Responsible Unit	Report Mechanism
EIR Section 4.3 Cultural Resources and Tribal Cultural Resources (cont.)				
Impact CUL-3: Implementation of the NHB Project could cause a substantial adverse change in the significance of an archaeological resource pursuant to *CEQA Guidelines* Section 15064.5.	**Mitigation Measure CUL-3: Inadvertent Discovery of Archaeological Resources and Tribal Cultural Resources** Prior to commencement of construction activities, all on-site personnel shall attend a mandatory pre-project training to outline the general archaeological and tribal cultural sensitivity of the project area. The training will include a description of the types of resources that could be encountered and the procedures to follow in the event of an inadvertent discovery of resources. If pre-contact or historic-era cultural materials are encountered by construction personnel during ground-disturbing activities, all construction activities within 100 feet shall halt and the contractor shall notify the UCSF Environmental Coordinator (EC). The UCSF EC shall retain a qualified archaeologist who meets the Secretary of the Interior's Professional Qualification Standards to inspect the find within 24 hours of discovery. If it is determined that the project could damage a historical resource or a unique archaeological resource, construction shall cease in an area determined by the qualified archaeologist until a mitigation plan has been prepared and implemented [*CEQA Guidelines* 15064.5(b)(4)]. If the find is a potential tribal cultural resource, the UCSF EC shall contact a Native American representative or representatives (as provided by the Native American Heritage Commission) [PRC 21074(2)(c)]. The qualified archaeologist, in consultation with the UCSF EC and the Native American representative(s), shall determine when construction can resume. If the resource is determined to be a historical resource or a unique archaeological resource, the preferred mitigation shall be preservation in place. In accordance with PRC Section 21083.2(b), preservation in place shall be accomplished through: (1) modifying the construction plan to avoid the resource; (2) incorporating the resource within open space; (3) capping and covering the resource; or (4) deeding the resource site into a permanent conservation easement. If preservation in place is not feasible, the qualified archaeologist, in consultation with the UCSF EC and the Native American representative(s) (if the resource is pre-contact), shall prepare and implement a detailed treatment plan. In all cases treatment will be carried out with dignity and respect (including protecting the cultural character, traditional use, and confidentiality of the resource). For pre-contact Native American resources, the Native American representative(s) will be consulted on the research approach, methods, and whether burial or data recovery or alternative mitigation is appropriate for the find. Treatment for most resources could consist of (but shall not be limited to) sample excavation, site documentation, and historical research, as appropriate to the discovered resource. The treatment plan shall include provisions for	Include instructions in the construction bid package for the construction contractor to incorporate the mitigation measure. The contractor will demonstrate knowledge of procedures and requirements when cultural resources are discovered during construction activities.	UCSF Project Manager and Construction Teams	Provide written verification in report form to the Monitor on each phase to certify that provisions are included for implementation of mitigation measure if cultural resources are discovered during construction activities. Provide construction status report to Monitor upon request and on completion of construction.

TABLE 9-1 (CONTINUED)
NHB PROJECT MITIGATION MONITORING AND REPORTING PROGRAM

Environmental Impact	Mitigation Measures	Implementation Procedure	Responsible Unit	Report Mechanism
EIR Section 4.3 Cultural Resources and Tribal Cultural Resources (cont.)				
	analysis of data in a regional context as appropriate to the discovered resource, reporting of results within a timely manner, and dissemination of reports to local and state repositories, libraries, and interested professionals			
Impact CUL-4: Implementation of the NHB Project could disturb human remains, including those interred outside of dedicated cemeteries.	**Mitigation Measure CUL-4: Inadvertent Discovery of Human Remains** In the event of discovery or recognition of any human remains during ground-disturbing activities, treatment shall comply with all applicable state and federal laws. All construction activities within 100 feet shall halt and the contractor shall notify the UCSF Environmental Coordinator (EC). In accordance with PRC 5097.98, the UCSF EC shall contact the Alameda County Coroner to determine that no investigation of the cause of death is required. The County Coroner shall contact the Native American Heritage Commission (NAHC) within 24 hours if it is determined that the remains are Native American. The NAHC will then identify the person or persons it believes to be the most likely descendant (MLD) from the deceased Native American. Within 48 hours, the MLD shall make recommendations to the UCSF EC of the appropriate means of treating the human remains and any grave goods. Whenever the NAHC is unable to identify an MLD, the MLD fails to make a recommendation, or the parties are unable to agree on the appropriate treatment measures, the human remains shall be reinterred with appropriate dignity on the property in a location not subject to further and future subsurface disturbance.	Include instructions in the construction bid package for the contractor to incorporate the mitigation measure. The contractor will demonstrate knowledge of procedures and requirements when cultural resources are discovered during construction activities.	UCSF Project Manager and Construction Teams	Provide written verification in report form to the Monitor on each phase to certify that provisions are included for implementation of mitigation measure if cultural resources are discovered during construction activities. Provide construction status report to Monitor upon request and upon completion of construction.
Impact CUL-5: Implementation of the NHB Project could cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe.	**Mitigation Measure CUL-5a: Cultural Resources Awareness Training** UCSF shall provide a cultural resources and tribal cultural resources sensitivity and awareness training program for all personnel involved in project construction, including field consultants and construction workers. UCSF shall invite affiliated Native American tribal representatives to participate. The training program shall include relevant information regarding sensitive cultural resources and tribal cultural resources, including applicable regulations, protocols for avoidance, and consequences of violating State laws and regulations. The training program shall also describe appropriate avoidance and minimization measures for resources that have the potential to be located in the Project site and shall outline what to do and who to contact if any potential cultural resources or tribal cultural resources are encountered. The training program shall emphasize the requirement for confidentiality and culturally appropriate treatment of any discovery of significance to Native Americans.	Retain a qualified archaeologist to define scope for cultural resources aware training program. Include instructions in the construction bid package for the construction contractor to incorporate cultural resources aware training program.	UCSF Project Manager and Construction Teams	Provide written verification in report form to the Monitor to certify that provisions are included for implementation of mitigation measure. Provide construction status report to Monitor upon request.

TABLE 9-1 (CONTINUED)
NHB PROJECT MITIGATION MONITORING AND REPORTING PROGRAM

Environmental Impact	Mitigation Measures	Implementation Procedure	Responsible Unit	Report Mechanism
EIR Section 4.3 Cultural Resources and Tribal Cultural Resources (cont.)				
	Mitigation Measure CUL-5b: Cultural Resources Monitoring Plan Prior to authorization to proceed, a Secretary of the Interior-qualified archaeologist shall prepare a cultural resources monitoring plan. The plan shall be reviewed by the affiliated Native American tribe(s) and UCSF. The plan shall include (but not be limited to) the following components: • Monitoring locations and circumstances based on soil types, geology, distance to known sites, and other factors; • Person(s) responsible for conducting monitoring activities, including a request to the culturally-affiliated Native American tribe(s) for a tribal monitor; • Person(s) responsible for overseeing and directing the monitors; • How the monitoring shall be conducted and the required format and content of monitoring reports; • Schedule for submittal of monitoring reports and person(s) responsible for review and approval of monitoring reports; • Protocol for notifications in case of encountering cultural resources, as well as methods of dealing with the encountered resources (e.g., collection, identification, curation); • Methods to ensure security of cultural resources if identified; • Protocol for notifying local authorities (i.e. Sheriff, Police) should site looting and other illegal activities occur during construction. During the course of the monitoring, the archaeologist and tribal monitor may adjust the frequency—from continuous to intermittent—of the monitoring based on the conditions and professional judgment regarding the potential to impact resources.	Include instructions in the construction bid package for the contractor to incorporate cultural resources monitoring plan. The cultural resources monitoring plan shall be reviewed by the affiliated Native American tribe and UCSF.	UCSF Project Manager and Construction Teams	Provide written verification in report form to the Monitor to certify that provisions are included for implementation of mitigation measure. Provide construction status report to Monitor upon request.
EIR Section 4.5 Geology and Soils				
Impact GEO-6: The NHB Project could directly or indirectly destroy a unique paleontological resource or site or unique geological feature.	**Mitigation Measure GEO-6:** Prior to commencement of construction activities, all on-site personnel shall attend a mandatory pre-project training to outline the general paleontological sensitivity of the project area. The training will include a description of the types of resources that could be encountered and the procedures to follow in the event of an inadvertent discovery of resources. If paleontological resources, such as fossilized bone, teeth, shell, tracks, trails, casts, molds, or impressions are discovered during ground-disturbing activities, work shall stop in that area and within 100 feet of the find until a qualified paleontologist meeting the Society of Vertebrate	Include instructions in the construction bid package for the contractor to incorporate the mitigation measure. The contractor will demonstrate knowledge of procedures and requirements when paleontological resources are discovered during construction activities.	UCSF Project Manager and Construction Teams	Provide written verification in report form to the Monitor on each phase to certify that provisions are included for implementation of mitigation measure if paleontological resources are discovered during construction activities. Provide construction

TABLE 9-1 (CONTINUED)
NHB PROJECT MITIGATION MONITORING AND REPORTING PROGRAM

Environmental Impact	Mitigation Measures	Implementation Procedure	Responsible Unit	Report Mechanism
EIR Section 4.5 Geology and Soils (cont.)				
	Paleontology (SVP) Standards can assess the nature and importance of the find and, if necessary, develop appropriate salvage measures in conformance with SVP standards (2010). If the discovery can be avoided and no further impacts will occur, no further effort shall be required. If the resource cannot be avoided and may be subject to further impact, a qualified paleontologist shall evaluate the resource and determine whether it is “unique” under CEQA. Any discovered paleontological resources that are determined by the qualified paleontologist to be “unique” in accordance with CEQA shall be subjected to appropriate salvage measures in conformance with SVP standards (2010).			status report to Monitor upon request and upon completion of construction.
EIR Section 4.7 Hazards and Hazardous Materials				
Impact HAZ-4: The UCSF BCH Oakland campus site is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Contamination at the NHB Project site could be encountered during construction and could have the potential to create a significant hazard to the public or the environment.	**Mitigation Measure HAZ-4a, Soil and Groundwater Management Plan (SGMP):** Prior to development on the campus site, a SGMP shall be prepared by a qualified environmental consulting firm to reflect current regulatory requirements and risk management protocols that are in accordance with ACDEH oversight. The SGMP shall include measures to address protocols for identifying, handling, and characterizing suspect contaminated soils and/or groundwater, if encountered, as summarized below: • Site description, including the hazardous materials that may be encountered. • Roles and responsibilities of onsite workers, supervisors, and the regulatory agency (ACDEH). Onsite personnel shall attend mandatory pre-project training regarding the SGMP. • Training for construction workers focused on the recognition of and response to encountering hazardous materials. • Protocols for the materials (soil and/or dewatering effluent) testing, handling, removing, transporting, and disposing of all excavated materials and dewatering effluent in a safe, appropriate, and lawful manner. • Specified personal protective equipment and decontamination procedures, if needed. • A requirement specifying that any construction worker who identifies hazardous materials has the authority to stop work and notify the site supervisor.	Include instructions in the construction bid package for the construction contractor to incorporate the mitigation measure. The contractor will demonstrate knowledge of procedures and requirements for soil management with respect to suspected soil and groundwater contamination.	UCSF Project Manager and Construction Teams	Provide written verification in report form to the Monitor on each phase to certify that provisions are included for implementation of mitigation measure for managing suspected soil and groundwater contamination during ground-disturbing activities. Provide construction status report to Monitor upon request.

TABLE 9-1 (CONTINUED)
NHB PROJECT MITIGATION MONITORING AND REPORTING PROGRAM

Environmental Impact	Mitigation Measures	Implementation Procedure	Responsible Unit	Report Mechanism
EIR Section 4.7 Hazards and Hazardous Materials (cont.)				
	• Procedures to follow if evidence of potential soil and/or groundwater contamination is encountered (such as soil staining, unusual odors, debris or buried storage containers). These procedures shall be followed in accordance with hazardous waste operations regulations and specifically include, but not be limited to, immediately stopping work in the vicinity of the unknown hazardous materials release; notifying the ACDEH; and retaining a qualified environmental firm to perform sampling and remediation. Notification and sampling requirements for adequate characterization shall be in accordance with ACDEH requirements and any required removal or remediation work shall be completed to the overseeing agency's standards prior to occupancy of the new structure.			
	Mitigation Measure HAZ-4b: Vapor Mitigation: To mitigate potential exceedances of indoor air standards, the Project shall incorporate at least one or more of the vapor mitigation methods listed below in areas determined to have soil gas concentrations above soil gas screening levels. The proposed work-specific vapor mitigation must be in accordance with vapor mitigation guidance provided by the Department of Toxic Substances Control (DTSC), which provides vapor guidance information at https://dtsc.ca.gov/vapor-intrusion/. • Excavate and remove contaminated materials (soil and, if needed, groundwater), to levels where subsequent testing verifies that soil gas levels are below screening levels. • Install a physical vapor barrier beneath the structure foundation that prevents soil gas from seeping into breathing spaces inside the structure, or reflective metal walls and mirrored glass walls as primary building materials for facades. • Install a passive or powered vapor mitigation system that draws soil gas out of the under-foundation base rock and directs that soil gas to a treatment system to prevent people from being exposed outdoors to the extracted soil gas. Upon completion, UCSF BCH Oakland shall prepare a report documenting the testing results and installed vapor mitigation method and submit the report to the regulatory agency with jurisdiction (i.e., ACDEH). A copy of the report shall be provided to the UCSF Mitigation Monitor to inform them of compliance with this requirement. The implemented mitigation measure shall result in indoor air concentrations that do not exceed the screening levels provided in the DTSC Human Health Risk Assessment (HHRA) Note Number 3.	Include instructions in the construction bid package for the construction contractor to incorporate the mitigation measure. The contractor will demonstrate knowledge of procedures and requirements for vapor mitigation.	UCSF Project Manager and Construction Teams	Provide written verification in report form to the Monitor on each phase to certify that provisions are included for implementation of vapor mitigation prior to and during construction. Provide construction status report to Monitor upon request.

TABLE 9-1 (CONTINUED)
NHB PROJECT MITIGATION MONITORING AND REPORTING PROGRAM

Environmental Impact	Mitigation Measures	Implementation Procedure	Responsible Unit	Report Mechanism
EIR Section 4.10 Noise and Vibration				
Impact NOI-1: Construction activities under the NHB Project would generate a substantial temporary increase in ambient noise levels in the vicinity of the Project site in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	**Mitigation Measure NOI-1a: Construction Noise Control Measures** UCSF contractors shall employ site-specific noise attenuation measures during construction of the Project to reduce the generation of construction noise. These measures shall be included in a Noise Control Plan that shall be submitted for review and approval by UCSF to ensure that construction noise is consistent with the standards set forth in the City's Noise Ordinance. Measures specified in the Noise Control Plan and implemented during project construction shall include, at a minimum, the following noise control strategies: • Equipment and trucks used for construction shall use 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). • Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for construction shall be 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; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves shall be used where feasible; this could achieve a reduction of 5 dBA. Quieter procedures, such as the use of drills rather than impact tools, shall be used where feasible. • Stationary noise sources shall be located as far from adjacent receptors as possible, and they shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or include other measures. • Shield staging areas where adjacent sensitive receptors have direct line-of-sight and are within 200 feet of loading and delivery activities. Shielding may consist of plywood fencing with no gaps or acoustical paneling erected in K-rails.	Include instructions in the construction bid package for the contractor to incorporate the mitigation measure. The contractor will prepare and implement a construction noise control plan and will report on the implementation of the mitigation measure.	UCSF Project Manager and Construction Teams	Provide written verification in report form to the Monitor on each phase to certify that provisions are included for construction noise control. Provide a report on construction noise control compliance to Monitor upon request; but no less than quarterly after beginning each construction activity.
	Mitigation Measure NOI-1b: Construction Hours Construction hours shall be restricted to the hours listed in the table below. However, in rare circumstances, work may need to occur outside of these work hour limits. For example, there may be times when heavy machinery must be delivered outside the extended hours (during times of low traffic); or concrete pours must occur outside the extended hours. In such cases, UCSF Community and Government Relations will receive advance notice from the project manager, at least one week in advance as feasible, and will engage the community to identify measures to	Include instructions in the construction bid package for the contractor to incorporate the mitigation measure. The contractor will prepare and implement a construction noise control plan that limits construction hours	UCSF Project Manager and Construction Teams	Provide written verification in report form to the Monitor on each phase to certify that provisions are included for construction noise control through limitations on construction hours. Provide a report on

TABLE 9-1 (CONTINUED)
NHB PROJECT MITIGATION MONITORING AND REPORTING PROGRAM

<table>
<tr><th>Environmental Impact</th><th>Mitigation Measures</th><th>Implementation Procedure</th><th>Responsible Unit</th><th>Report Mechanism</th></tr>
<tr><td colspan="5">EIR Section 4.10 Noise and Vibration (cont.)</td></tr>
<tr><td></td><td>minimize potential impacts. These measures may include, but not be limited to, restricting work to smaller time windows, condensing the overall duration of nighttime work to the degree feasible, and erecting temporary barriers to shield the short-term nighttime activity.
<table>
<tr><th colspan="5">Construction Hours</th></tr>
<tr><th></th><th colspan="2">“Not Noisy” Work[1]</th><th colspan="2">Noisy Work</th></tr>
<tr><th></th><th>Regular hours</th><th>Extended Hours[2]</th><th>Regular hours</th><th>Extended Hours[2]</th></tr>
<tr><td>Monday - Friday</td><td>7:00 AM to 5:00 PM</td><td>5:00 PM to 8:00 PM</td><td>8:00 AM to 5:00 PM</td><td></td></tr>
<tr><td>Saturday</td><td></td><td>8:00 AM to 5:00 PM</td><td></td><td>9:00 AM to 4:00 PM</td></tr>
<tr><td>Sunday</td><td></td><td>8:00 AM to 5:00 PM</td><td></td><td></td></tr>
</table>
NOTES:
1 “Not Noisy” work = 80 decibels or less at 100 feet; “Noisy” work = more than 80 decibels at 100 feet.
2 Extended hours to be considered by UCSF Community and Government Relations with advance notice from the project manager.</td><td>and will report on the implementation of the mitigation measure.</td><td></td><td>construction noise hour compliance to Monitor upon request; but no less than quarterly after beginning each construction activity.</td></tr>
<tr><td></td><td>Mitigation Measure NOI-1c: Construction Noise Complaints
UCSF shall establish a formal set of procedures for responding to and tracking complaints received pertaining to construction noise and shall implement the procedures during construction. Procedures shall be established prior to commencement of construction. At a minimum, the procedures shall include:
• Designation of an on-site construction complaint and enforcement manager for the project;
• A large on-site sign near the public right-of-way containing permitted construction days/hours, complaint procedures, and phone numbers for the project complaint manager;
• Protocols for receiving, responding to, and tracking received complaints; and
• Maintenance of a complaint log that records received complaints and how complaints were addressed.</td><td>Include instructions in the construction bid package for the contractor to incorporate the mitigation measure. The contractor will prepare a construction noise control plan that includes procedures for logging and addressing noise complaints and will report on the implementation of the mitigation measure.</td><td>UCSF Project Manager and Construction Teams</td><td>Provide written verification in report form to the Monitor on each phase to certify that provisions are included for construction noise complaints. Provide a report on construction noise complaints to Monitor upon request; but no less than quarterly after beginning each construction activity.</td></tr>
</table>

TABLE 9-1 (CONTINUED)
NHB PROJECT MITIGATION MONITORING AND REPORTING PROGRAM

Environmental Impact	Mitigation Measures	Implementation Procedure	Responsible Unit	Report Mechanism
EIR Section 4.10 Noise and Vibration (cont.)				
	Mitigation Measure NOI-1d: Pile-Installation Noise-Reducing Techniques Noise-reducing pile-installation techniques shall be employed during project construction. These techniques shall include: • Installing cast-in-place concrete piles. Noise from auger drilling is 17 dBA less than an impact pile driver. • Vibrating piles into place where feasible. • Implement “quiet” pile-installation technology (such as pre-drilling of piles).	Include instructions in the construction bid package for the contractor to incorporate the mitigation measure. The contractor will prepare a construction noise control plan that includes pile installation noise reduction measures and will report on the implementation of the mitigation measure.	UCSF Project Manager and Construction Teams	Provide written verification in report form to the Monitor on each phase to certify that provisions are included for pile-installation noise-reducing techniques. Provide a report on pile-installation noise-reduction compliance to Monitor upon request; but no less than quarterly after beginning each construction activity.
Impact NOI-3: Construction activities for the NHB Project and related improvements could result in generation of excessive groundborne vibration or groundborne noise levels.	**Mitigation Measure NOI-3: Assessment and Relocation/Retrofitting of Vibration-Sensitive Equipment** UCSF shall evaluate the presence of vibration-sensitive equipment within 150 feet of construction and demolition areas. Any sensitive equipment shall be evaluated for the existing extent of vibration isolation and relocated or vibration isolation shall be further embellished, as warranted. Based on available guidance (FTA, 2018), a performance standard of 65 VdB shall be implemented in lieu of any other available equipment-specific criterion.	Prior to the start of any demolition or construction activity, BCH Oakland will identify vibration-sensitive equipment within 150 feet of construction, assess the vibration isolation of such equipment, and enhance isolation if deemed necessary.	UCSF Project Manager	Provide written verification in report form to the Monitor that vibration-sensitive equipment shall be used within 150 feet of construction and demolition, and, if deemed necessary, provisions to enhance vibration isolation shall be implemented; or alternatively, the use of that equipment will be suspended during substantial vibration-generating activities within 150 feet.

TABLE 9-1 (CONTINUED)
NHB PROJECT MITIGATION MONITORING AND REPORTING PROGRAM

Environmental Impact	Mitigation Measures	Implementation Procedure	Responsible Unit	Report Mechanism
EIR Section 4.11 Transportation				
Impact TRANS-5: Construction of the NHB Project could temporarily impact travel conditions along sidewalks and roadways serving the campus site.	**Mitigation Measure TRANS-5: Construction Coordination and Monitoring Measures** In order to reduce potential conflicts between construction activities and pedestrians, bikes, buses, and autos during construction activities at the NHB Project site, UCSF shall require construction contractor(s) to coordinate with the relevant City of Oakland agencies to prepare Construction Transportation Management Plan to address the following during the major phases of project construction (e.g., demolition, construction of new building, or renovation of existing buildings): • Construction Traffic Control Plan to identify construction truck routes, coordinate feasible measures to reduce traffic congestion, reduce potential traffic, bicycle, and transit disruption and pedestrian circulation effects, potential detours for motor vehicles, bicycles, and pedestrians if necessary, and location of off-site construction staging areas for materials and equipment if necessary. • Construction Worker Parking and Travel Management Plan to minimize parking demand and motor vehicle trips generated by construction workers and ensure that construction workers do not use the on-street parking in the nearby residential neighborhood. If parking demand for construction workers cannot be accommodated on-site, the Plan shall identify off-site parking facilities and if necessary, provide a shuttle service between the parking facility and the construction site. • Notification procedures for nearby residences and businesses and public safety personnel regarding construction activities, peak construction vehicle activities (e.g., concrete pours, excavation), and travel lane closures, via a newsletter, website, and/or regular construction update meetings with neighbors. • Coordination with the City of Oakland Department of Transportation to ensure that the final design and construction of the NHB Project and the City's MLK Jr. Way Complete Streets Paving Project, which are expected to overlap, do not conflict with each other, and minimize the potential combined effects of the two construction projects on circulation for various travel modes. • If necessary, make repair to damages to the public right-of way, including streets and sidewalks, caused by project construction within one week of the occurrence of the damage (or excessive wear), unless further damage/excessive wear may continue; in such case, repair shall occur prior to the completion of construction.	Include instructions in the construction bid package for the contractor to incorporate the mitigation measure. The contractor will demonstrate the ability to prepare a complete and thorough Construction Traffic Control Plan that addresses traffic, transit, pedestrian, and bicycle movement; incorporates measures to limit single-occupancy vehicle travel by construction workers; and ensures minimal disruption of access for nearby residences, institutions, and businesses.	UCSF Project Manager and Construction Teams	Provide written verification in report form to the Monitor on each phase to certify that complete and thorough Construction Coordination Monitoring Measures are included. Provide a report on construction traffic control to Monitor upon request; but no less than quarterly after beginning each construction activity.

Appendix AIR-R
Air Quality Appendix

Benioff Children's Hospital Revised NHB Project
Health Risk Assessment

Benioff Childrens Hospital NHB Project
Summary of Health Risk Assessment Results

Construction

Receptor	Cancer Risk			Chronic Hazard Index			Annual Average $PM_{2.5}$ Concentration		
	(# in one million)	UTM X	UTM Y	(unitless)	UTM X	UTM Y	($\mu g/m^3$)	UTM X	UTM Y
Unmitigated									
Resident - child	6.5	564671	4187862	0.004	564671	4187862	0.04	564671	4187862
Worker	0.6	564471	4188042	0.003	564471	4188042	0.03	564471	4188042
Daycare	8.6	564791	4187822	0.001	564791	4187822	0.01	564791	4187822
Mitigated									
Resident - child	1.8	564671	4187862	0.002	564671	4187862	0.02	564671	4187862
Worker	0.2	564471	4188042	0.001	564731	4187922	0.01	564471	4188042
Daycare	2.3	564791	4187822	0.001	564791	4187822	0.01	564791	4187822

Operation

Receptor	Cancer Risk			Chronic Hazard Index			Annual Average $PM_{2.5}$ Concentration		
	(# in one million)	UTM X	UTM Y	(unitless)	UTM X	UTM Y	($\mu g/m^3$)	UTM X	UTM Y
Resident - child	5.1	564671	4187862	0.001	564671	4187862	0.007	564671	4187862
Worker	1.1	564751	4187782	0.001	564751	4187782	0.004	564751	4187782
Daycare	6.9	564791	4187822	0.001	564791	4187822	0.004	564791	4187822

Construction + Operation at Construction MEIR

Receptor	Cancer Risk			Chronic Hazard Index			Annual Average $PM_{2.5}$ Concentration		
	(# in one million)	UTM X	UTM Y	(unitless)	UTM X	UTM Y	($\mu g/m^3$)	UTM X	UTM Y
Unmitigated									
Resident - child	8.1	564671	4187862	0.004	564671	4187862	0.04	564671	4187862
Worker	0.6	564471	4188042	0.004	564471	4188042	0.03	564471	4188042
Daycare	8.6	564791	4187822	0.001	564791	4187822	0.01	564791	4187822
Mitigated									
Resident - child	3.4	564671	4187862	0.003	564671	4187862	0.02	564671	4187862
Worker	0.2	564471	4188042	0.001	564731	4187922	0.01	564471	4188042
Daycare	2.3	564791	4187822	0.001	564791	4187822	0.01	564791	4187822

Benioff Childrens Hospital NHB Project
Construction Health Risk Assessment Worksheets
Unmitigated

Benioff Childrens Hospital NHB Project
Particulate Matter Emissions Summary

Construction

Source	AERMOD Source	Construction Year	Start Date	End Date	Unmitigated (tpy)		Tier 4 (tpy)	
					DPM (Ex PM_{10})	$PM_{2.5}$	DPM (Ex PM_{10})	$PM_{2.5}$
Overall site emissions - Exhaust	PAREA1	2024	8/1/2024	12/31/2024	0.004	0.003	0.000	0.000
		2025	1/1/2025	12/31/2025	0.010	0.009	0.001	0.001
		2026	1/1/2026	3/31/2026	0.001	0.001	0.000	0.000
		2027	12/1/2027	12/31/2027	0.000	0.000	0.000	0.000
		2028	1/1/2028	12/31/2028	0.002	0.002	0.000	0.000
		2029	1/1/2029	12/31/2029	0.002	0.001	0.000	0.000
		2030	1/1/2030	12/31/2030	0.001	0.001	0.000	0.000
		2031	1/1/2031	1/31/2031	0.000	0.000	0.000	0.000
Overall site emissions - Fugitive Dust	PAREA2	2024	8/1/2024	12/31/2024	0.000	0.005	0.000	0.003
		2025	1/1/2025	12/31/2025	0.000	0.013	0.000	0.008
		2026	1/1/2026	3/31/2026	0.000	0.003	0.000	0.002
		2027	12/1/2027	12/31/2027	0.000	0.000	0.000	0.000
		2028	1/1/2028	12/31/2028	0.000	0.000	0.000	0.000
		2029	1/1/2029	12/31/2029	0.000	0.000	0.000	0.000
		2030	1/1/2030	12/31/2030	0.000	0.000	0.000	0.000
		2031	1/1/2031	1/31/2031	0.000	0.000	0.000	0.000
Parking Structure - Exhaust	PAREA3	2025	1/1/2025	12/31/2025	0.009	0.009	0.002	0.002
		2026	1/1/2026	1/31/2026	0.000	0.001	0.000	0.000
Parking Structure - Fugitive Dust	PAREA4	2025	1/1/2025	12/31/2025	0.000	0.002	0.000	0.001
		2026	1/1/2026	1/31/2026	0.000	0.000	0.000	0.000
NHB - Exhaust	PAREA5	2026	4/1/2026	12/31/2026	0.014	0.013	0.006	0.006
		2027	1/1/2027	12/31/2027	0.017	0.016	0.008	0.008
		2028	1/1/2028	12/31/2028	0.017	0.015	0.008	0.008
		2029	1/1/2029	12/31/2029	0.017	0.015	0.008	0.008
		2030	1/1/2030	1/31/2030	0.001	0.001	0.001	0.001
NHB - Fugitive Dust	PAREA6	2026	4/1/2026	12/31/2026	0.000	0.002	0.000	0.001
		2027	1/1/2027	12/31/2027	0.000	0.000	0.000	0.000
		2028	1/1/2028	12/31/2028	0.000	0.000	0.000	0.000
		2029	1/1/2029	12/31/2029	0.000	0.000	0.000	0.000
		2030	1/1/2030	1/31/2030	0.000	0.000	0.000	0.000
Existing Hospital Renovation - Exhaust	PAREA7	2030	8/1/2030	12/31/2030	0.001	0.001	0.000	0.000
		2031	1/1/2031	12/31/2031	0.002	0.002	0.000	0.000
		2032	1/1/2032	12/31/2032	0.002	0.001	0.000	0.000
		2033	1/1/2033	1/31/2033	0.000	0.000	0.000	0.000
Construction Truck Trips - Exhaust & Fugitive Dust	SLINE1	2024	8/1/2024	12/31/2024	0.0001	0.0003	0.0001	0.0003
		2025	1/1/2025	12/31/2025	0.0003	0.0010	0.0003	0.0010
		2026	1/1/2026	12/31/2026	0.0001	0.0004	0.0001	0.0004
		2027	1/1/2027	12/31/2027	0.0001	0.0003	0.0001	0.0003
		2028	1/1/2028	12/31/2028	0.0001	0.0004	0.0001	0.0004
		2029	1/1/2029	12/31/2029	0.0001	0.0004	0.0001	0.0004
		2030	1/1/2030	12/31/2030	0.0000	0.0001	0.0000	0.0001
		2031	1/1/2031	12/31/2031	0.0000	0.0001	0.0000	0.0001
		2032	1/1/2032	12/31/2032	0.0000	0.0001	0.0000	0.0001
		2033	1/1/2033	1/31/2033	0.0000	0.0000	0.0000	0.0000
					0.101	0.120	0.036	0.053

No fugitive dust from remodeling

Modeled trip length = 1014.7 m
Haul trip modeled fraction 0.0156

Benioff Childrens Hospital NHB Project
Construction Health Risk Calculations - Residential Unmitigated
Incremental Lifetime Cancer Risk and Hazard Index Calculations

					Exposure Duration (Days)						DPM	
				Start Date	8/1/2024	10/31/2024	11/1/2026					
				Stop Date	10/30/2024	10/31/2026					Emissions (tons)	Emission Rate (g/s)
Source	AERMOD Source	Year	Start Date	End Date	3rd Trimester	0<2	2<16	Exposure Duration	Calendar Days	Workdays	Uncontrolled	Uncontrolled
Overall site emissions - Exhaust	PAREA1	2024	8/1/2024	12/31/2024	91	62	0	152	152	109	0.00	0.001
	PAREA1	2025	1/1/2025	12/31/2025	0	365	0	364	364	261	0.01	0.001
	PAREA1	2026	1/1/2026	3/31/2026	0	90	0	89	89	64	0.00	0.001
	PAREA1	2027	12/1/2027	12/31/2027	0	0	30	30	30	23	0.00	0.000
	PAREA1	2028	1/1/2028	12/31/2028	0	0	365	365	365	260	0.00	0.000
	PAREA1	2029	1/1/2029	12/31/2029	0	0	364	364	364	261	0.00	0.000
	PAREA1	2030	1/1/2030	12/31/2030	0	0	364	364	364	261	0.00	0.000
	PAREA1	2031	1/1/2031	1/31/2031	0	0	30	30	30	23	0.00	0.000
Parking Structure - Exhaust	PAREA3	2025	1/1/2025	12/31/2025	0	365	0	364	364	261	0.01	0.001
	PAREA3	2026	1/1/2026	1/31/2026	0	31	0	30	30	22	0.00	0.000
NHB - Exhaust	PAREA5	2026	4/1/2026	12/31/2026	0	214	60	274	274	197	0.01	0.002
	PAREA5	2027	1/1/2027	12/31/2027	0	0	364	364	364	261	0.02	0.002
	PAREA5	2028	1/1/2028	12/31/2028	0	0	365	365	365	260	0.02	0.001
	PAREA5	2029	1/1/2029	12/31/2029	0	0	364	364	364	261	0.02	0.001
	PAREA5	2030	1/1/2030	1/31/2030	0	0	30	30	30	23	0.00	0.001
Existing Hospital Renovation - Exhaust	PAREA7	2030	8/1/2030	12/31/2030	0	0	152	152	152	109	0.00	0.000
	PAREA7	2031	1/1/2031	12/31/2031	0	0	364	364	364	261	0.00	0.000
	PAREA7	2032	1/1/2032	12/31/2032	0	0	365	365	365	262	0.00	0.000
	PAREA7	2033	1/1/2033	1/31/2033	0	0	30	30	30	21	0.00	0.000
Construction Truck Trips - Exhaust & Fugitive Dust	SLINE1	2024	8/1/2024	12/31/2024	91	62	0	152	152	109	0.00	0.000
	SLINE1	2025	1/1/2025	12/31/2025	0	365	0	364	364	261	0.00	0.000
	SLINE1	2026	1/1/2026	12/31/2026	0	304	60	364	364	261	0.00	0.000
	SLINE1	2027	1/1/2027	12/31/2027	0	0	364	364	364	261	0.00	0.000
	SLINE1	2028	1/1/2028	12/31/2028	0	0	365	365	365	260	0.00	0.000
	SLINE1	2029	1/1/2029	12/31/2029	0	0	364	364	364	261	0.00	0.000
	SLINE1	2030	1/1/2030	12/31/2030	0	0	364	364	364	261	0.00	0.000
	SLINE1	2031	1/1/2031	12/31/2031	0	0	364	364	364	261	0.00	0.000
	SLINE1	2032	1/1/2032	12/31/2032	0	0	365	365	365	262	0.00	0.000
	SLINE1	2033	1/1/2033	1/31/2033	0	0	30	30	30	21	0.00	0.000

Cancer Risk Factors

	Abbreviation	UOM	3rd Trimester	0<2	2<16
Daily Breathing Rate	DBR	L/kg-day	361	1090	572
Fraction Of Time At Home	FAH	unitless	1	1	1
Exposure Frequency	EF	days/year	0.96	0.96	0.96
Age Sensitivity Factor	ASF	unitless	10	10	3
Inhalation Absorption Factor	A	unitless	1	1	1
Conversion Factor	CF_1	m^3/L	0.001	0.001	0.001
Conversion Factor	CF_2	$\mu g/m^3$	0.001	0.001	0.001
Cancer Potency Factor (diesel exhaust)	CPF	$mg/kg\text{-}day^{-1}$	1.1	1.1	1.1
Averaging Time (for residential exposure)	AT	years	70.00	70.00	70.00

Daycare unmitigated risk is at 1

SOURCE: Office of Environmental Health Hazard Assessment, 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments* . February 2015

Daily breathing rate for residential receptor is based on the OEHHA 95th percentile moderate intensity breathing rates (OEHHA Table 5.7).

Fraction of time at home is set to values per OEHHA Table 8.4 for residential since the nearest school has an unmitigated cancer risk of <1 per million.

Inhalation cancer potency factor from OEHHA Table 7.1

Hazard Index

Chronic Inhalation	REL	$\mu g/m^3$	5

Intake Factor for Inhalation, IF (m^3/kg-day) = DBR*FAH*EF*ED*ASF*A*CF/AT

AERMOD Source	3rd Trimester	0<2	2<16
PAREA1	0.012	0.025	0.000
PAREA1	0.000	0.149	0.000
PAREA1	0.000	0.037	0.000
PAREA1	0.000	0.000	0.002
PAREA1	0.000	0.000	0.024
PAREA1	0.000	0.000	0.023
PAREA1	0.000	0.000	0.023
PAREA1	0.000	0.000	0.002
PAREA3	0.000	0.149	0.000
PAREA3	0.000	0.013	0.000
PAREA5	0.000	0.088	0.004
PAREA5	0.000	0.000	0.023
PAREA5	0.000	0.000	0.024
PAREA5	0.000	0.000	0.023
PAREA5	0.000	0.000	0.002
PAREA7	0.000	0.000	0.010
PAREA7	0.000	0.000	0.023
PAREA7	0.000	0.000	0.024
PAREA7	0.000	0.000	0.002
SLINE1	0.012	0.025	0.000
SLINE1	0.000	0.149	0.000
SLINE1	0.000	0.124	0.004
SLINE1	0.000	0.000	0.023
SLINE1	0.000	0.000	0.024
SLINE1	0.000	0.000	0.023
SLINE1	0.000	0.000	0.023
SLINE1	0.000	0.000	0.023
SLINE1	0.000	0.000	0.024
SLINE1	0.000	0.000	0.002

Risk Calculation Part 1, R1 = IF*CPF*CF

3rd Trimester	0<2	2<16
1.36E-05	2.79E-05	0.00E+00
0.00E+00	1.64E-04	0.00E+00
0.00E+00	4.05E-05	0.00E+00
0.00E+00	0.00E+00	2.13E-06
0.00E+00	0.00E+00	2.59E-05
0.00E+00	0.00E+00	2.58E-05
0.00E+00	0.00E+00	2.58E-05
0.00E+00	0.00E+00	2.13E-06
0.00E+00	1.64E-04	0.00E+00
0.00E+00	1.39E-05	0.00E+00
0.00E+00	9.63E-05	4.25E-06
0.00E+00	0.00E+00	2.58E-05
0.00E+00	0.00E+00	2.59E-05
0.00E+00	0.00E+00	2.58E-05
0.00E+00	0.00E+00	2.13E-06
0.00E+00	0.00E+00	1.08E-05
0.00E+00	0.00E+00	2.58E-05
0.00E+00	0.00E+00	2.59E-05
0.00E+00	0.00E+00	2.13E-06
1.36E-05	2.79E-05	0.00E+00
0.00E+00	1.64E-04	0.00E+00
0.00E+00	1.37E-04	4.25E-06
0.00E+00	0.00E+00	2.58E-05
0.00E+00	0.00E+00	2.59E-05
0.00E+00	0.00E+00	2.58E-05
0.00E+00	0.00E+00	2.58E-05
0.00E+00	0.00E+00	2.58E-05
0.00E+00	0.00E+00	2.59E-05
0.00E+00	0.00E+00	2.13E-06

MEIR - Resident Infant Residence	Cancer Risk	UTM X	UTM Y
	6.48	564671.3	4187862.5

HI	UTM X	UTM Y
0.004	564671.3	4187862.5

Benioff Childrens Hospital NHB Project
Construction Health Risk Calculations - Residential Unmitigated
Annual Average $PM_{2.5}$ Concentration Calculations

Source	AERMOD Source	Year	Start Date	End Date	Calendar Days	Workdays	Total $PM_{2.5}$ Emisions (tons)	Total $PM_{2.5}$ Emission Rate (g/s)
							Uncontrolled	Uncontrolled
Overall site emissions - Exhaust	PAREA1	2024	8/1/2024	12/31/2024	152	109	0.00	0.001
	PAREA1	2025	1/1/2025	12/31/2025	364	261	0.01	0.001
	PAREA1	2026	1/1/2026	3/31/2026	89	64	0.00	0.000
	PAREA1	2027	12/1/2027	12/31/2027	30	23	0.00	0.000
	PAREA1	2028	1/1/2028	12/31/2028	365	260	0.00	0.000
	PAREA1	2029	1/1/2029	12/31/2029	364	261	0.00	0.000
	PAREA1	2030	1/1/2030	12/31/2030	364	261	0.00	0.000
	PAREA1	2031	1/1/2031	1/31/2031	30	23	0.00	0.000
Overall site emissions - Fugitive Dust	PAREA2	2024	8/1/2024	12/31/2024	152	109	0.01	0.001
	PAREA2	2025	1/1/2025	12/31/2025	364	261	0.01	0.001
	PAREA2	2026	1/1/2026	3/31/2026	89	64	0.00	0.001
	PAREA2	2027	12/1/2027	12/31/2027	30	23	0.00	0.000
	PAREA2	2028	1/1/2028	12/31/2028	365	260	0.00	0.000
	PAREA2	2029	1/1/2029	12/31/2029	364	261	0.00	0.000
	PAREA2	2030	1/1/2030	12/31/2030	364	261	0.00	0.000
	PAREA2	2031	1/1/2031	1/31/2031	30	23	0.00	0.000
Parking Structure - Exhaust	PAREA3	2025	1/1/2025	12/31/2025	364	261	0.01	0.001
	PAREA3	2026	1/1/2026	1/31/2026	30	22	0.00	0.001
Parking Structure - Fugitive Dust	PAREA4	2025	1/1/2025	12/31/2025	364	261	0.00	0.000
	PAREA4	2026	1/1/2026	1/31/2026	30	22	0.00	0.000
NHB - Exhaust	PAREA5	2026	4/1/2026	12/31/2026	274	197	0.01	0.001
	PAREA5	2027	1/1/2027	12/31/2027	364	261	0.02	0.001
	PAREA5	2028	1/1/2028	12/31/2028	365	260	0.02	0.001
	PAREA5	2029	1/1/2029	12/31/2029	364	261	0.02	0.001
	PAREA5	2030	1/1/2030	1/31/2030	30	23	0.00	0.001
NHB - Fugitive Dust	PAREA6	2026	4/1/2026	12/31/2026	274	197	0.00	0.000
	PAREA6	2027	1/1/2027	12/31/2027	364	261	0.00	0.000
	PAREA6	2028	1/1/2028	12/31/2028	365	260	0.00	0.000
	PAREA6	2029	1/1/2029	12/31/2029	364	261	0.00	0.000
	PAREA6	2030	1/1/2030	1/31/2030	30	23	0.00	0.000
Existing Hospital Renovation - Exhaust	PAREA7	2030	8/1/2030	12/31/2030	152	109	0.00	0.000
	PAREA7	2031	1/1/2031	12/31/2031	364	261	0.00	0.000
	PAREA7	2032	1/1/2032	12/31/2032	365	262	0.00	0.000
	PAREA7	2033	1/1/2033	1/31/2033	30	21	0.00	0.000
Construction Truck Trips - Exhaust & Fugitive Dust	SLINE1	2024	8/1/2024	12/31/2024	152	109	0.00	0.000
	SLINE1	2025	1/1/2025	12/31/2025	364	261	0.00	0.000
	SLINE1	2026	1/1/2026	12/31/2026	364	261	0.00	0.000
	SLINE1	2027	1/1/2027	12/31/2027	364	261	0.00	0.000
	SLINE1	2028	1/1/2028	12/31/2028	365	260	0.00	0.000
	SLINE1	2029	1/1/2029	12/31/2029	364	261	0.00	0.000
	SLINE1	2030	1/1/2030	12/31/2030	364	261	0.00	0.000
	SLINE1	2031	1/1/2031	12/31/2031	364	261	0.00	0.000
	SLINE1	2032	1/1/2032	12/31/2032	365	262	0.00	0.000
	SLINE1	2033	1/1/2033	1/31/2033	30	21	0.00	0.000
							0.12	

MEIR - Resident	$PM_{2.5}$ Conc.	UTM X	UTM Y
Residence	0.041	564671.3	4187862.5

Benioff Childrens Hospital NHB Project
Construction Health Risk Calculations - Worker Unmitigated
Incremental Lifetime Cancer Risk and Hazard Index Calculations

					Exposure Duration (Days)			DPM	
				Start Date	8/1/2024				
				Stop Date				Emisions (tons)	Emission Rate (g/s)
Source	AERMOD Source	Year	Start Date	End Date	16<70	Calendar Days	Workdays	Uncontrolled	Uncontrolled
Overall site emissions - Exhaust	PAREA1	2024	8/1/2024	12/31/2024	152	152	109	0.00	0.001
	PAREA1	2025	1/1/2025	12/31/2025	364	364	261	0.01	0.001
	PAREA1	2026	1/1/2026	3/31/2026	89	89	64	0.00	0.001
	PAREA1	2027	12/1/2027	12/31/2027	30	30	23	0.00	0.000
	PAREA1	2028	1/1/2028	12/31/2028	365	365	260	0.00	0.000
	PAREA1	2029	1/1/2029	12/31/2029	364	364	261	0.00	0.000
	PAREA1	2030	1/1/2030	12/31/2030	364	364	261	0.00	0.000
	PAREA1	2031	1/1/2031	1/31/2031	30	30	23	0.00	0.000
Parking Structure - Exhaust	PAREA3	2025	1/1/2025	12/31/2025	364	364	261	0.01	0.001
	PAREA3	2026	1/1/2026	1/31/2026	30	30	22	0.00	0.000
NHB - Exhaust	PAREA5	2026	4/1/2026	12/31/2026	274	274	197	0.01	0.002
	PAREA5	2027	1/1/2027	12/31/2027	364	364	261	0.02	0.002
	PAREA5	2028	1/1/2028	12/31/2028	365	365	260	0.02	0.001
	PAREA5	2029	1/1/2029	12/31/2029	364	364	261	0.02	0.001
	PAREA5	2030	1/1/2030	1/31/2030	30	30	23	0.00	0.001
Existing Hospital Renovation - Exhaust	PAREA7	2030	8/1/2030	12/31/2030	152	152	109	0.00	0.000
	PAREA7	2031	1/1/2031	12/31/2031	364	364	261	0.00	0.000
	PAREA7	2032	1/1/2032	12/31/2032	365	365	262	0.00	0.000
	PAREA7	2033	1/1/2033	1/31/2033	30	30	21	0.00	0.000
Construction Truck Trips - Exhaust & Fugitive Dust	SLINE1	2024	8/1/2024	12/31/2024	152	152	109	0.00	0.000
	SLINE1	2025	1/1/2025	12/31/2025	364	364	261	0.00	0.000
	SLINE1	2026	1/1/2026	12/31/2026	364	364	261	0.00	0.000
	SLINE1	2027	1/1/2027	12/31/2027	364	364	261	0.00	0.000
	SLINE1	2028	1/1/2028	12/31/2028	365	365	260	0.00	0.000
	SLINE1	2029	1/1/2029	12/31/2029	364	364	261	0.00	0.000
	SLINE1	2030	1/1/2030	12/31/2030	364	364	261	0.00	0.000
	SLINE1	2031	1/1/2031	12/31/2031	364	364	261	0.00	0.000
	SLINE1	2032	1/1/2032	12/31/2032	365	365	262	0.00	0.000
	SLINE1	2033	1/1/2033	1/31/2033	30	30	21	0.00	0.000

Cancer Risk Factors

	Abbreviation	UOM	16<70	
8HR Breathing Rate (95th percentile)	8HR-BR	L/kg-day	230	95th percentile
Worker Adjustment Factor	WAF	unitless	4.20	Worst case
Exposure Frequency	EF	days/year	0.68	
Age Sensitivity Factor	ASF	unitless	1	
Inhalation Absorption Factor	A	unitless	1	
Conversion Factor	CF_1	m^3/L	0.001	

Conversion Factor	CF_2	μg/m^3	0.001
Cancer Potency Factor (diesel exhaust)	CPF	mg/kg-day^{-1}	1.1
Averaging Time (for residential exposure)	AT	years	70.00

SOURCE: Office of Environmental Health Hazard Assessment, 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments* . February 2015

Daily breathing rate for residential receptor is based on the OEHHA 95th percentile moderate intensity breathing rates (OEHHA Table 5.7).

Fraction of time at home is set to values per OEHHA Table 8.4 for residential since the nearest school has an unmitigated cancer risk of <1 per million.

Inhalation cancer potency factor from OEHHA Table 7.1

Hazard Index

Chronic Inhalation	REL	μg/m^3	5

Intake Factor for Inhalation, IF (m^3/kg-day) = DBR*FAH*EF*ED*ASF*A*CF/AT

AERMOD Source	16<70
PAREA1	0.004
PAREA1	0.009
PAREA1	0.002
PAREA1	0.001
PAREA1	0.009
PAREA1	0.009
PAREA1	0.009
PAREA1	0.001
PAREA3	0.009
PAREA3	0.001
PAREA5	0.007
PAREA5	0.009
PAREA5	0.009
PAREA5	0.009
PAREA5	0.001
PAREA7	0.004
PAREA7	0.009
PAREA7	0.009
PAREA7	0.001
SLINE1	0.004
SLINE1	0.009
SLINE1	0.009
SLINE1	0.009
SLINE1	0.009
SLINE1	0.009
SLINE1	0.009
SLINE1	0.009
SLINE1	0.009
SLINE1	0.001

Risk Calculation Part 1, R1 = IF*CPF*CF

16<70
4.33E-06
1.04E-05
2.54E-06
8.55E-07
1.04E-05
1.04E-05
1.04E-05
8.55E-07
1.04E-05
8.55E-07
7.81E-06
1.04E-05
1.04E-05
1.04E-05
8.55E-07
4.33E-06
1.04E-05
1.04E-05
8.55E-07
4.33E-06
1.04E-05
1.04E-05
1.04E-05
1.04E-05
1.04E-05
1.04E-05
1.04E-05
1.04E-05
8.55E-07

	Cancer Risk	UTM X	UTM Y
MEIW			
Worker	0.60	564471.3	4188042.5

HI	UTM X	UTM Y
0.0029	564471.3	4188042.5

Benioff Childrens Hospital NHB Project
Construction Health Risk Calculations - Worker Unmitigated
Annual Average $PM_{2.5}$ Concentration Calculations

							Total $PM_{2.5}$	
							Emisions (tons)	Emission Rate (g/s)
Source	AERMOD Source	Year	Start Date	End Date	Calendar Days	Workdays	Uncontrolled	Uncontrolled
Overall site emissions - Exhaust	PAREA1	2024	8/1/2024	12/31/2024	152	109	0.00	0.001
	PAREA1	2025	1/1/2025	12/31/2025	364	261	0.01	0.001
	PAREA1	2026	1/1/2026	3/31/2026	89	64	0.00	0.000
	PAREA1	2027	12/1/2027	12/31/2027	30	23	0.00	0.000
	PAREA1	2028	1/1/2028	12/31/2028	365	260	0.00	0.000
	PAREA1	2029	1/1/2029	12/31/2029	364	261	0.00	0.000
	PAREA1	2030	1/1/2030	12/31/2030	364	261	0.00	0.000
	PAREA1	2031	1/1/2031	1/31/2031	30	23	0.00	0.000
Overall site emissions - Fugitive Dust	PAREA2	2024	8/1/2024	12/31/2024	152	109	0.01	0.001
	PAREA2	2025	1/1/2025	12/31/2025	364	261	0.01	0.001
	PAREA2	2026	1/1/2026	3/31/2026	89	64	0.00	0.001
	PAREA2	2027	12/1/2027	12/31/2027	30	23	0.00	0.000
	PAREA2	2028	1/1/2028	12/31/2028	365	260	0.00	0.000
	PAREA2	2029	1/1/2029	12/31/2029	364	261	0.00	0.000
	PAREA2	2030	1/1/2030	12/31/2030	364	261	0.00	0.000
	PAREA2	2031	1/1/2031	1/31/2031	30	23	0.00	0.000
Parking Structure - Exhaust	PAREA3	2025	1/1/2025	12/31/2025	364	261	0.01	0.001
	PAREA3	2026	1/1/2026	1/31/2026	30	22	0.00	0.001
Parking Structure - Fugitive Dust	PAREA4	2025	1/1/2025	12/31/2025	364	261	0.00	0.000
	PAREA4	2026	1/1/2026	1/31/2026	30	22	0.00	0.000
NHB - Exhaust	PAREA5	2026	4/1/2026	12/31/2026	274	197	0.01	0.001
	PAREA5	2027	1/1/2027	12/31/2027	364	261	0.02	0.001
	PAREA5	2028	1/1/2028	12/31/2028	365	260	0.02	0.001
	PAREA5	2029	1/1/2029	12/31/2029	364	261	0.02	0.001
	PAREA5	2030	1/1/2030	1/31/2030	30	23	0.00	0.001
NHB - Fugitive Dust	PAREA6	2026	4/1/2026	12/31/2026	274	197	0.00	0.000
	PAREA6	2027	1/1/2027	12/31/2027	364	261	0.00	0.000
	PAREA6	2028	1/1/2028	12/31/2028	365	260	0.00	0.000
	PAREA6	2029	1/1/2029	12/31/2029	364	261	0.00	0.000
	PAREA6	2030	1/1/2030	1/31/2030	30	23	0.00	0.000
Existing Hospital Renovation - Exhaust	PAREA7	2030	8/1/2030	12/31/2030	152	109	0.00	0.000
	PAREA7	2031	1/1/2031	12/31/2031	364	261	0.00	0.000
	PAREA7	2032	1/1/2032	12/31/2032	365	262	0.00	0.000
	PAREA7	2033	1/1/2033	1/31/2033	30	21	0.00	0.000
Construction Truck Trips - Exhaust & Fugitive Dust	SLINE1	2024	8/1/2024	12/31/2024	152	109	0.00	0.000
	SLINE1	2025	1/1/2025	12/31/2025	364	261	0.00	0.000
	SLINE1	2026	1/1/2026	12/31/2026	364	261	0.00	0.000
	SLINE1	2027	1/1/2027	12/31/2027	364	261	0.00	0.000
	SLINE1	2028	1/1/2028	12/31/2028	365	260	0.00	0.000
	SLINE1	2029	1/1/2029	12/31/2029	364	261	0.00	0.000
	SLINE1	2030	1/1/2030	12/31/2030	364	261	0.00	0.000
	SLINE1	2031	1/1/2031	12/31/2031	364	261	0.00	0.000
	SLINE1	2032	1/1/2032	12/31/2032	365	262	0.00	0.000
	SLINE1	2033	1/1/2033	1/31/2033	30	21	0.00	0.000

MEIW	$PM_{2.5}$ Conc.	UTM X	UTM Y
Worker	0.028	564471.3	4188042.5

Benioff Childrens Hospital NHB Project

Construction Health Risk Calculations - School & Daycare Unmitigated

Incremental Lifetime Cancer Risk and Hazard Index Calculations

Source	AERMOD Source	Year	Start Date	End Date	Exposure Duration (Days) Daycare		School	Exposure Duration	Calendar Days	Workdays	DPM	
				Start Date	8/1/2024	6/20/2026	8/1/2024				Emissions (tons)	Emission Rate (g/s)
				Stop Date	6/19/2026	7/31/2029	1/31/2033					
					0<2	2<16	2<16				Uncontrolled	Uncontrolled
Overall site emissions - Exhaust	PAREA1	2024	8/1/2024	12/31/2024	152	0	152	152	152	109	0.00	0.001
	PAREA1	2025	1/1/2025	12/31/2025	364	0	364	364	364	261	0.01	0.001
	PAREA1	2026	1/1/2026	3/31/2026	89	0	89	89	89	64	0.00	0.001
	PAREA1	2027	12/1/2027	12/31/2027	0	30	30	30	30	23	0.00	0.000
	PAREA1	2028	1/1/2028	12/31/2028	0	365	365	365	365	260	0.00	0.000
	PAREA1	2029	1/1/2029	12/31/2029	0	364	364	364	364	261	0.00	0.000
	PAREA1	2030	1/1/2030	12/31/2030	0	364	364	364	364	261	0.00	0.000
	PAREA1	2031	1/1/2031	1/31/2031	0	30	30	30	30	23	0.00	0.000
Parking Structure - Exhaust	PAREA3	2025	1/1/2025	12/31/2025	364	0	364	364	364	261	0.01	0.001
	PAREA3	2026	1/1/2026	1/31/2026	30	0	30	30	30	22	0.00	0.000
NHB - Exhaust	PAREA5	2026	4/1/2026	12/31/2026	80	194	274	274	274	197	0.01	0.002
	PAREA5	2027	1/1/2027	12/31/2027	0	364	364	364	364	261	0.02	0.002
	PAREA5	2028	1/1/2028	12/31/2028	0	365	365	365	365	260	0.02	0.001
	PAREA5	2029	1/1/2029	12/31/2029	0	364	364	364	364	261	0.02	0.001
	PAREA5	2030	1/1/2030	1/31/2030	0	30	30	30	30	23	0.00	0.001
Existing Hospital Renovation - Exhaust	PAREA7	2030	8/1/2030	12/31/2030	0	152	152	152	152	109	0.00	0.000
	PAREA7	2031	1/1/2031	12/31/2031	0	364	364	364	364	261	0.00	0.000
	PAREA7	2032	1/1/2032	12/31/2032	0	365	365	365	365	262	0.00	0.000
	PAREA7	2033	1/1/2033	1/31/2033	0	30	30	30	30	21	0.00	0.000
Construction Truck Trips - Exhaust & Fugitive Dust	SLINE1	2024	8/1/2024	12/31/2024	152	0	152	152	152	109	0.00	0.000
	SLINE1	2025	1/1/2025	12/31/2025	364	0	364	364	364	261	0.00	0.000
	SLINE1	2026	1/1/2026	12/31/2026	170	194	364	364	364	261	0.00	0.000
	SLINE1	2027	1/1/2027	12/31/2027	0	364	364	364	364	261	0.00	0.000
	SLINE1	2028	1/1/2028	12/31/2028	0	365	365	365	365	260	0.00	0.000
	SLINE1	2029	1/1/2029	12/31/2029	0	364	364	364	364	261	0.00	0.000
	SLINE1	2030	1/1/2030	12/31/2030	0	364	364	364	364	261	0.00	0.000
	SLINE1	2031	1/1/2031	12/31/2031	0	364	364	364	364	261	0.00	0.000
	SLINE1	2032	1/1/2032	12/31/2032	0	365	365	365	365	262	0.00	0.000
	SLINE1	2033	1/1/2033	1/31/2033	0	30	30	30	30	21	0.00	0.000

Cancer Risk Factors

	Abbreviation	UOM	Daycare 0<2	Daycare 2<16	School 2<16		
Daily Breathing Rate (8 hour)	DBR	L/kg-day	1200	520	520	95th percentile for both age groups	La Vonda Crayo 6 weeks to 5 years
Modeling Adjustment Factor	MAF	unitless	4.2	4.2	4.2	Worst case assumed	Mechita Daycar 6 weeks to 5 years
Exposure Frequency	EF	days/year	0.96	0.96	0.68		
Age Sensitivity Factor	ASF	unitless	10	3	3		
Inhalation Absorption Factor	A	unitless	1	1	1		
Conversion Factor	CF_1	m^3/L	0.001	0.001	0.001		
Conversion Factor	CF_2	$\mu g/m^3$	0.001	0.001	0.001		
Cancer Potency Factor (diesel exhaust)	CPF	$mg/kg\text{-}day^{-1}$	1.1	1.1	1.1		
Averaging Time (for residential exposure)	AT	years	70.00	70.00	70.00		

SOURCE: Office of Environmental Health Hazard Assessment, 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments* . February 2015

Daily breathing rate for residential receptor is based on the OEHHA 95th percentile moderate intensity breathing rates (OEHHA Table 5.7).

Fraction of time at home is set to values per OEHHA Table 8.4 for residential since the nearest school has an unmitigated cancer risk of <1 per million.

Inhalation cancer potency factor from OEHHA Table 7.1

Hazard Index

Chronic Inhalation	REL	$\mu g/m^3$	5

Intake Factor for Inhalation, IF (m^3/kg-day) = DBR*FAH*EF*ED*ASF*A*CF/AT

	Daycare		School
AERMOD Source	0<2	2<16	2<16
PAREA1	0.288	0.000	0.027
PAREA1	0.689	0.000	0.064
PAREA1	0.168	0.000	0.016
PAREA1	0.000	0.007	0.005
PAREA1	0.000	0.090	0.064
PAREA1	0.000	0.090	0.064
PAREA1	0.000	0.090	0.064
PAREA1	0.000	0.007	0.005
PAREA3	0.689	0.000	0.064
PAREA3	0.057	0.000	0.005
PAREA5	0.151	0.048	0.048
PAREA5	0.000	0.090	0.064
PAREA5	0.000	0.090	0.064
PAREA5	0.000	0.090	0.064
PAREA5	0.000	0.007	0.005
PAREA7	0.000	0.037	0.027
PAREA7	0.000	0.090	0.064
PAREA7	0.000	0.090	0.064
PAREA7	0.000	0.007	0.005
SLINE1	0.288	0.000	0.027
SLINE1	0.689	0.000	0.064
SLINE1	0.321	0.048	0.064
SLINE1	0.000	0.090	0.064
SLINE1	0.000	0.090	0.064
SLINE1	0.000	0.090	0.064
SLINE1	0.000	0.090	0.064
SLINE1	0.000	0.090	0.064
SLINE1	0.000	0.090	0.064
SLINE1	0.000	0.007	0.005

Risk Calculation Part 1, R1 = IF*CPF*CF

Daycare		School
0<2	2<16	2<16
3.16E-04	0.00E+00	2.94E-05
7.57E-04	0.00E+00	7.03E-05
1.85E-04	0.00E+00	1.72E-05
0.00E+00	8.12E-06	5.80E-06
0.00E+00	9.88E-05	7.05E-05
0.00E+00	9.86E-05	7.03E-05
0.00E+00	9.86E-05	7.03E-05
0.00E+00	8.12E-06	5.80E-06
7.57E-04	0.00E+00	7.03E-05
6.24E-05	0.00E+00	5.80E-06
1.66E-04	5.26E-05	5.29E-05
0.00E+00	9.86E-05	7.03E-05
0.00E+00	9.88E-05	7.05E-05
0.00E+00	9.86E-05	7.03E-05
0.00E+00	8.12E-06	5.80E-06
0.00E+00	4.12E-05	2.94E-05
0.00E+00	9.86E-05	7.03E-05
0.00E+00	9.88E-05	7.05E-05
0.00E+00	8.12E-06	5.80E-06
3.16E-04	0.00E+00	2.94E-05
7.57E-04	0.00E+00	7.03E-05
3.53E-04	5.26E-05	7.03E-05
0.00E+00	9.86E-05	7.03E-05
0.00E+00	9.88E-05	7.05E-05
0.00E+00	9.86E-05	7.03E-05
0.00E+00	9.86E-05	7.03E-05
0.00E+00	9.86E-05	7.03E-05
0.00E+00	9.88E-05	7.05E-05
0.00E+00	8.12E-06	5.80E-06

MEIR	Cancer Risk	UTM X	UTM Y
Mechita Daycare	8.58	564791.3	4187822.5
LaVonda Crayon Box Daycare	2.60	564231.3	4187962.5

HI	UTM X	UTM Y
0.0013	564791.3	4187822.5
0.0005	564231.3	4187962.5

Benioff Childrens Hospital NHB Project
Construction Health Risk Calculations - School & Daycare Unmitigated
Annual Average $PM_{2.5}$ Concentration Calculations

							Total $PM_{2.5}$	
							Emisions (tons)	Emission Rate (g/s)
Source	AERMOD Source	Year	Start Date	End Date	Calendar Days	Workdays	Uncontrolled	Uncontrolled
Overall site emissions - Exhaust	PAREA1	2024	8/1/2024	12/31/2024	152	109	0.00	0.001
	PAREA1	2025	1/1/2025	12/31/2025	364	261	0.01	0.001
	PAREA1	2026	1/1/2026	3/31/2026	89	64	0.00	0.000
	PAREA1	2027	12/1/2027	12/31/2027	30	23	0.00	0.000
	PAREA1	2028	1/1/2028	12/31/2028	365	260	0.00	0.000
	PAREA1	2029	1/1/2029	12/31/2029	364	261	0.00	0.000
	PAREA1	2030	1/1/2030	12/31/2030	364	261	0.00	0.000
	PAREA1	2031	1/1/2031	1/31/2031	30	23	0.00	0.000
Overall site emissions - Fugitive Dust	PAREA2	2024	8/1/2024	12/31/2024	152	109	0.01	0.001
	PAREA2	2025	1/1/2025	12/31/2025	364	261	0.01	0.001
	PAREA2	2026	1/1/2026	3/31/2026	89	64	0.00	0.001
	PAREA2	2027	12/1/2027	12/31/2027	30	23	0.00	0.000
	PAREA2	2028	1/1/2028	12/31/2028	365	260	0.00	0.000
	PAREA2	2029	1/1/2029	12/31/2029	364	261	0.00	0.000
	PAREA2	2030	1/1/2030	12/31/2030	364	261	0.00	0.000
	PAREA2	2031	1/1/2031	1/31/2031	30	23	0.00	0.000
Parking Structure - Exhaust	PAREA3	2025	1/1/2025	12/31/2025	364	261	0.01	0.001
	PAREA3	2026	1/1/2026	1/31/2026	30	22	0.00	0.001
Parking Structure - Fugitive Dust	PAREA4	2025	1/1/2025	12/31/2025	364	261	0.00	0.000
	PAREA4	2026	1/1/2026	1/31/2026	30	22	0.00	0.000
NHB - Exhaust	PAREA5	2026	4/1/2026	12/31/2026	274	197	0.01	0.001
	PAREA5	2027	1/1/2027	12/31/2027	364	261	0.02	0.001
	PAREA5	2028	1/1/2028	12/31/2028	365	260	0.02	0.001
	PAREA5	2029	1/1/2029	12/31/2029	364	261	0.02	0.001
	PAREA5	2030	1/1/2030	1/31/2030	30	23	0.00	0.001
NHB - Fugitive Dust	PAREA6	2026	4/1/2026	12/31/2026	274	197	0.00	0.000
	PAREA6	2027	1/1/2027	12/31/2027	364	261	0.00	0.000
	PAREA6	2028	1/1/2028	12/31/2028	365	260	0.00	0.000
	PAREA6	2029	1/1/2029	12/31/2029	364	261	0.00	0.000
	PAREA6	2030	1/1/2030	1/31/2030	30	23	0.00	0.000
Existing Hospital Renovation - Exhaust	PAREA7	2030	8/1/2030	12/31/2030	152	109	0.00	0.000
	PAREA7	2031	1/1/2031	12/31/2031	364	261	0.00	0.000
	PAREA7	2032	1/1/2032	12/31/2032	365	262	0.00	0.000
	PAREA7	2033	1/1/2033	1/31/2033	30	21	0.00	0.000
	SLINE1	2024	8/1/2024	12/31/2024	152	109	0.00	0.000
	SLINE1	2025	1/1/2025	12/31/2025	364	261	0.00	0.000

Construction Truck Trips - Exhaust & Fugitive Dust	SLINE1	2026	1/1/2026	12/31/2026	364	261	0.00	0.000
	SLINE1	2027	1/1/2027	12/31/2027	364	261	0.00	0.000
	SLINE1	2028	1/1/2028	12/31/2028	365	260	0.00	0.000
	SLINE1	2029	1/1/2029	12/31/2029	364	261	0.00	0.000
	SLINE1	2030	1/1/2030	12/31/2030	364	261	0.00	0.000
	SLINE1	2031	1/1/2031	12/31/2031	364	261	0.00	0.000
	SLINE1	2032	1/1/2032	12/31/2032	365	262	0.00	0.000
	SLINE1	2033	1/1/2033	1/31/2033	30	21	0.00	0.000

MEIR	$PM_{2.5}$ Conc.	UTM X	UTM Y
Mechita Daycare	0.013	564791.3	4187822.5
LaVonda Crayon Box Daycare	0.004	564231.3	4187962.5

Benioff Childrens Hospital NHB Project
Construction Health Risk Assessment Worksheets
Mitigated

Benioff Childrens Hospital NHB Project

Construction Health Risk Calculations - Residential Mitigated

Incremental Lifetime Cancer Risk and Hazard Index Calculations

					Exposure Duration (Days)						DPM	
				Start Date	8/1/2024	10/31/2024	11/1/2026					
				Stop Date	10/30/2024	10/31/2026					Emissions (tons)	Emission Rate (g/s)
Source	AERMOD Source	Year	Start Date	End Date	3rd Trimester	0<2	2<16	Exposure Duration	Calendar Days	Workdays	Tier 4F	Tier 4F
Overall site emissions - Exhaust	PAREA1	2024	8/1/2024	12/31/2024	91	62	0	152	152	109	0.00	0.000
	PAREA1	2025	1/1/2025	12/31/2025	0	365	0	364	364	261	0.00	0.000
	PAREA1	2026	1/1/2026	3/31/2026	0	90	0	89	89	64	0.00	0.000
	PAREA1	2027	12/1/2027	12/31/2027	0	0	30	30	30	23	0.00	0.000
	PAREA1	2028	1/1/2028	12/31/2028	0	0	365	365	365	260	0.00	0.000
	PAREA1	2029	1/1/2029	12/31/2029	0	0	364	364	364	261	0.00	0.000
	PAREA1	2030	1/1/2030	12/31/2030	0	0	364	364	364	261	0.00	0.000
	PAREA1	2031	1/1/2031	1/31/2031	0	0	30	30	30	23	0.00	0.000
Parking Structure - Exhaust	PAREA3	2025	1/1/2025	12/31/2025	0	365	0	364	364	261	0.00	0.000
	PAREA3	2026	1/1/2026	1/31/2026	0	31	0	30	30	22	0.00	0.000
NHB - Exhaust	PAREA5	2026	4/1/2026	12/31/2026	0	214	60	274	274	197	0.01	0.001
	PAREA5	2027	1/1/2027	12/31/2027	0	0	364	364	364	261	0.01	0.001
	PAREA5	2028	1/1/2028	12/31/2028	0	0	365	365	365	260	0.01	0.001
	PAREA5	2029	1/1/2029	12/31/2029	0	0	364	364	364	261	0.01	0.001
	PAREA5	2030	1/1/2030	1/31/2030	0	0	30	30	30	23	0.00	0.001
Existing Hospital Renovation - Exhaust	PAREA7	2030	8/1/2030	12/31/2030	0	0	152	152	152	109	0.00	0.000
	PAREA7	2031	1/1/2031	12/31/2031	0	0	364	364	364	261	0.00	0.000
	PAREA7	2032	1/1/2032	12/31/2032	0	0	365	365	365	262	0.00	0.000
	PAREA7	2033	1/1/2033	1/31/2033	0	0	30	30	30	21	0.00	0.000
Construction Truck Trips - Exhaust & Fugitive Dust	SLINE1	2024	8/1/2024	12/31/2024	91	62	0	152	152	109	0.00	0.000
	SLINE1	2025	1/1/2025	12/31/2025	0	365	0	364	364	261	0.00	0.000
	SLINE1	2026	1/1/2026	12/31/2026	0	304	60	364	364	261	0.00	0.000
	SLINE1	2027	1/1/2027	12/31/2027	0	0	364	364	364	261	0.00	0.000
	SLINE1	2028	1/1/2028	12/31/2028	0	0	365	365	365	260	0.00	0.000
	SLINE1	2029	1/1/2029	12/31/2029	0	0	364	364	364	261	0.00	0.000
	SLINE1	2030	1/1/2030	12/31/2030	0	0	364	364	364	261	0.00	0.000
	SLINE1	2031	1/1/2031	12/31/2031	0	0	364	364	364	261	0.00	0.000
	SLINE1	2032	1/1/2032	12/31/2032	0	0	365	365	365	262	0.00	0.000
	SLINE1	2033	1/1/2033	1/31/2033	0	0	30	30	30	21	0.00	0.000

Cancer Risk Factors

	Abbreviation	UOM	3rd Trimester	0<2	2<16
Daily Breathing Rate	DBR	L/kg-day	361	1090	572
Fraction Of Time At Home	FAH	unitless	1	1	1
Exposure Frequency	EF	days/year	0.96	0.96	0.96
Age Sensitivity Factor	ASF	unitless	10	10	3
Inhalation Absorption Factor	A	unitless	1	1	1
Conversion Factor	CF_1	m^3/L	0.001	0.001	0.001
Conversion Factor	CF_2	$\mu g/m^3$	0.001	0.001	0.001
Cancer Potency Factor (diesel exhaust)	CPF	$mg/kg\text{-}day^{-1}$	1.1	1.1	1.1
Averaging Time (for residential exposure)	AT	years	70.00	70.00	70.00

Daycare unmitigated risk is at 1

SOURCE: Office of Environmental Health Hazard Assessment, 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments* . February 2015

Daily breathing rate for residential receptor is based on the OEHHA 95th percentile moderate intensity breathing rates (OEHHA Table 5.7).

Fraction of time at home is set to values per OEHHA Table 8.4 for residential since the nearest school has an unmitigated cancer risk of <1 per million.

Inhalation cancer potency factor from OEHHA Table 7.1

Hazard Index

Chronic Inhalation	REL	$\mu g/m^3$	5

Intake Factor for Inhalation, IF (m^3/kg-day) = DBR*FAH*EF*ED*ASF*A*CF/AT

AERMOD Source	3rd Trimester	0<2	2<16
PAREA1	0.012	0.025	0.000
PAREA1	0.000	0.149	0.000
PAREA1	0.000	0.037	0.000
PAREA1	0.000	0.000	0.002
PAREA1	0.000	0.000	0.024
PAREA1	0.000	0.000	0.023
PAREA1	0.000	0.000	0.023
PAREA1	0.000	0.000	0.002
PAREA3	0.000	0.149	0.000
PAREA3	0.000	0.013	0.000
PAREA5	0.000	0.088	0.004
PAREA5	0.000	0.000	0.023
PAREA5	0.000	0.000	0.024
PAREA5	0.000	0.000	0.023
PAREA5	0.000	0.000	0.002
PAREA7	0.000	0.000	0.010
PAREA7	0.000	0.000	0.023
PAREA7	0.000	0.000	0.024
PAREA7	0.000	0.000	0.002
SLINE1	0.012	0.025	0.000
SLINE1	0.000	0.149	0.000
SLINE1	0.000	0.124	0.004
SLINE1	0.000	0.000	0.023
SLINE1	0.000	0.000	0.024
SLINE1	0.000	0.000	0.023
SLINE1	0.000	0.000	0.023
SLINE1	0.000	0.000	0.023
SLINE1	0.000	0.000	0.024
SLINE1	0.000	0.000	0.002

Risk Calculation Part 1, R1 = IF*CPF*CF

3rd Trimester	0<2	2<16
1.36E-05	2.79E-05	0.00E+00
0.00E+00	1.64E-04	0.00E+00
0.00E+00	4.05E-05	0.00E+00
0.00E+00	0.00E+00	2.13E-06
0.00E+00	0.00E+00	2.59E-05
0.00E+00	0.00E+00	2.58E-05
0.00E+00	0.00E+00	2.58E-05
0.00E+00	0.00E+00	2.13E-06
0.00E+00	1.64E-04	0.00E+00
0.00E+00	1.39E-05	0.00E+00
0.00E+00	9.63E-05	4.25E-06
0.00E+00	0.00E+00	2.58E-05
0.00E+00	0.00E+00	2.59E-05
0.00E+00	0.00E+00	2.58E-05
0.00E+00	0.00E+00	2.13E-06
0.00E+00	0.00E+00	1.08E-05
0.00E+00	0.00E+00	2.58E-05
0.00E+00	0.00E+00	2.59E-05
0.00E+00	0.00E+00	2.13E-06
1.36E-05	2.79E-05	0.00E+00
0.00E+00	1.64E-04	0.00E+00
0.00E+00	1.37E-04	4.25E-06
0.00E+00	0.00E+00	2.58E-05
0.00E+00	0.00E+00	2.59E-05
0.00E+00	0.00E+00	2.58E-05
0.00E+00	0.00E+00	2.58E-05
0.00E+00	0.00E+00	2.58E-05
0.00E+00	0.00E+00	2.59E-05
0.00E+00	0.00E+00	2.13E-06

MEIR - Resident Infant Residence

Cancer Risk	UTM X	UTM Y
1.79	564671.3	4187862.5

HI	UTM X	UTM Y
0.0018	564671.3	4187862.5

Benioff Childrens Hospital NHB Project
Construction Health Risk Calculations - Residential Mitigated
Annual Average $PM_{2.5}$ Concentration Calculations

Source	AERMOD Source	Year	Start Date	End Date	Calendar Days	Workdays	Total $PM_{2.5}$ Emisions (tons) Tier 4F	Total $PM_{2.5}$ Emission Rate (g/s) Tier 4F
Overall site emissions - Exhaust	PAREA1	2024	8/1/2024	12/31/2024	152	109	0.000	0.000
	PAREA1	2025	1/1/2025	12/31/2025	364	261	0.001	0.000
	PAREA1	2026	1/1/2026	3/31/2026	89	64	0.000	0.000
	PAREA1	2027	12/1/2027	12/31/2027	30	23	0.000	0.000
	PAREA1	2028	1/1/2028	12/31/2028	365	260	0.000	0.000
	PAREA1	2029	1/1/2029	12/31/2029	364	261	0.000	0.000
	PAREA1	2030	1/1/2030	12/31/2030	364	261	0.000	0.000
	PAREA1	2031	1/1/2031	1/31/2031	30	23	0.000	0.000
Overall site emissions - Fugitive Dust	PAREA2	2024	8/1/2024	12/31/2024	152	109	0.003	0.001
	PAREA2	2025	1/1/2025	12/31/2025	364	261	0.008	0.001
	PAREA2	2026	1/1/2026	3/31/2026	89	64	0.002	0.001
	PAREA2	2027	12/1/2027	12/31/2027	30	23	0.000	0.000
	PAREA2	2028	1/1/2028	12/31/2028	365	260	0.000	0.000
	PAREA2	2029	1/1/2029	12/31/2029	364	261	0.000	0.000
	PAREA2	2030	1/1/2030	12/31/2030	364	261	0.000	0.000
	PAREA2	2031	1/1/2031	1/31/2031	30	23	0.000	0.000
Parking Structure - Exhaust	PAREA3	2025	1/1/2025	12/31/2025	364	261	0.002	0.000
	PAREA3	2026	1/1/2026	1/31/2026	30	22	0.000	0.000
Parking Structure - Fugitive Dust	PAREA4	2025	1/1/2025	12/31/2025	364	261	0.001	0.000
	PAREA4	2026	1/1/2026	1/31/2026	30	22	0.000	0.000
NHB - Exhaust	PAREA5	2026	4/1/2026	12/31/2026	274	197	0.006	0.001
	PAREA5	2027	1/1/2027	12/31/2027	364	261	0.008	0.001
	PAREA5	2028	1/1/2028	12/31/2028	365	260	0.008	0.001
	PAREA5	2029	1/1/2029	12/31/2029	364	261	0.008	0.001
	PAREA5	2030	1/1/2030	1/31/2030	30	23	0.001	0.001
NHB - Fugitive Dust	PAREA6	2026	4/1/2026	12/31/2026	274	197	0.001	0.000
	PAREA6	2027	1/1/2027	12/31/2027	364	261	0.000	0.000
	PAREA6	2028	1/1/2028	12/31/2028	365	260	0.000	0.000
	PAREA6	2029	1/1/2029	12/31/2029	364	261	0.000	0.000
	PAREA6	2030	1/1/2030	1/31/2030	30	23	0.000	0.000
Existing Hospital Renovation - Exhaust	PAREA7	2030	8/1/2030	12/31/2030	152	109	0.000	0.000
	PAREA7	2031	1/1/2031	12/31/2031	364	261	0.000	0.000
	PAREA7	2032	1/1/2032	12/31/2032	365	262	0.000	0.000
	PAREA7	2033	1/1/2033	1/31/2033	30	21	0.000	0.000
Construction Truck Trips - Exhaust & Fugitive Dust	SLINE1	2024	8/1/2024	12/31/2024	152	109	0.000	0.000
	SLINE1	2025	1/1/2025	12/31/2025	364	261	0.001	0.000
	SLINE1	2026	1/1/2026	12/31/2026	364	261	0.000	0.000
	SLINE1	2027	1/1/2027	12/31/2027	364	261	0.000	0.000
	SLINE1	2028	1/1/2028	12/31/2028	365	260	0.000	0.000
	SLINE1	2029	1/1/2029	12/31/2029	364	261	0.000	0.000
	SLINE1	2030	1/1/2030	12/31/2030	364	261	0.000	0.000
	SLINE1	2031	1/1/2031	12/31/2031	364	261	0.000	0.000
	SLINE1	2032	1/1/2032	12/31/2032	365	262	0.000	0.000
	SLINE1	2033	1/1/2033	1/31/2033	30	21	0.000	0.000
							0.05	

MEIR - Resident	$PM_{2.5}$ Conc.	UTM X	UTM Y
Residence	0.016	564671.3	4187862.5

Benioff Childrens Hospital NHB Project
Construction Health Risk Calculations - Worker Mitigated
Incremental Lifetime Cancer Risk and Hazard Index Calculations

					Exposure Duration (Days)			DPM	
				Start Date	8/1/2024				
				Stop Date				Emisions (tons)	Emission Rate (g/s)
Source	AERMOD Source	Year	Start Date	End Date	3rd Trimester	Calendar Days	Workdays	Tier 4F	Tier 4F
Overall site emissions - Exhaust	PAREA1	2024	8/1/2024	12/31/2024	152	152	109	0.00	0.000
	PAREA1	2025	1/1/2025	12/31/2025	364	364	261	0.00	0.000
	PAREA1	2026	1/1/2026	3/31/2026	89	89	64	0.00	0.000
	PAREA1	2027	12/1/2027	12/31/2027	30	30	23	0.00	0.000
	PAREA1	2028	1/1/2028	12/31/2028	365	365	260	0.00	0.000
	PAREA1	2029	1/1/2029	12/31/2029	364	364	261	0.00	0.000
	PAREA1	2030	1/1/2030	12/31/2030	364	364	261	0.00	0.000
	PAREA1	2031	1/1/2031	1/31/2031	30	30	23	0.00	0.000
Parking Structure - Exhaust	PAREA3	2025	1/1/2025	12/31/2025	364	364	261	0.00	0.000
	PAREA3	2026	1/1/2026	1/31/2026	30	30	22	0.00	0.000
NHB - Exhaust	PAREA5	2026	4/1/2026	12/31/2026	274	274	197	0.01	0.001
	PAREA5	2027	1/1/2027	12/31/2027	364	364	261	0.01	0.001
	PAREA5	2028	1/1/2028	12/31/2028	365	365	260	0.01	0.001
	PAREA5	2029	1/1/2029	12/31/2029	364	364	261	0.01	0.001
	PAREA5	2030	1/1/2030	1/31/2030	30	30	23	0.00	0.001
Existing Hospital Renovation - Exhaust	PAREA7	2030	8/1/2030	12/31/2030	152	152	109	0.00	0.000
	PAREA7	2031	1/1/2031	12/31/2031	364	364	261	0.00	0.000
	PAREA7	2032	1/1/2032	12/31/2032	365	365	262	0.00	0.000
	PAREA7	2033	1/1/2033	1/31/2033	30	30	21	0.00	0.000
Construction Truck Trips - Exhaust & Fugitive Dust	SLINE1	2024	8/1/2024	12/31/2024	152	152	109	0.00	0.000
	SLINE1	2025	1/1/2025	12/31/2025	364	364	261	0.00	0.000
	SLINE1	2026	1/1/2026	12/31/2026	364	364	261	0.00	0.000
	SLINE1	2027	1/1/2027	12/31/2027	364	364	261	0.00	0.000
	SLINE1	2028	1/1/2028	12/31/2028	365	365	260	0.00	0.000
	SLINE1	2029	1/1/2029	12/31/2029	364	364	261	0.00	0.000
	SLINE1	2030	1/1/2030	12/31/2030	364	364	261	0.00	0.000
	SLINE1	2031	1/1/2031	12/31/2031	364	364	261	0.00	0.000
	SLINE1	2032	1/1/2032	12/31/2032	365	365	262	0.00	0.000
	SLINE1	2033	1/1/2033	1/31/2033	30	30	21	0.00	0.000

Cancer Risk Factors

	Abbreviation	UOM	16<70	
8HR Breathing Rate (95th percentile)	8HR-BR	L/kg-day	230	95th percentile
Worker Adjustment Factor	WAF	unitless	4.20	Worst case
Exposure Frequency	EF	days/year	0.68	
Age Sensitivity Factor	ASF	unitless	1	
Inhalation Absorption Factor	A	unitless	1	

Conversion Factor	CF_1	m^3/L	0.001
Conversion Factor	CF_2	$\mu g/m^3$	0.001
Cancer Potency Factor (diesel exhaust)	CPF	mg/kg-day^{-1}	1.1
Averaging Time (for residential exposure)	AT	years	70.00

SOURCE: Office of Environmental Health Hazard Assessment, 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments* . February 2015

Daily breathing rate for residential receptor is based on the OEHHA 95th percentile moderate intensity breathing rates (OEHHA Table 5.7).

Fraction of time at home is set to values per OEHHA Table 8.4 for residential since the nearest school has an unmitigated cancer risk of <1 per million.

Inhalation cancer potency factor from OEHHA Table 7.1

Hazard Index

Chronic Inhalation	REL	$\mu g/m^3$	5

Intake Factor for Inhalation, IF (m^3/kg-day) = DBR*FAH*EF*ED*ASF*A*CF/AT

AERMOD Source	16<70
PAREA1	0.004
PAREA1	0.009
PAREA1	0.002
PAREA1	0.001
PAREA1	0.009
PAREA1	0.009
PAREA1	0.009
PAREA1	0.001
PAREA3	0.009
PAREA3	0.001
PAREA5	0.007
PAREA5	0.009
PAREA5	0.009
PAREA5	0.009
PAREA5	0.001
PAREA7	0.004
PAREA7	0.009
PAREA7	0.009
PAREA7	0.001
SLINE1	0.004
SLINE1	0.009
SLINE1	0.009
SLINE1	0.009
SLINE1	0.009
SLINE1	0.009
SLINE1	0.009
SLINE1	0.009
SLINE1	0.009
SLINE1	0.001

Risk Calculation Part 1, R1 = IF*CPF*CF

16<70
4.33E-06
1.04E-05
2.54E-06
8.55E-07
1.04E-05
1.04E-05
1.04E-05
8.55E-07
1.04E-05
8.55E-07
7.81E-06
1.04E-05
1.04E-05
1.04E-05
8.55E-07
4.33E-06
1.04E-05
1.04E-05
8.55E-07
4.33E-06
1.04E-05
1.04E-05
1.04E-05
1.04E-05
1.04E-05
1.04E-05
1.04E-05
1.04E-05
8.55E-07

	Cancer Risk	UTM X	UTM Y
MEIW Worker	0.199	564471.3	4188042.5

HI	UTM X	UTM Y
0.0011	564731.3	4187922.5

Benioff Childrens Hospital NHB Project
Construction Health Risk Calculations - Worker Mitigated
Annual Average $PM_{2.5}$ Concentration Calculations

Source	AERMOD Source	Year	Start Date	End Date	Calendar Days	Workdays	Total $PM_{2.5}$ Emisions (tons)	Total $PM_{2.5}$ Emission Rate (g/s)
							Tier 4F	Tier 4F
Overall site emissions - Exhaust	PAREA1	2024	8/1/2024	12/31/2024	152	109	0.00	0.000
	PAREA1	2025	1/1/2025	12/31/2025	364	261	0.00	0.000
	PAREA1	2026	1/1/2026	3/31/2026	89	64	0.00	0.000
	PAREA1	2027	12/1/2027	12/31/2027	30	23	0.00	0.000
	PAREA1	2028	1/1/2028	12/31/2028	365	260	0.00	0.000
	PAREA1	2029	1/1/2029	12/31/2029	364	261	0.00	0.000
	PAREA1	2030	1/1/2030	12/31/2030	364	261	0.00	0.000
	PAREA1	2031	1/1/2031	1/31/2031	30	23	0.00	0.000
Overall site emissions - Fugitive Dust	PAREA2	2024	8/1/2024	12/31/2024	152	109	0.00	0.001
	PAREA2	2025	1/1/2025	12/31/2025	364	261	0.01	0.001
	PAREA2	2026	1/1/2026	3/31/2026	89	64	0.00	0.001
	PAREA2	2027	12/1/2027	12/31/2027	30	23	0.00	0.000
	PAREA2	2028	1/1/2028	12/31/2028	365	260	0.00	0.000
	PAREA2	2029	1/1/2029	12/31/2029	364	261	0.00	0.000
	PAREA2	2030	1/1/2030	12/31/2030	364	261	0.00	0.000
	PAREA2	2031	1/1/2031	1/31/2031	30	23	0.00	0.000
Parking Structure - Exhaust	PAREA3	2025	1/1/2025	12/31/2025	364	261	0.00	0.000
	PAREA3	2026	1/1/2026	1/31/2026	30	22	0.00	0.000
Parking Structure - Fugitive Dust	PAREA4	2025	1/1/2025	12/31/2025	364	261	0.00	0.000
	PAREA4	2026	1/1/2026	1/31/2026	30	22	0.00	0.000
NHB - Exhaust	PAREA5	2026	4/1/2026	12/31/2026	274	197	0.01	0.001
	PAREA5	2027	1/1/2027	12/31/2027	364	261	0.01	0.001
	PAREA5	2028	1/1/2028	12/31/2028	365	260	0.01	0.001
	PAREA5	2029	1/1/2029	12/31/2029	364	261	0.01	0.001
	PAREA5	2030	1/1/2030	1/31/2030	30	23	0.00	0.001
NHB - Fugitive Dust	PAREA6	2026	4/1/2026	12/31/2026	274	197	0.00	0.000
	PAREA6	2027	1/1/2027	12/31/2027	364	261	0.00	0.000
	PAREA6	2028	1/1/2028	12/31/2028	365	260	0.00	0.000
	PAREA6	2029	1/1/2029	12/31/2029	364	261	0.00	0.000
	PAREA6	2030	1/1/2030	1/31/2030	30	23	0.00	0.000
Existing Hospital Renovation - Exhaust	PAREA7	2030	8/1/2030	12/31/2030	152	109	0.00	0.000
	PAREA7	2031	1/1/2031	12/31/2031	364	261	0.00	0.000
	PAREA7	2032	1/1/2032	12/31/2032	365	262	0.00	0.000
	PAREA7	2033	1/1/2033	1/31/2033	30	21	0.00	0.000
Construction Truck Trips - Exhaust & Fugitive Dust	SLINE1	2024	8/1/2024	12/31/2024	152	109	0.00	0.000
	SLINE1	2025	1/1/2025	12/31/2025	364	261	0.00	0.000
	SLINE1	2026	1/1/2026	12/31/2026	364	261	0.00	0.000
	SLINE1	2027	1/1/2027	12/31/2027	364	261	0.00	0.000
	SLINE1	2028	1/1/2028	12/31/2028	365	260	0.00	0.000
	SLINE1	2029	1/1/2029	12/31/2029	364	261	0.00	0.000
	SLINE1	2030	1/1/2030	12/31/2030	364	261	0.00	0.000
	SLINE1	2031	1/1/2031	12/31/2031	364	261	0.00	0.000
	SLINE1	2032	1/1/2032	12/31/2032	365	262	0.00	0.000
	SLINE1	2033	1/1/2033	1/31/2033	30	21	0.00	0.000

MEIR - Resident	$PM_{2.5}$ Conc.	UTM X	UTM Y
Worker	0.013	564471.3	4188042.5

Benioff Childrens Hospital NHB Project

Construction Health Risk Calculations - School & Daycare Mitigated

Incremental Lifetime Cancer Risk and Hazard Index Calculations

					Exposure Duration (Days)							
					Daycare		School				DPM	
				Start Date	8/1/2024	6/20/2026	8/1/2024				Emisions (tons)	Emission Rate (g/s)
				Stop Date	6/19/2026	7/31/2029	1/31/2033					
Source	AERMOD Source	Year	Start Date	End Date	0<2	2<16	2<16	Exposure Duration	Calendar Days	Workdays	Tier 4F	Tier 4F
Overall site emissions - Exhaust	PAREA1	2024	8/1/2024	12/31/2024	152	0	152	152	152	109	0.000	0.000
	PAREA1	2025	1/1/2025	12/31/2025	364	0	364	364	364	261	0.001	0.000
	PAREA1	2026	1/1/2026	3/31/2026	89	0	89	89	89	64	0.000	0.000
	PAREA1	2027	12/1/2027	12/31/2027	0	30	30	30	30	23	0.000	0.000
	PAREA1	2028	1/1/2028	12/31/2028	0	365	365	365	365	260	0.000	0.000
	PAREA1	2029	1/1/2029	12/31/2029	0	364	364	364	364	261	0.000	0.000
	PAREA1	2030	1/1/2030	12/31/2030	0	364	364	364	364	261	0.000	0.000
	PAREA1	2031	1/1/2031	1/31/2031	0	30	30	30	30	23	0.000	0.000
Parking Structure - Exhaust	PAREA3	2025	1/1/2025	12/31/2025	364	0	364	364	364	261	0.002	0.000
	PAREA3	2026	1/1/2026	1/31/2026	30	0	30	30	30	22	0.000	0.000
NHB - Exhaust	PAREA5	2026	4/1/2026	12/31/2026	80	194	274	274	274	197	0.006	0.001
	PAREA5	2027	1/1/2027	12/31/2027	0	364	364	364	364	261	0.008	0.001
	PAREA5	2028	1/1/2028	12/31/2028	0	365	365	365	365	260	0.008	0.001
	PAREA5	2029	1/1/2029	12/31/2029	0	364	364	364	364	261	0.008	0.001
	PAREA5	2030	1/1/2030	1/31/2030	0	30	30	30	30	23	0.001	0.001
Existing Hospital Renovation - Exhaust	PAREA7	2030	8/1/2030	12/31/2030	0	152	152	152	152	109	0.000	0.000
	PAREA7	2031	1/1/2031	12/31/2031	0	364	364	364	364	261	0.000	0.000
	PAREA7	2032	1/1/2032	12/31/2032	0	365	365	365	365	262	0.000	0.000
	PAREA7	2033	1/1/2033	1/31/2033	0	30	30	30	30	21	0.000	0.000
Construction Truck Trips - Exhaust & Fugitive Dust	SLINE1	2024	8/1/2024	12/31/2024	152	0	152	152	152	109	0.00011	0.000
	SLINE1	2025	1/1/2025	12/31/2025	364	0	364	364	364	261	0.00034	0.000
	SLINE1	2026	1/1/2026	12/31/2026	170	194	364	364	364	261	0.00015	0.000
	SLINE1	2027	1/1/2027	12/31/2027	0	364	364	364	364	261	0.00011	0.000
	SLINE1	2028	1/1/2028	12/31/2028	0	365	365	365	365	260	0.00013	0.000
	SLINE1	2029	1/1/2029	12/31/2029	0	364	364	364	364	261	0.00013	0.000
	SLINE1	2030	1/1/2030	12/31/2030	0	364	364	364	364	261	0.00004	0.000
	SLINE1	2031	1/1/2031	12/31/2031	0	364	364	364	364	261	0.00003	0.000
	SLINE1	2032	1/1/2032	12/31/2032	0	365	365	365	365	262	0.00003	0.000
	SLINE1	2033	1/1/2033	1/31/2033	0	30	30	30	30	21	0.00000	0.000

Cancer Risk Factors

			Daycare		School		
	Abbreviation	UOM	0<2	2<16	2<16		
Daily Breathing Rate (8 hour)	DBR	L/kg-day	1200	520	520	95th percentile for both age groups	La Vonda Crayo 6 weeks to 5 years
Modeling Adjustment Factor	MAF	unitless	4.2	4.2	4.2	Worst case assumed	Mechita Daycar 6 weeks to 5 years
Exposure Frequency	EF	days/year	0.96	0.96	0.68		
Age Sensitivity Factor	ASF	unitless	10	3	3		
Inhalation Absorption Factor	A	unitless	1	1	1		
Conversion Factor	CF_1	m^3/L	0.001	0.001	0.001		
Conversion Factor	CF_2	$\mu g/m^3$	0.001	0.001	0.001		
Cancer Potency Factor (diesel exhaust)	CPF	mg/kg-day^{-1}	1.1	1.1	1.1		
Averaging Time (for residential exposure)	AT	years	70.00	70.00	70.00		

SOURCE: Office of Environmental Health Hazard Assessment, 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments* . February 2015

Daily breathing rate for residential receptor is based on the OEHHA 95th percentile moderate intensity breathing rates (OEHHA Table 5.7).

Fraction of time at home is set to values per OEHHA Table 8.4 for residential since the nearest school has an unmitigated cancer risk of <1 per million.

Inhalation cancer potency factor from OEHHA Table 7.1

Hazard Index

Chronic Inhalation	REL	$\mu g/m^3$	5

Intake Factor for Inhalation, IF (m^3/kg-day) = DBR*FAH*EF*ED*ASF*A*CF/AT

	Daycare		School
AERMOD Source	0<2	2<16	2<16
PAREA1	0.288	0.000	0.027
PAREA1	0.689	0.000	0.064
PAREA1	0.168	0.000	0.016
PAREA1	0.000	0.007	0.005
PAREA1	0.000	0.090	0.064
PAREA1	0.000	0.090	0.064
PAREA1	0.000	0.090	0.064
PAREA1	0.000	0.007	0.005
PAREA3	0.689	0.000	0.064
PAREA3	0.057	0.000	0.005
PAREA5	0.151	0.048	0.048
PAREA5	0.000	0.090	0.064
PAREA5	0.000	0.090	0.064
PAREA5	0.000	0.090	0.064
PAREA5	0.000	0.007	0.005
PAREA7	0.000	0.037	0.027
PAREA7	0.000	0.090	0.064
PAREA7	0.000	0.090	0.064
PAREA7	0.000	0.007	0.005
SLINE1	0.288	0.000	0.027
SLINE1	0.689	0.000	0.064
SLINE1	0.321	0.048	0.064
SLINE1	0.000	0.090	0.064
SLINE1	0.000	0.090	0.064
SLINE1	0.000	0.090	0.064
SLINE1	0.000	0.090	0.064
SLINE1	0.000	0.090	0.064
SLINE1	0.000	0.090	0.064
SLINE1	0.000	0.007	0.005

Risk Calculation Part 1, R1 = IF*CPF*CF

Daycare		School
0<2	2<16	2<16
3.16E-04	0.00E+00	2.94E-05
7.57E-04	0.00E+00	7.03E-05
1.85E-04	0.00E+00	1.72E-05
0.00E+00	8.12E-06	5.80E-06
0.00E+00	9.88E-05	7.05E-05
0.00E+00	9.86E-05	7.03E-05
0.00E+00	9.86E-05	7.03E-05
0.00E+00	8.12E-06	5.80E-06
7.57E-04	0.00E+00	7.03E-05
6.24E-05	0.00E+00	5.80E-06
1.66E-04	5.26E-05	5.29E-05
0.00E+00	9.86E-05	7.03E-05
0.00E+00	9.88E-05	7.05E-05
0.00E+00	9.86E-05	7.03E-05
0.00E+00	8.12E-06	5.80E-06
0.00E+00	4.12E-05	2.94E-05
0.00E+00	9.86E-05	7.03E-05
0.00E+00	9.88E-05	7.05E-05
0.00E+00	8.12E-06	5.80E-06
3.16E-04	0.00E+00	2.94E-05
7.57E-04	0.00E+00	7.03E-05
3.53E-04	5.26E-05	7.03E-05
0.00E+00	9.86E-05	7.03E-05
0.00E+00	9.88E-05	7.05E-05
0.00E+00	9.86E-05	7.03E-05
0.00E+00	9.86E-05	7.03E-05
0.00E+00	9.86E-05	7.03E-05
0.00E+00	9.88E-05	7.05E-05
0.00E+00	8.12E-06	5.80E-06

MEIR	Cancer Risk	UTM X	UTM Y
La Vonda Crayon Box	2.27	564791.3	4187822.5
Mechita Daycare	0.67	564231.3	4187962.5

HI	UTM X	UTM Y
0.0006	564791.3	4187822.5
0.0002	564231.3	4187962.5

Benioff Childrens Hospital NHB Project
Construction Health Risk Calculations - School & Daycare Mitigated
Annual Average $PM_{2.5}$ Concentration Calculations

							Total $PM_{2.5}$ Emisions (tons)	Total $PM_{2.5}$ Emission Rate (g/s)
Source	AERMOD Source	Year	Start Date	End Date	Calendar Days	Workdays	Tier 4F	Tier 4F
Overall site emissions - Exhaust	PAREA1	2024	8/1/2024	12/31/2024	152	109	0.00	0.000
	PAREA1	2025	1/1/2025	12/31/2025	364	261	0.00	0.000
	PAREA1	2026	1/1/2026	3/31/2026	89	64	0.00	0.000
	PAREA1	2027	12/1/2027	12/31/2027	30	23	0.00	0.000
	PAREA1	2028	1/1/2028	12/31/2028	365	260	0.00	0.000
	PAREA1	2029	1/1/2029	12/31/2029	364	261	0.00	0.000
	PAREA1	2030	1/1/2030	12/31/2030	364	261	0.00	0.000
	PAREA1	2031	1/1/2031	1/31/2031	30	23	0.00	0.000
Overall site emissions - Fugitive Dust	PAREA2	2024	8/1/2024	12/31/2024	152	109	0.00	0.001
	PAREA2	2025	1/1/2025	12/31/2025	364	261	0.01	0.001
	PAREA2	2026	1/1/2026	3/31/2026	89	64	0.00	0.001
	PAREA2	2027	12/1/2027	12/31/2027	30	23	0.00	0.000
	PAREA2	2028	1/1/2028	12/31/2028	365	260	0.00	0.000
	PAREA2	2029	1/1/2029	12/31/2029	364	261	0.00	0.000
	PAREA2	2030	1/1/2030	12/31/2030	364	261	0.00	0.000
	PAREA2	2031	1/1/2031	1/31/2031	30	23	0.00	0.000
Parking Structure - Exhaust	PAREA3	2025	1/1/2025	12/31/2025	364	261	0.00	0.000
	PAREA3	2026	1/1/2026	1/31/2026	30	22	0.00	0.000
Parking Structure - Fugitive Dust	PAREA4	2025	1/1/2025	12/31/2025	364	261	0.00	0.000
	PAREA4	2026	1/1/2026	1/31/2026	30	22	0.00	0.000
NHB - Exhaust	PAREA5	2026	4/1/2026	12/31/2026	274	197	0.01	0.001
	PAREA5	2027	1/1/2027	12/31/2027	364	261	0.01	0.001
	PAREA5	2028	1/1/2028	12/31/2028	365	260	0.01	0.001
	PAREA5	2029	1/1/2029	12/31/2029	364	261	0.01	0.001
	PAREA5	2030	1/1/2030	1/31/2030	30	23	0.00	0.001
NHB - Fugitive Dust	PAREA6	2026	4/1/2026	12/31/2026	274	197	0.00	0.000
	PAREA6	2027	1/1/2027	12/31/2027	364	261	0.00	0.000
	PAREA6	2028	1/1/2028	12/31/2028	365	260	0.00	0.000
	PAREA6	2029	1/1/2029	12/31/2029	364	261	0.00	0.000
	PAREA6	2030	1/1/2030	1/31/2030	30	23	0.00	0.000
Existing Hospital Renovation - Exhaust	PAREA7	2030	8/1/2030	12/31/2030	152	109	0.00	0.000
	PAREA7	2031	1/1/2031	12/31/2031	364	261	0.00	0.000
	PAREA7	2032	1/1/2032	12/31/2032	365	262	0.00	0.000
	PAREA7	2033	1/1/2033	1/31/2033	30	21	0.00	0.000
Construction Truck Trips - Exhaust & Fugitive Dust	SLINE1	2024	8/1/2024	12/31/2024	152	109	0.00	0.000
	SLINE1	2025	1/1/2025	12/31/2025	364	261	0.00	0.000
	SLINE1	2026	1/1/2026	12/31/2026	364	261	0.00	0.000
	SLINE1	2027	1/1/2027	12/31/2027	364	261	0.00	0.000
	SLINE1	2028	1/1/2028	12/31/2028	365	260	0.00	0.000
	SLINE1	2029	1/1/2029	12/31/2029	364	261	0.00	0.000
	SLINE1	2030	1/1/2030	12/31/2030	364	261	0.00	0.000
	SLINE1	2031	1/1/2031	12/31/2031	364	261	0.00	0.000
	SLINE1	2032	1/1/2032	12/31/2032	365	262	0.00	0.000
	SLINE1	2033	1/1/2033	1/31/2033	30	21	0.00	0.000

MEIR	$PM_{2.5}$ Conc.	UTM X	UTM Y
Mechita Daycare	0.006	564791.3	4187822.5
LaVonda Crayon Box Daycare	0.002	564231.3	4187962.5

Benioff Childrens Hospital NHB Project
Operational Health Risk Assessment

Benioff Childrens Hospital NHB Project
Operational Emissions Summary

On-site Truck Idling Emissions

EMFAC Vehicle Class	Trip/year	hour/year	Fleet % Diesel	DPM EF (g/hr)	$PM_{2.5}$ EF (g/hr)	DPM (tons/yr)	$PM_{2.5}$ (tons/yr)
HHDT	254	42.3	100%	0.0108	0.0104	0.0000005	0.0000004
					Total	0.0000005	0.0000004

On-site TRU Idling Emissions

EMFAC Vehicle Class	Trip/year	hour/year	Fleet % Diesel	DPM EF (g/hr)	$PM_{2.5}$ EF (g/hr)	DPM (tons/yr)	$PM_{2.5}$ (tons/yr)
HHDT	1	12.7	100%	0.3447	0.3172	0.0000044	0.0000040
					Total	0.0000044	0.0000040

Emergency Generator Testing Emissions

Equipment Name	Engine Size (hp)	Load Factor (unitless)	Emission Factors (g/hp-hr)							Emissions (lb/yr)				Emissions (tons/yr)			
			ROG	NO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O	ROG	NO_X	PM_{10}	$PM_{2.5}$	ROG	NO_X	PM_{10}	$PM_{2.5}$
Standy Generator 1	3356	0.74	**0.14**	**0.5**	**0.02**	**0.02**	521.64	0.021	0.004	91.9	328.2	13.1	13.1	0.0	0.2	0.01	0.01
Standy Generator 2 & 3	5364	0.74	**0.14**	**0.5**	**0.02**	**0.02**	521.64	0.021	0.004	183.8	656.3	26.3	26.3	0.1	0.3	0.01	0.01
									Totals	275.7	984.5	39.4	39.4	0.1	0.5	0.0	0.0

NOTE: To account for the third potential emergency generator, the size of the second generator was doubled.

Benioff Childrens Hospital NHB Project

Operational Health Risk Assessment - Residential Unmitigated

Incremental Lifetime Cancer Risk, Hazard Index and Annual $PM_{2.5}$ Concentration Calculations

Operation Source	AERMOD Source	Start Date	End Date	Days: 3rd Trimester	Days: Age 0<2	Days: Age 2<16	Days: Age 16<30
Emergency Generator 1	STCK1	Annual		91	730	5110	5110
Emergency Generator 2	STCK2	Annual		91	730	5110	5110
Truck Idling at Loading Dock	PAREA8	Annual		91	730	5110	5110
TRU Idling at Loading Dock	VOL1	Annual		91	730	5110	5110

			DPM (tons)	$PM_{2.5}$ (tons)	DPM (g/s)	$PM_{2.5}$ (g/s)
AERMOD Source	Start Date	End Date	Annual O&M	Annual O&M	Annual O&M	Annual O&M
STCK1	Annual		6.56E-03	6.56E-03	1.89E-04	1.89E-04
STCK2	Annual		1.31E-02	1.31E-02	3.78E-04	3.78E-04
PAREA8	Annual		4.58E-07	4.38E-07	1.32E-08	1.26E-08
VOL1	Annual		4.37E-06	4.03E-06	1.26E-07	1.16E-07

Risk Factors

	Abbreviation	UOM	3rd Trimester	0<2	2<16	16<30	
Daily Breathing Rate (95th %'ile)	DBR	L/kg-day	361	1090	572	261	95th percentile DBR for age groups < 2, 80th percentile for >2
Fraction Of Time At Home	FAH	unitless	1	1	1	0.73	operational risk less greater 1 for school and daycare
Exposure Frequency	EF	days/year	0.96	0.96	0.96	0.96	
Age Sensitivity Factor	ASF	unitless	10	10	3	1	
Inhalation Absorption Factor	A	unitless	1	1	1	1	
Conversion Factor	CF_1	m^3/L	0.001	0.001	0.001	0.001	
Conversion Factor	CF_2	$\mu g/m^3$	0.001	0.001	0.001	0.001	
Cancer Potency Factor (diesel exhaust)	CPF	$mg/kg\text{-}day^{-1}$	1.1	1.1	1.1	1.1	
Averaging Time (for residential exposure)	AT	years	70	70	70	70	

Intake Factor for Inhalation, IF (m^3/kg-day) = DBR*FAH*EF*ED*ASF*A*CF/AT

Operational Source	Year	3rd Trimester	0<2	2<16	16<30
All sources	Annual	0.012	0.299	0.329	0.037

Risk Calculation Part 1, R1 = IF*CPF*CF

Year	3rd Trimester	0<2	2<16	16<30
Annual	1.36E-05	3.28E-04	3.62E-04	4.02E-05

Hazard Index

Chronic Inhalation	REL	$\mu g/m^3$	5

Residence

	Max Risk	UTM X	UTM Y
Cancer	5.05	564671	4187862.47
HI	0.001	564671	4187862.47
$PM_{2.5}$	0.01	564671	4187862.47

Benioff Childrens Hospital NHB Project

Operational Health Risk Assessment with Exposure Starting after Construction Ends - At Residential MEIR for Construction

Incremental Lifetime Cancer Risk, Hazard Index and Annual $PM_{2.5}$ Concentration Calculations

Operation Source	AERMOD Source	Start Date	End Date	Days: 3rd Trimester	Days: Age 0<2	Days: Age 2<16	Days: Age 16<30
Emergency Generator 1	STCK1	Annual		0	0	2826	5110
Emergency Generator 2	STCK2	Annual		0	0	4800	5110
Truck Idling at Loading Dock	PAREA8	Annual		0	0	4800	5110
TRU Idling at Loading Dock	VOL1	Annual		0	0	4800	5110

AERMOD Source	Start Date	End Date	DPM (tons) Annual O&M	$PM_{2.5}$ (tons) Annual O&M	DPM (g/s) Annual O&M	$PM_{2.5}$ (g/s) Annual O&M
STCK1	Annual		6.56E-03	6.56E-03	1.89E-04	1.89E-04
STCK2	Annual		1.31E-02	1.31E-02	3.78E-04	3.78E-04
PAREA8	Annual		4.58E-07	4.38E-07	1.32E-08	1.26E-08
VOL1	Annual		4.37E-06	4.03E-06	1.26E-07	1.16E-07

Risk Factors

	Abbreviation	UOM	3rd Trimester	0<2	2<16	16<30	
Daily Breathing Rate (95th %'ile)	DBR	L/kg-day	361	1090	572	261	95th percentile DBR for age groups < 2, 80th percentile for >2
Fraction Of Time At Home	FAH	unitless	1	1	1	0.73	operational risk less greater 1 for school and daycare
Exposure Frequency	EF	days/year	0.96	0.96	0.96	0.96	
Age Sensitivity Factor	ASF	unitless	10	10	3	1	
Inhalation Absorption Factor	A	unitless	1	1	1	1	
Conversion Factor	CF_1	m^3/L	0.001	0.001	0.001	0.001	
Conversion Factor	CF_2	$\mu g/m^3$	0.001	0.001	0.001	0.001	
Cancer Potency Factor (diesel exhaust)	CPF	$mg/kg\text{-}day^{-1}$	1.1	1.1	1.1	1.1	
Averaging Time (for residential exposure)	AT	years	70	70	70	70	

Intake Factor for Inhalation, IF (m^3/kg-day) = DBR*FAH*EF*ED*ASF*A*CF/AT

Operational Source	Year	3rd Trimester	0<2	2<16	16<30
All sources	Annual	0.000	0.000	0.182	0.037

Risk Calculation Part 1, R1 = IF*CPF*CF

Year	3rd Trimester	0<2	2<16	16<30
Annual	0.00E+00	0.00E+00	2.00E-04	4.02E-05

Hazard Index

Chronic Inhalation	REL	$\mu g/m^3$	5

Residence

	Max Risk	UTM X	UTM Y
Cancer	1.63	564671	4187862.47
HI	0.001	564671	4187862.47
$PM_{2.5}$	0.01	564671	4187862.47

At Construction MEIR

Risk	UTM X	UTM Y
1.63	564671	4187862
0.0014	564671	4187862
0.0068	564671	4187862

Benioff Childrens Hospital NHB Project
Operational Health Risk Assessment - Workers Unmitigated
Incremental Lifetime Cancer Risk, Hazard Index and Annual $PM_{2.5}$ Concentration Calculations

Operation Source	AERMOD Source	Start Date	End Date	Days Age 16<70
Emergency Generator 1	STCK1	Annual		9125
Emergency Generator 2	STCK2	Annual		9125
Truck Idling at Loading Dock	PAREA8	Annual		9125
TRU Idling at Loading Dock	VOL1	Annual		9125

AERMOD Source	Start Date	End Date	DPM (tons) Annual O&M	$PM_{2.5}$ (tons) Annual O&M	DPM (g/s) Annual O&M	$PM_{2.5}$ (g/s) Annual O&M
STCK1	Annual		6.56E-03	6.56E-03	1.89E-04	1.89E-04
STCK2	Annual		1.31E-02	1.31E-02	3.78E-04	3.78E-04
PAREA8	Annual		4.58E-07	4.38E-07	1.32E-08	1.26E-08
VOL1	Annual		4.37E-06	4.03E-06	1.26E-07	1.16E-07

Risk Factors

	Abbreviation	UOM	16<70	
8HR Breathing Rate (95th percentile)	8HR-BR	L/kg-day	230	
Worker Adjustment Factor	WAF	unitless	4.20	Worst case
Exposure Frequency	EF	days/year	0.68	
Age Sensitivity Factor	ASF	unitless	1	
Inhalation Absorption Factor	A	unitless	1	
Conversion Factor	CF_1	m^3/L	0.001	
Conversion Factor	CF_2	$\mu g/m^3$	0.001	
Cancer Potency Factor (diesel exhaust)	CPF	$mg/kg\text{-}day^{-1}$	1.1	
Averaging Time (for residential exposure)	AT	years	70	

Table 8.5 Summary of Recommendations for Exposure Duration for Individual Cancer Risk at the MEIR and MEIW

Receptor	*Recommendation*
Resident (MEIR)	30 years
Resident (supplemental Information)	9 years for central tendency; 70 years for maximum (lifetime)
Worker (MEIW)	25 years

Intake Factor for Inhalation, IF (m^3/kg-day) = DBR*WAF*EF*ED*ASF*A*CF/AT

Operational Source	Year	16<70
All sources	Annual	0.236

Risk Calculation Part 1, R1 = IF*CPF*CF

Year	16<70
Annual	2.60E-04

Hazard Index

Chronic Inhalation	REL	$\mu g/m^3$	5

Worker

	Max Risk	UTM X	UTM Y
Cancer	1.11	564751.25	4187782.47
HI	0.001	564751.25	4187782.47
$PM_{2.5}$	0.004	564751.25	4187782.47

Benioff Childrens Hospital NHB Project

Operational Health Risk Assessment - Workers Unmitigated

Incremental Lifetime Cancer Risk, Hazard Index and Annual $PM_{2.5}$ Concentration Calculations

Operation Source	AERMOD Source	Start Date	End Date	Days Age 16<70
Emergency Generator 1	STCK1	Annual		6023
Emergency Generator 2	STCK2	Annual		6023
Truck Idling at Loading Dock	PAREA8	Annual		6023
TRU Idling at Loading Dock	VOL1	Annual		6023

AERMOD Source	Start Date	End Date	DPM (tons) Annual O&M	$PM_{2.5}$ (tons) Annual O&M	DPM (g/s) Annual O&M	$PM_{2.5}$ (g/s) Annual O&M
STCK1	Annual		6.56E-03	6.56E-03	1.89E-04	1.89E-04
STCK2	Annual		1.31E-02	1.31E-02	3.78E-04	3.78E-04
PAREA8	Annual		4.58E-07	4.38E-07	1.32E-08	1.26E-08
VOL1	Annual		4.37E-06	4.03E-06	1.26E-07	1.16E-07

Risk Factors

	Abbreviation	UOM	16<70	
8HR Breathing Rate (95th percentile)	8HR-BR	L/kg-day	230	
Worker Adjustment Factor	WAF	unitless	4.20	Worst case
Exposure Frequency	EF	days/year	0.68	
Age Sensitivity Factor	ASF	unitless	1	
Inhalation Absorption Factor	A	unitless	1	
Conversion Factor	CF_1	m^3/L	0.001	
Conversion Factor	CF_2	$\mu g/m^3$	0.001	
Cancer Potency Factor (diesel exhaust)	CPF	$mg/kg\text{-}day^{-1}$	1.1	
Averaging Time (for residential exposure)	AT	years	70	

Table 8.5 Summary of Recommendations for Exposure Duration for Individual Cancer Risk at the MEIR and MEIW

Receptor	*Recommendation*
Resident (MEIR)	30 years
Resident (supplemental Information)	9 years for central tendency; 70 years for maximum (lifetime)
Worker (MEIW)	25 years

Intake Factor for Inhalation, IF (m^3/kg-day) = DBR*WAF*EF*ED*ASF*A*CF/AT

Operational Source	Year	16<70
All sources	Annual	0.156

Risk Calculation Part 1, R1 = IF*CPF*CF

Year	16<70
Annual	1.72E-04

Hazard Index

Chronic Inhalation	REL	$\mu g/m^3$	5

Worker

	Max Risk	UTM X	UTM Y
Cancer	0.74	564751.25	4187782.47
HI	0.001	564751.25	4187782.47
$PM_{2.5}$	0.004	564751.25	4187782.47

At Construction MEIR

	Risk	UTM X	UTM Y
Cancer	0.0003	564471	4188042
HI	0.0007	564471	4188042
$PM_{2.5}$	0.0000	564471	4188042

Benioff Childrens Hospital NHB Project
Operational Health Risk Assessment - School & Daycare Unmitigated
Incremental Lifetime Cancer Risk, Hazard Index and Annual $PM_{2.5}$ Concentration Calculations

				Days			DPM		$PM_{2.5}$	
							Emisions (tons)	Emission Rate (g/s)	Emisions (tons)	Emission Rate (g/s)
Operation Source	AERMOD Source	Start Date	End Date	0<2	2<16	2<16	Uncontrolled	Uncontrolled	Uncontrolled	Uncontrolled
Emergency Generator 1	STCK1	Annual		688	1095	2555	0.01	0.0002	0.01	0.0002
Emergency Generator 2	STCK2	Annual		688	1095	2555	0.01	0.0004	0.01	0.0004
Truck Idling at Loading Dock	PAREA8	Annual		688	1095	2555	0.0000	0.0000	0.000	0.0000
TRU Idling at Loading Dock	VOL1	Annual		688	1095	2555	0.0000	0.0000	0.000	0.0000

Cancer Risk Factors

			Daycare		School	
	Abbreviation	UOM	0<2	2<16	2<16	
Daily Breathing Rate (8 hour)	DBR	L/kg-day	1200	520	520	
Modeling Adjustment Factor	MAF	unitless	4.2	4.2	4.2	Worst case
Exposure Frequency	EF	days/year	0.96	0.96	0.68	
Age Sensitivity Factor	ASF	unitless	10	3	3	
Inhalation Absorption Factor	A	unitless	1	1	1	
Conversion Factor	CF_1	m^3/L	0.001	0.001	0.001	
Conversion Factor	CF_2	$\mu g/m^3$	0.001	0.001	0.001	
Cancer Potency Factor (diesel exhaust)	CPF	$mg/kg\text{-}day^{-1}$	1.1	1.1	1.1	
Averaging Time (for residential exposure)	AT	years	70.00	70.00	70.00	

SOURCE: Office of Environmental Health Hazard Assessment, 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments* . February 2015
Daily breathing rate for residential receptor is based on the OEHHA 95th percentile moderate intensity breathing rates (OEHHA Table 5.7).
Fraction of time at home is set to values per OEHHA Table 8.4 for residential since the nearest school has an unmitigated cancer risk of <1 per million.
Inhalation cancer potency factor from OEHHA Table 7.1

Hazard Index

Chronic Inhalation	REL	$\mu g/m^3$	5

Intake Factor for Inhalation, IF (m^3/kg-day) = DBR*MAF*EF*ED*ASF*A*CF/AT

Operational Source	Year	0<2	2<16	2<16
All sources	Annual	1.301	0.270	0.449

Risk Calculation Part 1, R1 = IF*CPF*CF

Year	0<2	2<16	2<16
Annual	0.0014	0.0003	0.0005

Hazard Index

Chronic Inhalation	REL	$\mu g/m^3$	5

MEIR	Cancer Risk	UTM X	UTM Y
Mechita Daycare	6.90	564791.3	4187822.5
LaVonda Crayon Box Daycare	1.03	564231.3	4187962.5

HI	UTM X	UTM Y
0.0008	564791.3	4187822.5
0.0001	564231.3	4187962.5

$PM_{2.5}$ Conc.	UTM X	UTM Y
0.004	564791.3	4187822.5
0.001	564231.3	4187962.5

Benioff Childrens Hospital NHB Project
Cumulative Health Risks at Residential MEIR for Construction

BAAQMD Permitted Stationary Sources[1]										
Facility Name	**Address**	**Source Details**	**Health Risk at Source**			**Distance to Residential**	**Adjusted Health Risk at Residential MEIR**		
			Cancer Risk	**Chronic Hazard Index**	**$PM_{2.5}$**	**MEIR (feet)**	**Cancer Risk**	**Chronic Hazard Index**	**$PM_{2.5}$**
Children's Hospital Oakland	747 52nd Street	General Medical and Surgical Hospitals	393.7	0.258	2.68	750	83.6	0.055	0.6
City of Oakland Envr Scvs Division	463 51st Street	Other General Government Support	6.3	0.005	0.01	1000	0.3	0.0002	0.0004
ARCO Facility #06148	5131 Shattuck Ave	Gasoline Stations with Convenience Stores	10.7	0.046	0.00	570	0.4	0.002	0.0000
Background Risks from Mobile Sources[2]									
Onroad							92.4	0.29	2.1
Rail							0.00	0	0.00000
Project[3] **- Unmtigated**							8.11	0.004	0.04
Construction + Operation									
TOTAL							184.9	0.35	2.68
BAAQMD Cumulative Thresholds							100	10	0.8

NOTES:
1. Stationary source health risk data from BAAQMD's Stationary Source Screening Map at https://baaqmd.maps.arcgis.com/apps/webappviewer/index.html?id=845658c19eae4594b9f4b805fb9d89a3.
2. Mobile source risks from data downloaded from BAAQMD's Mobile Source Screening Map at https://mtc.maps.arcgis.com/apps/instant/sidebar/index.html?appid=c5f9b1a40326409a89076bdc0d95e429.
3. From project HRA.

UTM		Onroad Cancer Risk	Onroad Hazard Index	Onroad PM2.5	Rail Cancer Risk	Rail Hazard Index	Rail PM2.5
564671	4187862	92.420998	0.285195	2.072738	NA –outside range	NA –outside range	NA –outside range

Source: Data downloaded from BAAQMD's Mobile Source Screening Map at https://mtc.maps.arcgis.com/apps/instant/sidebar/index.html?appid=c5f9b1a40326409a89076bdc0d95e429

BAAQMD Permitted Stationary Sources[1]									
Facility Name	**Address**	**Source Details**	**Health Risk at Source**			**Distance to Residential**	**Adjusted Health Risk at Residential MEIR**		
			Cancer Risk	**Chronic Hazard Index**	**$PM_{2.5}$**	**MEIR (feet)**	**Cancer Risk**	**Chronic Hazard Index**	**$PM_{2.5}$**
Children's Hospital Oakland	747 52nd Street	General Medical and Surgical Hospitals	393.7	0.258	2.68	750	83.6	0.055	0.6
City of Oakland Envr Scvs Division	463 51st Street	Other General Government Support	6.3	0.005	0.01	1000	0.3	0.0002	0.0004
ARCO Facility #06148	5131 Shattuck Ave	Gasoline Stations with Convenience Stores	10.7	0.046	0.00	570	0.4	0.002	0.0000
Background Risks from Mobile Sources[2]									
Onroad							92.4	0.29	2.1
Rail							0.00	0	0.00000
Project[3] **- Mitigated**							3.42	0.003	0.02
Construction + Operation									
TOTAL							180.2	0.35	2.67
BAAQMD Cumulative Thresholds							100	10	0.8

Appendix NOI-R
Noise and Vibration Appendix

Noise Monitoring - Peralta Site

Stationary Source Noise Modeling - Revised NHB Project

Technical Memorandum - Peralta Community College District Temporary Helistop Noise Modeling Approach, Input Assumptions, and Results

Technical Memorandum - Helistop Noise and Air Quality Modeling Approach, Input Assumptions, and Results for Revised NHB Project

Technical Memorandum - Helistop Noise and Air Quality Modeling Approach, Input Assumptions, and Results for Revised NHB Project Variant

Noise Monitoring - Peralta Site

Summary

File Name on Meter	831_Data.116.s
File Name on PC	831_0002783-20240426 104854-831_Data.116.ldbin
Serial Number	0002783
Model	Model 831
Firmware Version	2.403
User	Nick Reynoso
Location	ST-1: Embarcadero Way, in front of Embarcadero West
Job Description	UCSF BCH Oakland
Note	

Measurement

Description	
Start	2024-04-26 10:48:54
Stop	2024-04-26 11:03:55
Duration	00:15:00.8
Run Time	00:15:00.8
Pause	00:00:00.0
Pre-Calibration	2024-04-26 10:45:01
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	Z Weighting
Detector	Slow
Preamplifier	PRM831
Microphone Correction	Off
Integration Method	Linear
OBA Range	Low
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	Z Weighting
OBA Max Spectrum	Bin Max
Gain	0.0 dB
Overload	143.3 dB

	A	C	Z	
Under Range Peak	75.7	72.7	**77.7**	dB
Under Range Limit	**26.1**	26.4	31.7	dB
Noise Floor	17.0	17.2	22.4	dB

	First	Second	Third
Instrument Identification			

Results

LAeq	62.4	
LAE	91.9	
EA	172.087 µPa²h	
LZpeak (max)	2024-04-26 11:00:10	99.9 dB
LASmax	2024-04-26 10:58:37	75.5 dB
LASmin	2024-04-26 11:00:53	54.1 dB
SEA	-99.9 dB	

	Exceedance Counts	Duration
LAS > 65.0 dB	30	163.1 s
LAS > 85.0 dB	0	0.0 s
LZpeak > 135.0 dB	0	0.0 s
LZpeak > 137.0 dB	0	0.0 s
LZpeak > 140.0 dB	0	0.0 s

Community Noise	Ldn	LDay 07:00-22:00	LNight 22:00-07:00	Lden	LDay 07:00-19:00	LEvening 19:00-22:00	LNight 22:00-07:00	
	62.4	62.4	-99.9	62.4	62.4	-99.9	-99.9	dB

LCeq	71.2 dB
LAeq	62.4 dB
LCeq - LAeq	8.8 dB
LAIeq	63.6 dB
LAeq	62.4 dB
LAIeq - LAeq	1.3 dB

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
Leq	62.4		71.2		77.2	
LS(max)	75.5	2024/04/26 10:58:37	86.3	2024/04/26 10:55:37	88.6	2024/04/26 11:02:33
LF(max)	76.6	2024/04/26 10:58:36	89.3	2024/04/26 10:55:37	93.9	2024/04/26 11:02:33
LI(max)	77.0	2024/04/26 10:58:36	90.1	2024/04/26 10:55:37	96.7	2024/04/26 11:00:10
LS(min)	54.1	2024/04/26 11:00:53	63.8	2024/04/26 11:00:51	68.7	2024/04/26 11:00:46
LF(min)	53.6	2024/04/26 11:00:53	62.2	2024/04/26 11:00:51	66.3	2024/04/26 11:00:45
LI(min)	53.9	2024/04/26 11:00:53	64.7	2024/04/26 11:00:44	69.1	2024/04/26 11:00:46
LPeak(max)	88.9	2024/04/26 10:58:35	95.2	2024/04/26 10:58:36	99.9	2024/04/26 11:00:10

Overload Count	0
Overload Duration	0.0 s
OBA Overload Count	0
OBA Overload Duration	0.0 s

Summary	
File Name on Meter	831_Data.118.s
File Name on PC	831_0002783-20240426 115440-831_Data.118.ldbin
Serial Number	0002783
Model	Model 831
Firmware Version	2.403
User	Nick Reynoso
Location	ST-2: Corner of 5th Avenue and E 9th Street
Job Description	UCSF BCH Oakland
Note	

Measurement	
Description	
Start	2024-04-26 11:54:40
Stop	2024-04-26 12:09:41
Duration	00:15:00.5
Run Time	00:15:00.5
Pause	00:00:00.0
Pre-Calibration	2024-04-26 10:45:01
Post-Calibration	None
Calibration Deviation	---

Overall Settings				
RMS Weight	A Weighting			
Peak Weight	Z Weighting			
Detector	Slow			
Preamplifier	PRM831			
Microphone Correction	Off			
Integration Method	Linear			
OBA Range	Low			
OBA Bandwidth	1/1 and 1/3			
OBA Frequency Weighting	Z Weighting			
OBA Max Spectrum	Bin Max			
Gain	0.0			dB
Overload	143.3			dB
	A	**C**	**Z**	
Under Range Peak	75.7	72.7	**77.7**	dB
Under Range Limit	**26.1**	26.4	31.7	dB
Noise Floor	17.0	17.2	22.4	dB
	First	**Second**	**Third**	
Instrument Identification				

Results			
L_{Aeq}	69.7		
LAE	99.2		
EA	926.376 µPa²h		
$LZ_{peak\ (max)}$	2024-04-26 11:59:00	104.2	dB
LAS_{max}	2024-04-26 11:56:00	86.4	dB
LAS_{min}	2024-04-26 12:09:25	63.2	dB
SEA	-99.9 dB		

	Exceedance Counts	**Duration**
LAS > 65.0 dB	1	900.4 s
LAS > 85.0 dB	2	4.2 s
LZ_{peak} > 135.0 dB	0	0.0 s
LZ_{peak} > 137.0 dB	0	0.0 s
LZ_{peak} > 140.0 dB	0	0.0 s

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**	
	69.7	69.7	-99.9	69.7	69.7	-99.9	-99.9	dB

L_{Ceq}	77.4	dB
L_{Aeq}	69.7	dB
L_{Ceq} - L_{Aeq}	7.7	dB
L_{AIeq}	71.2	dB
L_{Aeq}	69.7	dB
L_{AIeq} - L_{Aeq}	1.6	dB

	A		**C**		**Z**	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
L_{eq}	69.7		77.4		82.4	
$L_{S(max)}$	86.4	2024/04/26 11:56:00	93.3	2024/04/26 11:59:39	94.4	2024/04/26 11:59:00
$L_{F(max)}$	89.4	2024/04/26 11:57:20	96.0	2024/04/26 11:59:38	99.5	2024/04/26 11:59:00
$L_{I(max)}$	90.5	2024/04/26 11:57:20	96.7	2024/04/26 11:59:38	101.5	2024/04/26 11:59:00
$L_{S(min)}$	63.2	2024/04/26 12:09:25	70.7	2024/04/26 12:09:13	74.2	2024/04/26 12:00:39
$L_{F(min)}$	62.2	2024/04/26 12:08:44	68.3	2024/04/26 12:09:11	72.0	2024/04/26 12:08:49
$L_{I(min)}$	62.9	2024/04/26 12:08:44	71.2	2024/04/26 12:09:12	74.9	2024/04/26 12:00:39
$L_{Peak(max)}$	101.2	2024/04/26 11:57:20	104.0	2024/04/26 11:56:02	104.2	2024/04/26 11:59:00

Overload Count	0
Overload Duration	0.0 s
OBA Overload Count	0
OBA Overload Duration	0.0 s

Summary

File Name on Meter	831_Data.117.s
File Name on PC	831_0002783-20240426 110809-831_Data.117.ldbin
Serial Number	0002783
Model	Model 831
Firmware Version	2.403
User	Nick Reynoso
Location	ST-3 (Helistop): Entrance to 11 4th Street Parking
Job Description	UCSF BCH Oakland
Note	

Measurement

Description	
Start	2024-04-26 11:08:09
Stop	2024-04-26 11:23:10
Duration	00:15:00.9
Run Time	00:15:00.9
Pause	00:00:00.0
Pre-Calibration	2024-04-26 10:45:01
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	Z Weighting
Detector	Slow
Preamplifier	PRM831
Microphone Correction	Off
Integration Method	Linear
OBA Range	Low
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	Z Weighting
OBA Max Spectrum	Bin Max
Gain	0.0 dB
Overload	143.3 dB

	A	**C**	**Z**	
Under Range Peak	75.7	72.7	**77.7**	dB
Under Range Limit	**26.1**	26.4	31.7	dB
Noise Floor	17.0	17.2	22.4	dB

	First	**Second**	**Third**
Instrument Identification			

Results

LAeq	70.6		
LAE	100.1		
EA	1.139 mPa²h		
LZpeak (max)	2024-04-26 11:15:04	106.7	dB
LASmax	2024-04-26 11:17:14	80.6	dB
LASmin	2024-04-26 11:09:58	66.4	dB
SEA	-99.9 dB		

	Exceedance Counts	**Duration**
LAS > 65.0 dB	1	900.8 s
LAS > 85.0 dB	0	0.0 s
LZpeak > 135.0 dB	0	0.0 s
LZpeak > 137.0 dB	0	0.0 s
LZpeak > 140.0 dB	0	0.0 s

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**	
	70.6	70.6	-99.9	70.6	70.6	-99.9	-99.9	dB

LCeq	80.5 dB
LAeq	70.6 dB
LCeq - LAeq	10.0 dB
LAIeq	71.5 dB
LAeq	70.6 dB
LAIeq - LAeq	0.9 dB

	A		**C**		**Z**	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
Leq	70.6		80.5		84.9	
LS(max)	80.6	2024/04/26 11:17:14	89.4	2024/04/26 11:17:14	93.5	2024/04/26 11:15:04
LF(max)	82.6	2024/04/26 11:17:14	91.3	2024/04/26 11:15:04	98.4	2024/04/26 11:15:04
LI(max)	83.4	2024/04/26 11:17:14	94.5	2024/04/26 11:15:04	101.4	2024/04/26 11:15:04
LS(min)	66.4	2024/04/26 11:09:58	74.8	2024/04/26 11:09:43	77.8	2024/04/26 11:11:25
LF(min)	65.3	2024/04/26 11:09:41	73.4	2024/04/26 11:09:41	75.7	2024/04/26 11:09:41
LI(min)	66.0	2024/04/26 11:09:41	75.6	2024/04/26 11:09:43	78.4	2024/04/26 11:10:57
LPeak(max)	94.3	2024/04/26 11:17:14	100.6	2024/04/26 11:15:04	106.7	2024/04/26 11:15:04

Overload Count	0
Overload Duration	0.0 s
OBA Overload Count	0
OBA Overload Duration	0.0 s

Summary

File Name on Meter	831_Data.115.s
File Name on PC	831_0002783-20240424 100000-831_Data.115.ldbin
Serial Number	0002783
Model	Model 831
Firmware Version	2.403
User	Nick Reynoso
Location	LT-1: Across Civic Center Lodge on Fallon Street
Job Description	UCSF BCH Oakland
Note	

Measurement

Description	
Start	2024-04-24 10:00:00
Stop	2024-04-26 10:00:00
Duration	48:00:00.0
Run Time	48:00:00.0
Pause	00:00:00.0
Pre-Calibration	2024-04-24 09:06:45
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	Z Weighting
Detector	Slow
Preamplifier	PRM831
Microphone Correction	Off
Integration Method	Linear
OBA Range	Low
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	Z Weighting
OBA Max Spectrum	Bin Max
Gain	0.0 dB
Overload	143.3 dB

	A	C	Z	
Under Range Peak	75.8	72.8	**77.8**	dB
Under Range Limit	**26.1**	26.4	31.8	dB
Noise Floor	17.0	17.2	22.4	dB

	First	Second	Third
Instrument Identification			

Results

LAeq	68.5		
LAE	120.9		
EA	137.067 mPa²h		
LZpeak (max)	2024-04-25 06:28:34	115.4	dB
LASmax	2024-04-25 06:28:35	93.1	dB
LASmin	2024-04-26 02:03:51	55.2	dB
SEA	-99.9 dB		

	Exceedance Counts	Duration
LAS > 65.0 dB	678	161794.4 s
LAS > 85.0 dB	2	7.2 s
LZpeak > 135.0 dB	0	0.0 s
LZpeak > 137.0 dB	0	0.0 s
LZpeak > 140.0 dB	0	0.0 s

Community Noise	Ldn	LDay 07:00-22:00	LNight 22:00-07:00	Lden	LDay 07:00-19:00	LEvening 19:00-22:00	LNight 22:00-07:00	
	74.3	68.9	67.7	74.6	68.9	69.1	67.7	dB

LCeq	77.4 dB
LAeq	68.5 dB
LCeq - LAeq	8.8 dB
LAIeq	69.3 dB
LAeq	68.5 dB
LAIeq - LAeq	0.7 dB

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
Leq	68.5		77.4		81.7	
LS(max)	93.1	2024/04/25 6:28:35	100.1	2024/04/25 6:28:35	102.7	2024/04/25 14:37:34
LF(max)	97.3	2024/04/25 6:28:35	102.8	2024/04/25 6:28:35	108.4	2024/04/25 14:34:00
LI(max)	98.6	2024/04/25 6:28:35	103.7	2024/04/25 6:28:35	111.7	2024/04/25 14:34:00
LS(min)	55.2	2024/04/26 2:03:51	62.7	2024/04/26 2:03:51	65.3	2024/04/25 1:23:08
LF(min)	54.7	2024/04/26 2:03:50	60.7	2024/04/26 2:03:44	63.3	2024/04/26 2:17:51
LI(min)	55.3	2024/04/26 2:03:50	62.8	2024/04/26 2:03:47	65.7	2024/04/25 1:23:08
LPeak(max)	111.5	2024/04/25 6:28:34	114.6	2024/04/25 6:28:34	115.4	2024/04/25 6:28:34

Overload Count	0
Overload Duration	0.0 s
OBA Overload Count	10
OBA Overload Duration	21.6 s

Calculated Ldn from Long-Term Noise Monitoring Data

Meter 0002783 - UCSF BCH Oakland
4/25/2024
Thursday

	TIME	dBA	Numbers...	10 dBA More Numbers...	5 dBA
Midnight	0 / 24	65.4	3488799	34887994	11032552
am 1:00	100	64.2	2648927	26489271	8376643
2:00	200	64.5	2850231	28502306	9013221
3:00	300	66.0	4006157	40061573	12668582
4:00	400	68.1	6515774	65157738	20604686
5:00	500	69.9	9664914	96649141	30563142
6:00	600	71.5	13996421	139964211	44260570
7:00	700	70.7	11702456	117024555	37006414
8:00	800	70.0	10109042	101090420	31967598
9:00	900	68.5	7036246	70362458	22250563
10:00	1000	70.1	10176068	101760680	32179552
11:00	1100	69.4	8663712	86637119	27397062
12:00	1200	68.8	7594602	75946017	24016239
pm 1:00	1300	66.8	4838525	48385251	15300760
2:00	1400	68.1	6511619	65116193	20591548
3:00	1500	68.1	6478016	64780158	20485285
4:00	1600	68.6	7226982	72269824	22853725
5:00	1700	68.8	7655596	76555959	24209120
6:00	1800	69.1	8119962	81199621	25677575
7:00	1900	69.8	9576901	95769010	30284820
8:00	2000	69.7	9390203	93902034	29694430
9:00	2100	68.9	7703463	77034630	24360489
10:00	2200	68.3	6803212	68032119	21513645
pm 11:00	2300	66.7	4698660	46986598	14858467

Leq Nighttime 10:00 p.m.-7:00 a.m. (not penalized)
68 dBA

Leq Daytime 7:00 am-10:00 p.m.
70 dBA

Leq 24-Hour
69 dBA

Ldn: 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
74 dBA

CNEL: 5 dBA penalty for noise between 7:00p.m. and 10:00 p.m., and 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
75 dBA

CNEL - Ld 0.3588414

Summary

File Name on Meter	LxT_Data.172.s
File Name on PC	LxT_0004435-20240424 100000-LxT_Data.172.ldbin
Serial Number	0004435
Model	SoundTrack LxT®
Firmware Version	2.404
User	Nick Reynoso
Location	LT-2: Across Sierra At Jack London Square on Oak Street
Job Description	UCSF BCH Oakland
Note	

Measurement

Description	
Start	2024-04-24 10:00:00
Stop	2024-04-26 10:00:00
Duration	48:00:00.0
Run Time	48:00:00.0
Pause	00:00:00.0
Pre-Calibration	2024-04-24 09:44:51
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting			
Peak Weight	Z Weighting			
Detector	Slow			
Preamplifier	PRMLxT2B			
Microphone Correction	Off			
Integration Method	Exponential			
Overload	143.6 dB			
	A	**C**	**Z**	
Under Range Peak	99.8	96.8	**101.8**	dB
Under Range Limit	**38.2**	37.7	44.5	dB
Noise Floor	29.0	28.6	35.4	dB
	First	**Second**	**Third**	
Instrument Identification				

Results

LASeq	68.2	
LASE	120.6	
EAS	126.739 mPa²h	
EAS8	21.123 mPa²h	
EAS40	105.616 mPa²h	
LZpeak (max)	2024-04-24 15:40:45	125.7 dB
LASmax	2024-04-25 15:36:30	107.3 dB
LASmin	2024-04-26 02:03:49	48.7 dB
SEA	141.3 dB	

	Exceedance Counts	**Duration**
LAS > 85.0 dB	68	228.8 s
LAS > 115.0 dB	0	0.0 s
LZpeak > 135.0 dB	0	0.0 s
LZpeak > 137.0 dB	0	0.0 s
LZpeak > 140.0 dB	0	0.0 s

LCSeq	75.7 dB
LASeq	68.2 dB
LCSeq - LASeq	7.5 dB
LAIeq	72.3 dB
LAeq	68.2 dB
LAIeq - LAeq	4.1 dB

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
Leq	68.2					
Ls(max)	107.3	2024/04/25 15:36:30				
Ls(min)	48.7	2024/04/26 2:03:49				
LPeak(max)					125.7	2024/04/24 15:40:45

Overload Count	0
Overload Duration	0.0 s

Calculated Ldn from Long-Term Noise Monitoring Data

Meter 0004435 - UCSF BCH Oakland
4/25/2024
Thursday

	TIME	dBA	Numbers...	10 dBA More Numbers...	5 dBA
Midnight	0 / 24	66.0	3955888	39558881	12509617
am 1:00	100	61.2	1315261	13152612	4159221
2:00	200	62.3	1700529	17005288	5377544
3:00	300	63.7	2352486	23524857	7439213
4:00	400	64.2	2619365	26193649	8283159
5:00	500	67.6	5709920	57099197	18056351
6:00	600	67.9	6218477	62184765	19664549
7:00	700	68.8	7667486	76674861	24246720
8:00	800	69.8	9443870	94438700	29864139
9:00	900	71.0	12606398	126063976	39864929
10:00	1000	69.9	9837755	98377549	31109713
11:00	1100	69.8	9497537	94975371	30033849
12:00	1200	69.3	8443490	84434901	26700660
pm 1:00	1300	69.7	9345209	93452086	29552144
2:00	1400	68.1	6382708	63827083	20183896
3:00	1500	76.0	40128045	401280448	########
4:00	1600	69.2	8239427	82394268	26055355
5:00	1700	67.3	5397765	53977653	17069233
6:00	1800	67.7	5900285	59002851	18658340
7:00	1900	66.7	4711834	47118342	14900128
8:00	2000	67.5	5603353	56033532	17719359
9:00	2100	70.8	12044312	120443121	38087459
10:00	2200	65.0	3150830	31508302	9963800
pm 11:00	2300	64.1	2568503	25685025	8122318

Leq Nighttime 10:00 p.m.-7:00 a.m. (not penalized)
65 dBA

Leq Daytime 7:00 am-10:00 p.m.
71 dBA

Leq 24-Hour
69 dBA

Ldn: 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
73 dBA

CNEL: 5 dBA penalty for noise between 7:00p.m. and 10:00 p.m., and 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
73 dBA

CNEL - Ld 0.4421119

Summary

File Name on Meter	LxT_Data.131.s
File Name on PC	LxT_0004337-20240424 110000-LxT_Data.131.ldbin
Serial Number	0004337
Model	SoundTrack LxT®
Firmware Version	2.404
User	Nick Reynoso
Location	LT-3: 845 Embarcadero
Job Description	UCSF BCH Oakland
Note	

Measurement

Description	
Start	2024-04-24 11:00:00
Stop	2024-04-26 11:00:00
Duration	48:00:00.0
Run Time	48:00:00.0
Pause	00:00:00.0
Pre-Calibration	2024-04-24 10:10:38
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting				
Peak Weight	Z Weighting				
Detector	Slow				
Preamplifier	PRMLxT2B				
Microphone Correction	Off				
Integration Method	Linear				
Overload	143.2	dB			
	A		**C**	**Z**	
Under Range Peak	99.5		96.5	**101.5**	dB
Under Range Limit	**37.8**		37.4	44.2	dB
Noise Floor	28.7		28.3	35.0	dB
	First		**Second**	**Third**	
Instrument Identification					

Results

LAeq	72.0			
LAE	124.4			
EA	304.173	mPa²h		
EA8	50.696	mPa²h		
EA40	253.478	mPa²h		
LZpeak (max)	2024-04-24 17:48:29		123.5	dB
LASmax	2024-04-24 17:48:28		101.9	dB
LASmin	2024-04-25 02:10:30		56.8	dB
SEA	141.9	dB		

	Exceedance Counts	**Duration**	
LAS > 85.0 dB	125	385.9	s
LAS > 115.0 dB	0	0.0	s
LZpeak > 135.0 dB	0	0.0	s
LZpeak > 137.0 dB	0	0.0	s
LZpeak > 140.0 dB	0	0.0	s

LCeq	80.2	dB
LAeq	72.0	dB
LCeq - LAeq	8.2	dB
LAIeq	73.3	dB
LAeq	72.0	dB
LAIeq - LAeq	1.3	dB

	A		**C**		**Z**	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
Leq	72.0		80.2			
Ls(max)	101.9	2024/04/24 17:48:28				
Ls(min)	56.8	2024/04/25 2:10:30				
LPeak(max)					123.5	2024/04/24 17:48:29

Overload Count	0	
Overload Duration	0.0	s

Calculated Ldn from Long-Term Noise Monitoring Data

Meter 0004337 - UCSF BCH Oakland
4/25/2024
Thursday

	TIME	dBA	Numbers...	10 dBA More Numbers...	5 dBA
Midnight	0 / 24	67.8	5969748	59697480	18878001
am 1:00	100	67.3	5334774	53347737	16870036
2:00	200	67.5	5678034	56780341	17955521
3:00	300	68.5	7158269	71582688	22636433
4:00	400	71.5	14167395	141673949	44801236
5:00	500	73.5	22346422	223464222	70665592
6:00	600	74.1	25470414	254704138	80544520
7:00	700	74.2	26384751	263847510	83435909
8:00	800	73.0	20079089	200790888	63495654
9:00	900	71.9	15436612	154366124	48814855
10:00	1000	71.2	13217490	132174903	41797374
11:00	1100	72.5	17799631	177996310	56287376
12:00	1200	74.1	25595110	255951100	80938844
pm 1:00	1300	73.4	21861200	218612001	69131185
2:00	1400	72.6	18138443	181384428	57358792
3:00	1500	70.5	11211765	112117654	35454715
4:00	1600	70.6	11414424	114144240	36095578
5:00	1700	72.2	16511594	165115940	52214245
6:00	1800	71.0	12614789	126147893	39891466
7:00	1900	72.0	15781526	157815262	49905568
8:00	2000	73.3	21216757	212167569	67093276
9:00	2100	73.4	21927494	219274940	69340824
10:00	2200	72.9	19339044	193390439	61155427
pm 11:00	2300	70.0	9974451	99744510	31541983

Leq Nighttime 10:00 p.m.-7:00 a.m. (not penalized)
71 dBA

Leq Daytime 7:00 am-10:00 p.m.
74 dBA

Leq 24-Hour
72 dBA

Ldn: 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
78 dBA

CNEL: 5 dBA penalty for noise between 7:00p.m. and 10:00 p.m., and 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
78 dBA

CNEL - Ld 0.3722831

Stationary Source Noise Modeling - Revised NHB Project

Calculation of A-Weighted Sound Pressure Levels **Podium Exhaust Fans**

From Mecanical Plans sound power level = 80 dB

Conversion of Sound power level to Sould Pressure level

$$Lp = Lw - \left|10log\left({}^{Q}/_{4\pi r^2}\right)\right|$$

Q = 2
r = 1 meter

-7.98236

		Sound pressure level (unweighted)	Distance feet)	# of units	Resultant SPL(dB)	dBA
Sound Power Level =	80	88	3.28 feet	8	97	88

Distance to Receiver Property Line (ft) = Residential 249

Combined A-weighted SPL @ receptor = Residential 50

With 5 dBA rooftop reduction = Residential 45

Engineering Noise Control

Cooling Tower Hospital

ENC 11.5 page565

kW = 14.914 (based on 20HP converted to kW)

		Lw
Propeller-type cooling towers:		
A	Fan power up to 75 kW: Lw = 100 + 8LOG(kW)	109.3888
B	Fan power greater than 75 kW: Lw = 96 + 10LOG(kW)	107.7359
	(subtract 8 dB if the fan is operated at half its rated speed.)	
Centrifugal type cooling towers:		
C	Fan power up to 60 kW: Lw = 85 + 11LOG(kW)	97.90954
D	Fan power greater than 60 kW: Lw = 93 + 7LOG(kW)	101.2152

Cooling Tower Definition

Manufacturer	Marley	Fan Motor Speed	1800 rpm
Product	NC OSHPD	Required Fan Motor Output per cell *	29.32 BHp
Model	NC8409SAE4	Required Fan Motor Output total *	117.28 BHp
Cells	4	Fan Motor Capacity per cell	30.00 Hp
CTI Certified	Yes	Fan Motor Output per cell	30.00 BHp
Fan	12 ft, 5 Blades, Low Sound	Fan Motor Output total	120.00 BHp
Fan Speed	273 rpm, 10292 fpm	Air Flow per cell	172000 cfm
Fans per cell	1	Air Flow total	688000 cfm
Fill Type	MX75	Static Lift	12 ft
		Distribution Head Loss	0 ft
		ASHRAE 90.1 Performance	79.8 gpm/Hp
Model Group	Standard Low Sound (A)		

* Required Fan Motor Output assumes VFD operation

	31.5	63	125	250	500	1000	2000	4000	8000	Awt	
Propeller-type cooling towers:	8	5	5	8	11	15	18	21	29		Table 11.7
Centrifugal type cooling towers:	6	6	8	10	11	13	12	18	25		Table 11.7
A	101.4	104.4	104.4	101.4	98.4	94.4	91.4	88.4	80.4	100.6	
B	99.7	102.7	102.7	99.7	96.7	92.7	89.7	86.7	78.7	98.9	
C	91.9	91.9	89.9	87.9	86.9	84.9	85.9	79.9	72.9	91.2	
D	95.2	95.2	93.2	91.2	90.2	88.2	89.2	83.2	76.2	94.5	

Table 11.8 Approximate corrections (dB) to average sound pressure level for directinal effects of cooling towers (directivity effects at distances greater than 6 meter from the tower.)

	31.5	63	125	250	500	1000	2000	4000	8000
Centrifugal fan blow through type									
Front	3	3	2	3	4	3	3	4	4
Side	0	0	0	-2	-3	-4	-5	-5	-5
Rear	0	0	-1	-2	-3	-4	-5	-6	-6
Top	-3	-3	-2	0	1	2	3	4	5
Axial flow, blow through type									
Front	2	2	4	6	6	5	5	5	5
Side	1	1	1	-2	-5	-5	-5	-5	-4
Rear	-3	-3	-4	-7	-7	-7	-8	-11	-3
Top	-5	-5	-5	-5	-2	0	0	2	4
Induced draft, propeller type									
Front	0	0	0	1	2	2	2	3	3
Side	-2	-2	-2	-3	-4	-4	-5	-6	-6
Top	3	3	3	3	2	2	2	1	1
Underflow forced draft propeller type									
Any side	-1	-1	-1	-2	-2	-3	-3	-4	-4
Top	2	2	2	3	3	4	4	5	5

										A-weighted Sound Power Level
per CELL	101.7	104.7	104.7	102.7	99.7	96.7	93.7	91.7	83.7	102.5

Sound Power Level to Sound Pressure Level

$$Lp = Lw - \left|10\log\left(Q/_{4\pi r^2}\right)\right|$$

frequency	31.5	63	125	250	500	1000	2000	4000	8000	Overall	Hz		
swl	101.7	104.7	104.7	102.7	99.7	96.7	93.7	91.7	83.7	110	dB		
spl	93.8	96.8	96.8	94.8	91.8	88.8	85.8	83.8	75.8	102	dB	@	3.28 feet (8.0)
a weighting	-39.4	-26.2	-16.1	-8.6	-3.2	0.0	1.2	1.0	-1.1		dB		
spl	54.4	70.6	80.7	86.2	88.6	88.8	87.0	84.8	74.7	95	dBA		

Q=1	Near center of room
Q=2	At center of floor
Q=4	Center of edge between floor and wall
Q=8	Corner between two walls and floor
Q=	2

# of Cooling Tower	Total dBA		distance (ft)	dBA at receiver
1	95	@ 3.28 ft	350	54

With 5 dBA rooftop reduction = Residential 49

Calculation of A-Weighted Sound Pressure Levels **Podium AHUs**

$$Lp = Lw - \left|10log\left({}^{Q}/_{4\pi r^2}\right)\right|$$

From mechanical Plans sound power level = 83 dB

Conversion of Sound power level to Sould Pressure level

Q = 2
r = 1 meter

-7.98236

		Sound pressure level (unweighted)	Distance feet)	# of units	Resultant SPL(dB)	dBA
Sound Power Level =	83	91	3.28 feet	6	99	90

Distance to Receiver (ft) =	Residential	249
Combined A-weighted SPL @ receptor =	Residential	52
With 5 dBA rooftop reduction =	Residential	47

Calculation of A-Weighted Sound Pressure Levels **Chiller in Basement**

From mechanical Plans sound power level = 68 dB

Conversion of Sound power level to Sould Pressure level

$$Lp = Lw - \left|10log\left(Q/_{4\pi r^2}\right)\right|$$

Q = 2
r = 1 meter

-7.98236

		Sound pressure level (unweighted)	Distance feet)	# of units	Resultant SPL(dB)	dBA
Sound Power Level =	68	76	3.28 feet	2	79	70

Distance to Receiver (ft) = Residential 367

Combined A-weighted SPL @ receptor = Residential 29

With 20 dBA interior to exterior structur reduction Residential 9

Calculation of A-Weighted Sound Pressure Levels ASHP

From mechanical Plans sound power level = 93 dB

Conversion of Sound power level to Sould Pressure level

$$Lp = Lw - \left|10log\left(Q/_{4\pi r^2}\right)\right|$$

Q = 2
r = 1 meter

-7.98236

		Sound pressure level (unweighted)	Distance feet)	# of units	Resultant SPL(dB)	dBA
Sound Power Level =	93	101	3.28 feet	3	106	97

Distance to Receiver (ft) =
350 Residential

Combined A-weighted SPL @ receptor =
56 at residential receptor property line

With 5 dBA enclosure reduction =
Residential 51

Calculation of A-Weighted Sound Pressure Levels **CUP Generators**

From mechanical Plans for Kaiser Hospital (2,500 KW) 75 dB

Conversion of Sound power level to Sould Pressure level

$$Lp = Lw - \left|10log\left(\frac{Q}{4\pi r^2}\right)\right|$$

Q = 2
r = 1 meter

-7.98236

		Sound pressure level (unweighted)	Distance feet)	# of units	Resultant SPL(dB)	dBA
Sound Power Level =	75	83	3.28 feet	3	88	79

Distance to Receiver (ft) = 350 Residential

Combined A-weighted SPL @ receptor = 38 dBA at residential receptor property line

Noise Source	Exhaust	AHU	ASHP	Generator	Cooling tower	Hospita
Noise Level	45	47	51	38	49	
Remove LOG	34727.63	51968.05	131513.1	6591.2689	78724.77	

Adding Noise Sources	57.3

Engineering Noise Control

Cooling Tower Hospital

ENC 11.5 page565

kW = 14.914 (based on 20HP converted to kW)

Cooling Tower Definition

Manufacturer	Marley	Fan Motor Speed	1800 rpm
Product	NC OSHPD	Required Fan Motor Output per cell *	29.32 BHp
Model	NC8409SAE4	Required Fan Motor Output total *	117.28 BHp
Cells	4	Fan Motor Capacity per cell	30.00 Hp
CTI Certified	Yes	Fan Motor Output per cell	30.00 BHp
Fan	12 ft, 5 Blades, Low Sound	Fan Motor Output total	120.00 BHp
Fan Speed	273 rpm, 10292 fpm	Air Flow per cell	172000 cfm
Fans per cell	1	Air Flow total	688000 cfm
Fill Type	MX75	Static Lift	12 ft
		Distribution Head Loss	0 ft
		ASHRAE 90.1 Performance	79.8 gpm/Hp
Model Group	Standard Low Sound (A)		

* Required Fan Motor Output assumes VFD operation

		Lw
Propeller-type cooling towers:		
A	Fan power up to 75 kW: Lw = 100 + 8LOG(kW)	109.3888
B	Fan power greater than 75 kW: Lw = 96 + 10LOG(kW)	107.7359
	(subtract 8 dB if the fan is operated at half its rated speed.)	
Centrifugal type cooling towers:		
C	Fan power up to 60 kW: Lw = 85 + 11LOG(kW)	97.90954
D	Fan power greater than 60 kW: Lw = 93 + 7LOG(kW)	101.2152

	31.5	63	125	250	500	1000	2000	4000	8000	Awt	
Propeller-type cooling towers:	8	5	5	8	11	15	18	21	29		Table 11.7
Centrifugal type cooling towers:	6	6	8	10	11	13	12	18	25		Table 11.7
A	101.4	104.4	104.4	101.4	98.4	94.4	91.4	88.4	80.4	100.6	
B	99.7	102.7	102.7	99.7	96.7	92.7	89.7	86.7	78.7	98.9	
C	91.9	91.9	89.9	87.9	86.9	84.9	85.9	79.9	72.9	91.2	
D	95.2	95.2	93.2	91.2	90.2	88.2	89.2	83.2	76.2	94.5	

Table 11.8 Approximate corrections (dB) to average sound pressure level for directinal effects of cooling towers (directivity effects at distances greater than 6 meter from the tower.)

	31.5	63	125	250	500	1000	2000	4000	8000
Centrifugal fan blow through type									
Front	3	3	2	3	4	3	3	4	4
Side	0	0	0	-2	-3	-4	-5	-5	-5
Rear	0	0	-1	-2	-3	-4	-5	-6	-6
Top	-3	-3	-2	0	1	2	3	4	5
Axial flow, blow through type									
Front	2	2	4	6	6	5	5	5	5
Side	1	1	1	-2	-5	-5	-5	-5	-4
Rear	-3	-3	-4	-7	-7	-7	-8	-11	-3
Top	-5	-5	-5	-5	-2	0	0	2	4
Induced draft, propeller type									
Front	0	0	0	1	2	2	2	3	3
Side	-2	-2	-2	-3	-4	-4	-5	-6	-6
Top	3	3	3	3	2	2	2	1	1
Underflow forced draft propeller type									
Any side	-1	-1	-1	-2	-2	-3	-3	-4	-4
Top	2	2	2	3	3	4	4	5	5

										A-weighted Sound Power Level
per CELL	101.7	104.7	104.7	102.7	99.7	96.7	93.7	91.7	83.7	102.5

Sound Power Level to Sound Pressure Level

$$Lp = Lw - \left|10log\left(Q/_{4\pi r^2}\right)\right|$$

frequency	31.5	63	125	250	500	1000	2000	4000	8000	Overall	Hz				
swl	101.7	104.7	104.7	102.7	99.7	96.7	93.7	91.7	83.7	110	dB				
spl	93.8	96.8	96.8	94.8	91.8	88.8	85.8	83.8	75.8	102	dB	@	3.28 8.0	feet	Q= 2
a weighting	-39.4	-26.2	-16.1	-8.6	-3.2	0.0	1.2	1.0	-1.1		dB				
spl	54.4	70.6	80.7	86.2	88.6	88.8	87.0	84.8	74.7	95	dBA				

Q=1 Near center of room

Q=2 At center of floor

Q=4 Center of edge between floor and wall

Q=8 Corner between two walls and floor

# of Cooling Tower	Total dBA		distance (ft)	dBA at receiver
1	95	@ 3.28 ft	350	54

With 5 dBA rooftop reduction = Residential 49

Engineering Noise Control
Cooling tower in maintainence Yard
ENC 11.5 page565

kW = 14.914 (based on 20HP converted to kW)

Cooling Tower Definition

Manufacturer	Marley	Fan Motor Speed	1800 rpm
Product	NC OSHPD	Required Fan Motor Output per cell *	29.32 BHp
Model	NC8409SAE4	Required Fan Motor Output total *	117.28 BHp
Cells	4	Fan Motor Capacity per cell	30.00 Hp
CTI Certified	Yes	Fan Motor Output per cell	30.00 BHp
Fan	12 ft, 5 Blades, Low Sound	Fan Motor Output total	120.00 BHp
Fan Speed	273 rpm, 10292 fpm	Air Flow per cell	172000 cfm
Fans per cell	1	Air Flow total	688000 cfm
Fill Type	MX75	Static Lift	12 ft
		Distribution Head Loss	0 ft
		ASHRAE 90.1 Performance	79.8 gpm/Hp
Model Group	Standard Low Sound (A)		

* Required Fan Motor Output assumes VFD operation

		Lw
Propeller-type cooling towers:		
A	Fan power up to 75 kW: Lw = 100 + 8LOG(kW)	109.3888
B	Fan power greater than 75 kW: Lw = 96 + 10LOG(kW)	107.7359
	(subtract 8 dB if the fan is operated at half its rated speed.)	
Centrifugal type cooling towers:		
C	Fan power up to 60 kW: Lw = 85 + 11LOG(kW)	97.90954
D	Fan power greater than 60 kW: Lw = 93 + 7LOG(kW)	101.2152

	31.5	63	125	250	500	1000	2000	4000	8000	Awt	
Propeller-type cooling towers:	8	5	5	8	11	15	18	21	29		Table 11.7
Centrifugal type cooling towers:	6	6	8	10	11	13	12	18	25		Table 11.7
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B	99.7	102.7	102.7	99.7	96.7	92.7	89.7	86.7	78.7	98.9	
C	91.9	91.9	89.9	87.9	86.9	84.9	85.9	79.9	72.9	91.2	
D	95.2	95.2	93.2	91.2	90.2	88.2	89.2	83.2	76.2	94.5	

Table 11.8 Approximate corrections (dB) to average sound pressure level for directinal effects of cooling towers
(directivity effects at distances greater than 6 meter from the tower.)

	31.5	63	125	250	500	1000	2000	4000	8000
Centrifugal fan blow through type									
Front	3	3	2	3	4	3	3	4	4
Side	0	0	0	-2	-3	-4	-5	-5	-5
Rear	0	0	-1	-2	-3	-4	-5	-6	-6
Top	-3	-3	-2	0	1	2	3	4	5
Axial flow, blow through type									
Front	2	2	4	6	6	5	5	5	5
Side	1	1	1	-2	-5	-5	-5	-5	-4
Rear	-3	-3	-4	-7	-7	-7	-8	-11	-3
Top	-5	-5	-5	-5	-2	0	0	2	4
Induced draft, propeller type									
Front	0	0	0	1	2	2	2	3	3
Side	-2	-2	-2	-3	-4	-4	-5	-6	-6
Top	3	3	3	3	2	2	2	1	1
Underflow forced draft propeller type									
Any side	-1	-1	-1	-2	-2	-3	-3	-4	-4
Top	2	2	2	3	3	4	4	5	5

										A-weighted Sound Power Level
per CELL	101.7	104.7	104.7	102.7	99.7	96.7	93.7	91.7	83.7	102.5

Sound Power Level to Sound Pressure Level $Lp = Lw - \left|10log\left(Q/_{4\pi r^2}\right)\right|$

frequency	31.5	63	125	250	500	1000	2000	4000	8000	Overall	Hz
swl	101.7	104.7	104.7	102.7	99.7	96.7	93.7	91.7	83.7	110	dB
spl	93.8	96.8	96.8	94.8	91.8	88.8	85.8	83.8	75.8	102	dB
a weighting	-39.4	-26.2	-16.1	-8.6	-3.2	0.0	1.2	1.0	-1.1		dB
spl	54.4	70.6	80.7	86.2	88.6	88.8	87.0	84.8	74.7	95	dBA

@ 3.28 feet Q= 2
8.0

Q=1	Near center of room
Q=2	At center of floor
Q=4	Center of edge between floor and wall
Q=8	Corner between two walls and floor

# of Cooling Tower	Total dBA		distance (ft)	dBA at receiver
3	99	@ 3.28 ft	350	59

With 5 dBA enclosure reduction Residential 54

ESA

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Suite 1100
Los Angeles, CA. 90017
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esassoc.com

Technical Memorandum

Date	May 17, 2024
To	Paul Mitchell, ESA
From	Chris Nottoli, ESA Dominic Scarano, ESA Justin Cook, ESA
Subject	**UCSF BCH Oakland NHB Project Environmental Impact Report** **Peralta Community College District Temporary Helistop Noise Modeling Approach, Input Assumptions, and Results**

1. Background

UCSF proposes the potential installation and use of a temporary helistop on a former parking lot owned by the Peralta Community College District (Peralta site) for the duration of the construction of a new helistop at the UCSF BCH Oakland campus site as part of the UCSF New Hospital Building (NHB) Project . UCSF BCH Oakland requested a noise analysis of the operation of this temporary helistop at the Peralta site.

UCSF's aviation consultant, Heliplanners, conducted a preliminary assessment of potential flightpath alignments that could be used by helicopters to arrive at and depart from the Peralta site, taking into account area topography, and the presence of surrounding on- and off-site buildings, structures, and other objects. The installation and use of a temporary helistop at the Peralta site would be subject to further design and analysis by the aviation consultant to determine the most suitable location for the helistop within the site; the type of helistop structure (e.g., freestanding structure, elevated on berm, etc.), the appropriate height of the helistop structure, required safety lighting features, and selection of flight paths alignments that would demonstrate that the approach/departure and transitional surfaces would provide adequate clearance from on- and off-site obstructions in the site vicinity. The temporary helistop would also be subject to applicable permitting approvals prior to operation. Nevertheless, adequate information is available at this time to conduct a conservative planning level analysis of potential noise impacts from the operation of this temporary helistop for CEQA purposes.

The scope of work includes development of noise contours, speech interference, and sleep disturbance analysis. The previous Helistop Noise Assessment conducted in support of the Children's Hospital and Research Center Oakland (CHRCO) Campus Master Plan (CMP) Project Final EIR, completed by Brown-Buntin Associates, Inc. in July 2014 (hereinafter, "the BBA Report"), was used as the basis for certain noise modeling inputs that would also be representative for use at the Peralta site.[1] This technical memorandum discusses the noise modeling approach, input assumptions, and results of the analysis for the Peralta site. Please see Appendix A in this technical memorandum for additional information on aircraft noise and aircraft noise terminology.

[1] "Helistop Replacement Project Children's Hospital and Research Center Oakland," Brown-Buntin Associates, Inc., August 2014.

The following sections address the Federal Aviation Administration (FAA)'s Aviation Environmental Design Tool (AEDT)[2], Version 3e, inputs developed under the following categories:

- Helistop layout physical descriptions
- Aircraft operations
- Aircraft noise and performance characteristics
- Flight track geometry and use
- Meteorological conditions
- Terrain
- Discussion of Results

2. Helistop Layout Physical Descriptions

The Peralta site is located 4,500 feet southeast of downtown Oakland in Alameda County, California, adjacent to the Nimitz Freeway (I-880). The 1.51-acre triangular-shaped temporary helistop site is located at 11 4th Street, on land owned by Peralta Community College District. The site consists primarily of a former surface parking lot. A paved bike/walking path follows along the west and south edges of the parking lot, and is separated from the parking lot by a chain link fence.

The site is surrounded on the north by I-880, on the south by the Oakland Fire Department Training Center, and on the west by an industrial building. Lake Merritt Channel, which connects Lake Merritt with the Oakland Estuary, is located to the east of the site. Chain link fencing surrounds the perimeter of the site. The existing Amtrak/freight rail corridor runs approximately 350 feet to the south of the Peralta site.

While detailed design information is not yet available for the temporary helistop at the Peralta site, it is conservatively assumed for this noise assessment that a helistop structure would have a landing at 5-feet above ground level (agl), or 13 feet above mean sea level (MSL). **Table** 1 provides the helistop layout data for the proposed temporary helistop.

Table 1. Proposed Temporary Helistop Data
Source: Heliplanners, 2024.

Latitude	Longitude	Elevation (Feet Mean Sea Level [MSL])
37.792380	-122.263342	13

3. Aircraft Operations

Title 14 of the Code of Federal Regulations (CFR) Part 150 (14 CFR Part 150) and its table of noise/land use compatibility guidelines require the calculation of Day Night Average Sound Level (DNL), or Community Noise Equivalent Level (CNEL) for aircraft noise analyses in California. That is, the total noise exposure (in CNEL) averaged over a year – typically a calendar year. The AEDT produces these values of exposure utilizing an "average annual day" of aircraft operations.

The UCSF BCH Oakland NHB Project would necessitate use of a temporary helistop site for over 5 years (January 2026 to May 2031). The UCSF BCH Oakland NHB Project variant, which would include a new helistop on the

[2] https://aedt.faa.gov/

proposed parking garage at the BCH Oakland campus site, would necessitate use of the temporary helistop site at Peralta site for 1.5 years (January 2026 to June 2027). To provide a conservative assessment of Project impacts, the Project scenario described above is assessed in this noise analysis, and as such, conditions were analyzed in 2031, when the greatest number of temporary helicopter operations at the Peralta site would occur.

Helistop operations for the modeling scenarios were derived based on flight log data provided by UCSF BCH Oakland, as the analysis assumes a temporary shift in annual helicopter operations from the UCSF BCH Oakland site to the Peralta site. It is projected that operations will increase at a rate of 1% per year through the completion date of 2031 of the permanent UCSF BCH hospital helistop. As such, there would be 858 annual operations in 2031.[3]

As under the previous helicopter noise assessments completed for this EIR, the AgustaWestland A-109 was modeled as the primary helicopter operating at the Peralta site which is also consistent with the BBA Report. The A-109 is a twin-engine helicopter with a four-bladed main rotor and a conventional (unshrouded) tail rotor. The operational characteristics and noise levels of the A-109 are representative of the older and relatively noisy helicopters that currently utilize or would be expected to utilize the helistop. As such the modeling of this helicopter reflects a conservative approach to noise exposure. As under the previous assessments, the day-evening-night split for arrivals and departures were derived from calendar year 2022 flight logs and applied to the annual operations. The arrival split was modeled as 55.4% (day), 15.7% (evening), and 28.9% (night). The departure split was modeled as 51.2% (day), 18.4% (evening), and 30.4% (night). **Table 2** presents the forecasted 2031 annual operations at the Peralta site.

Table 2. 2031 Annual Aircraft Operations

Source: BCH, 2023; ESA, 2023

Operation	Aircraft	Day	Evening	Night	Total
Arrivals	A-109	237.55	67.36	124.09	429
Departures	A-109	219.88	78.87	130.25	429
	Subtotal	**457.43**	**146.23**	**254.34**	**858**

4. Aircraft Noise and Performance Characteristics

Specific noise and performance data must be entered into the AEDT for the helicopter operating at the Peralta site. Noise data is included in the form of Sound Exposure Level (SEL) at a range of distances (from 200 feet to 25,000 feet) from a particular aircraft with engines operating at a specific thrust level. Performance data includes thrust, speed and altitude profiles for takeoff and landing operations. The AEDT database contains standard noise and performance data for helicopter aircraft most of which are civilian aircraft. The AEDT automatically accesses the noise and performance data for takeoff and landing operations by those aircraft.

Besides identifying the aircraft types in the database, the AEDT has STANDARD, ICAO, and Noisemap aircraft flight profiles for takeoffs, landings, and flight patterns or touch-and-go operations. ESA used standard profiles for the AgustaWestland A-109, consistent with the previous conservative approach to the helicopter noise assessment conducted in support of the CHRCO CMP Project Final EIR.

3 Each helicopter landing/takeoff counts as one aircraft operation.

5. Flight Track Geometry and Use

As discussed above, UCSF's aviation consultant, Heliplanners, conducted a preliminary assessment that identified four potential flightpath alignments that could be used by helicopters to arrive at and depart from the Peralta site (please see **Figure 1**), taking into account area topography, and the presence of surrounding on- and off-site buildings, structures, or other objects. Given that the temporary helistop at the Peralta site would be subject to further design and analysis, and subject to applicable permitting approvals prior to operation, the assumed flightpaths are considered preliminary and subject to refinement. As a conservative approach to assess potential worst-case noise impacts, 100 percent of helicopter operations were assessed on each of the four path alignments.[4]

Figure 1. Peralta Community College Temporary Helistop Model Preliminary Flight Tracks

Source: ESA, 2024, Heliplanners, 2024.

4 While 100% of all operations were applied to each track, the total noise exposure presented in the following sections is not the cumulative result of 400% of the total operations. The CNEL contours for each track (representing 100% of the operations, e.g. 429 operations on each arrival track and 429 operations on each departure track) were combined to create a composite contour, with the outer limits of each interval forming the composite contour.

6. Meteorological Conditions

The AEDT has several settings that affect aircraft performance profiles and sound propagation based on meteorological data. Meteorological settings include 10-year average temperature, barometric pressure, and relative humidity at the airport. Weather data from Oakland International Airport (OAK) was used as weather information. The AEDT holds the following values for annual average weather conditions at OAK:

- Temperature: 58.38° F
- Pressure: 1013.47 millibars
- Sea-level Pressure: 1016.75 millibars
- Relative Humidity 72.61%
- Dew Point: 49.62° F
- Wind Speed: 7.2 Knots

7. Terrain

Terrain data describes the elevation of the ground surrounding the Peralta site. If the AEDT user selects the use of terrain data, the AEDT uses terrain data to adjust the ground level under the flight paths. The terrain data does not affect the aircraft's performance or noise levels but does affect the vertical distance between the aircraft and a "receiver" on the ground. This in turn affects noise propagation assumptions about how noise propagates over ground. ESA obtained 1/3 arcsecond terrain data from the United States Geological Survey (USGS) National Map Viewer and used it with the terrain feature of the AEDT in generating the noise contours.[5]

8. Discussion of Results

Noise Exposure

Noise monitoring was conducted adjacent to the Peralta site (Location ST-3) and several representative residential receptor locations in the surrounding area (Locations ST-1, ST-2, and LT-1 through LT-3) on April 25th through April 26th, 2024 to characterize existing ambient noise conditions. These noise monitoring locations are shown in **Figure 2**.

Helicopter-generated noise level contours, in terms of CNEL, were calculated for the 2031 conditions with the temporary helistop at the Peralta site and are also presented in Figure 2.

5 USGS terrain obtain on June 22, 2023.

Figure 2. 2031 Temporary Helistop CNEL Contours and Highway CNEL contours

Source: AEDT, 2024; ESA, 2024; Dyett & Bhatia, 2022

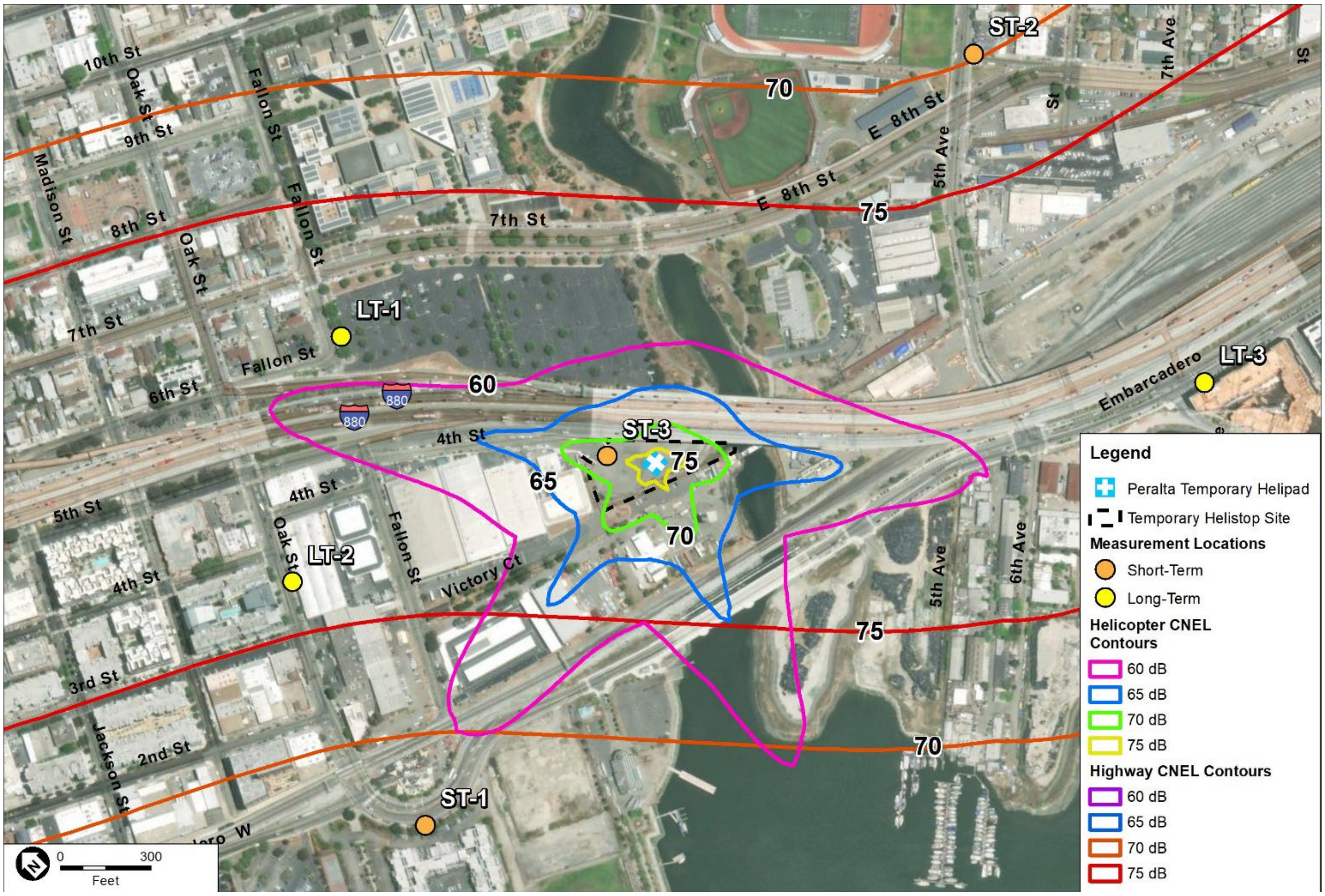


Table 3 provides the modeled results at the Peralta site and each of the representative residential noise impact assessment sites. Each residential site represents the closest residential locations around the Peralta site. Sites LT-1, LT-2, and ST-1 are located to the north and west of the Peralta site, while LT-3 and ST-2 are located to the east. ST-3 is positioned at the Peralta site .

To the north of the Peralta site, CNEL ranged from 53.7 to 57.1 dB. To the south the CNEL ranged from 45.6 to 54.4. Overall, the CNEL at the residential impact assessment sites ranged from 45.6 to 57.7 dB, with the loudest modeled noise level at the Peralta site at 74.0 dB. All land uses within the CNEL contours were analyzed using Google Earth aerial photography. It was determined that no noise sensitive land uses would be located within the CNEL 60-65 under the temporary helistop modeling scenario.

Table 3. Modeled CNEL Values at Noise Impact Assessment Sites
Source: ESA, 2024

Site	Land Use	Peralta Site CNEL (dB)
		2031
LT-1	Residential	57.1
LT-2	Residential	53.7
LT-3	Residential	54.4
ST-1	Residential	57.7
ST-2	Residential	45.6
ST-3	Peralta Site	74.0

Figure 2 also graphically displays CNEL contours for the adjacent I-880 freeway background traffic. The figure shows helicopter noise exposure from 60 through 75 CNEL contours in 5 dB increments. Noise exposure along the I-880 is presented from 70 and 75 CNEL. As shown in Figure 2, the 60 CNEL contour is primarily contained within the 70 CNEL generated by the freeway. This would create an overall CNEL increase of less than 0.5 dB around the Peralta site as a result of the temporary helistop.

Single-Event Noise Impacts on Sleep and Speech

A single event noise analysis was performed for each noise impact assessment site, utilizing three metrics: SEL to evaluate the potential for sleep disturbance, and Maximum A-Weighted Sound Level (Lmax), and Time Above (TA) to assess the potential for speech interference. Single event metrics such as SEL and Lmax represent worst-case noise exposure for a single noise event, and as such, are not affected by changes to the total number of annual operations. The single event metrics were modeled using the closest track to each noise impact assessment site.

Sleep Disturbance

To determine potential sleep disturbance, an outdoor-to-indoor noise level reduction (NLR) must be applied. A typical NLR for a residence in the project area is 10-15 dB with windows open and 15-20 dB when windows and doors are closed.[6] For this analysis, an NLR of 15 dB was applied to modeled results. For example, a single event with an exterior SEL of 90 dB would result in an interior SEL of 75 dB.

Table 4 summarizes the calculated SEL values at each noise impact assessment site for potential sleep disturbance. The 15 dB NLR was subtracted from the exterior SEL and the Federal Interagency Committee on Aviation Noise (FICAN) dose response was calculated based on the interior SEL.[7]

6 US Environmental Protection Agency, *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare With an Adequate Margin of Safety*, March 1974.

7 Federal Interagency Committee on Aviation Noise, *Effects of Aviation Noise on Awakenings from Sleep*, June 1997.

Table 4. Potential Sleep Disturbance
Source: ESA, 2024, FICAN

Site	Land Use	Proposed Temporary Helistop at Peralta Site		
		Exterior SEL (dB)[1]	Interior SEL (dB)[2]	Maximum % Awakened[3]
LT-1	Residential	100.5	85.5	11.5
LT-2	Residential	97.1	82.1	10.3
LT-3	Residential	97.8	82.8	10.6
ST-1	Residential	101.1	86.1	11.7
ST-2	Residential	88.9	73.9	7.6
ST-3	Peralta Site	117.4	102.4	18.5

Notes:
[1] AEDT calculated SEL value for the A-109 on flight track closest to receiver.
[2] Outdoor-to-indoor noise level reduction of 15 was applied to all receivers.
[3] Maximum percent awakened calculated using FICAN dose-response curve.

As previously mentioned, LT-1, LT-2, and ST-1 are located to the north and west of the Peralta site, while LT-3 and ST-2 are located to the east. ST-3 is positioned at the Peralta site.

To the north and west of the Peralta site, the maximum percent awakened at the study residential receptors under the operation of the helistop at the Peralta site ranged from 10.3 to 11.7 dB. To the east of the Peralta site, the maximum percent awakened ranged from 7.6 and 10.6 dB. Overall, the maximum percent awakened at the residential impact assessment sites ranged from 7.6 to 11.7 dB. It should be noted that this analysis does not include percent awakened for existing noise generated (e.g. community noise, railway operations[8], and freeway noise) within the vicinity of the receptors and, as such, it could be expected that the project-related sleep disturbance would be minimal.

Speech Interference

Potential speech interference is assumed to occur at interior noise levels at or above 65 dB. The AEDT was used to calculate exterior noise levels that exceeded 80 dB, (e.g., TA 80 dB in minutes per day) to account for the 15 dB NLR inside the residence.

Table 5 summarizes the calculated Lmax and TA 65 values at each noise impact assessment site for potential speech interference. The data shows that the overall speech interference would be minimal, ranging from 0.2 to 0.3 minutes at the modeled residential receptors. Speech interference is expected to be high directly on the Peralta site when helicopters are arriving or departing.

8 At-grade rail crossings at Oak Street and at 5th Avenue, adjacent to LT-2 and LT-3, respectively, operate with alarm bells and required locomotive horn blasts.

Table 5. Potential Speech Interference
Source: ESA, 2024

Site	Land Use	Proposed Temporary Helistop at Peralta Site	
		Lmax (dB)[1]	2031 TA65 (min/day)
LT-1	Residential	117.4	0.3
LT-2	Residential	84.4	0.2
LT-3	Residential	88.0	0.3
ST-1	Residential	95.6	0.2
ST-2	Residential	75.1	0.0
ST-3	Peralta Site	121.2	5.1

Notes:
[1] AEDT calculated SEL value for the A-109 on flight track closest to receiver.
[2] Outdoor-to-indoor noise level reduction of 15 was applied to all receivers.

APPENDIX A
Aircraft Noise

1.1 Environmental Noise Fundamentals

The measurement and human perception of sound involve two basic physical characteristics: intensity and frequency. Intensity is a measure of the acoustic energy of sound vibrations, expressed in terms of sound pressure. The higher the sound pressure, the more energy carried by the sound and the louder the perception of that sound. The second important physical characteristic is sound frequency, which is the number of times per second the air vibrates or oscillates. Low-frequency sounds are characterized as rumbles or roars, while high-frequency sounds are typified by sirens or screeches.

Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level), which is measured in decibels (dB). On this scale, zero dB corresponds roughly to the threshold of human hearing and 120 to 140 dB corresponds to the threshold of pain. Pressure waves traveling through air exert a force registered by the human ear as sound. Noise is commonly defined as unwanted sound.

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude (sound power). When all the audible frequencies of a sound are measured, a sound spectrum is plotted consisting of a range of frequencies spanning 20 to 20,000 Hz. The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the sound frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts on humans, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to extremely low and extremely high frequencies. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). A-weighting follows an international standard methodology of frequency weighting and is typically applied to community noise measurements. Some representative noise sources and their corresponding A-weighted noise levels are shown on **Figure A-1**.

1.2 General Characteristics of Aircraft Noise

Outdoor sound levels decrease as a function of distance from the source and as a result of wave divergence, atmospheric absorption, and ground attenuation. If sound is radiated from a source in a homogenous and undisturbed manner, the sound travels as spherical waves. As the sound wave travels away from the source, the sound energy is distributed over a greater area, dispersing the sound power of

the wave. Spherical spreading of the sound wave reduces the noise level, for most sound sources, at a rate of 6 dB per doubling of the distance.

Atmospheric absorption also influences the levels that are received by the observer. The greater the distance sound travels, the greater the influence of atmospheric effects. Atmospheric absorption becomes important at distances of greater than 1,000 feet. The degree of absorption is a function of the sound frequency, as well as the humidity and temperature of the air. For example, atmospheric absorption is lowest at high humidity and higher temperatures. Turbulence and gradients of wind, temperature, and humidity also play a significant role in determining the degree of attenuation. Certain conditions, such as inversions, can also result in higher sound levels that would result from spherical spreading as a result of channeling or focusing the sound waves.

Absorption effects in the atmosphere vary with frequency. The higher frequencies are more readily absorbed than the lower frequencies. Over large distances, the lower frequencies become the dominant sound as the higher frequencies are attenuated.

The effects of ground attenuation on aircraft noise propagation are a function of the height of the source and/or receiver and the characteristics of the terrain. The closer the source of the noise is to the ground, the greater the ground absorption. Terrain consisting of soft surfaces, such as vegetation, provide for more ground absorption than hard surfaces, such as a large parking lot.

Aircraft noise originates from both the engines and the airframe of an aircraft, but the engines are, by far, the more significant source of noise. Meteorological conditions affect the transmission of aircraft noise through the air. Wind speed and direction, and the temperature immediately above ground level, cause diffraction and displacement of sound waves. Humidity and temperature materially affect the transmission of air-to-ground sound through absorption associated with the instability and viscosity of the air.

1.3 Aircraft Noise Descriptors

The description, analysis, and reporting of aircraft noise levels is made difficult by the complexity of human response to sound and the myriad of sound-rating scales and metrics that have been developed for describing acoustic effects. Various rating scales have been devised to approximate the human response to the “loudness” or “noisiness” of a sound. Noise metrics have been developed to account for additional parameters, such as duration and cumulative effect of multiple events.

Noise metrics can be categorized as single-event metrics and cumulative metrics. Single-event metrics describe the noise from individual events, such as an aircraft flyover. Cumulative metrics describe the noise in terms of the total noise exposure over a period of time.

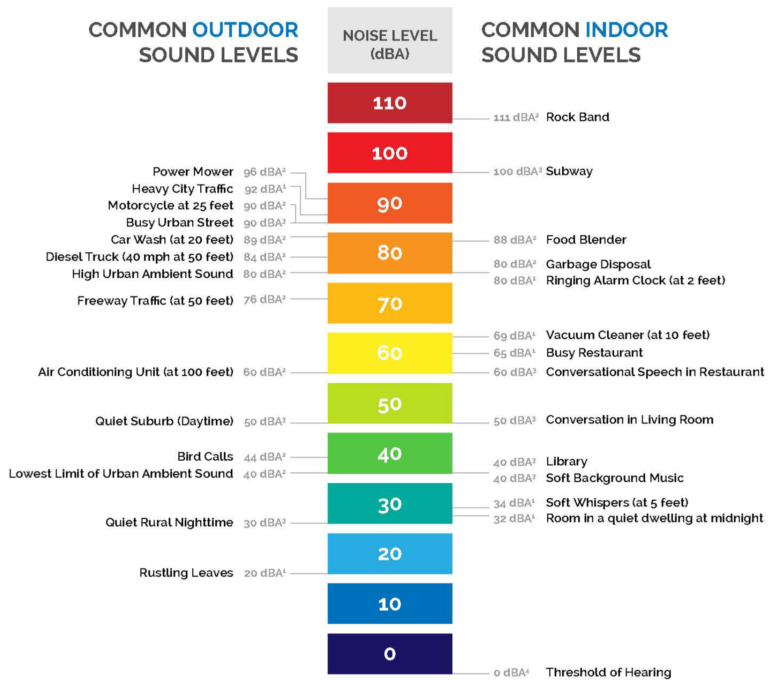
1.3.1 A-Weighted Sound Pressure Level (dBA)

The decibel is a unit used to describe sound pressure level. When expressed in dBA, the sound has been filtered to reduce the effect of very low and very high frequency sounds, much as the human ear filters sound frequencies. Without this filtering, calculated and measured sound levels would include events that the human ear cannot hear (e.g., dog whistles and low frequency sounds, such as the groaning sounds emanating from large buildings with changes in temperature and wind). With A-weighting, calculations

and sound monitoring equipment approximate the sensitivity of the human ear to sounds of different frequencies.

Some common sound levels on the dBA scale are listed in **Figure A-1**. As shown, the relative perceived loudness of a sound doubles for each increase of 10 dBA, although a 10-dBA change in the sound level corresponds to a factor of 10 changes in relative sound energy. Generally, single-event sound levels with differences of 2 dBA or less are not perceived to be noticeably different by most listeners.

FIGURE A-1
COMMON SOUNDS ON THE A WEIGHTED DECIBEL SCALE



1 Aviation Noise Effects, FAA, AEE, March, 1985 (FAA-EE-85-2), Table 1.1
2 Federal Agency Review of Selected Airport Noise Analysis Issues (Federal Interagency Committee on Noise), August 1992, Table B.1
3 Children's health and the environment, A Global Perspective, World Health Organization, 2005, Table 15.1
4 OSHA Technical Manual, TED 01-00-015, Section III (Health Hazards), Chapter 5 (Noise, Updated 8/15/2013)

Source: Environmental Science Associates, 2023.

1.3.2 Maximum A-Weighted Sound Level (Lmax)

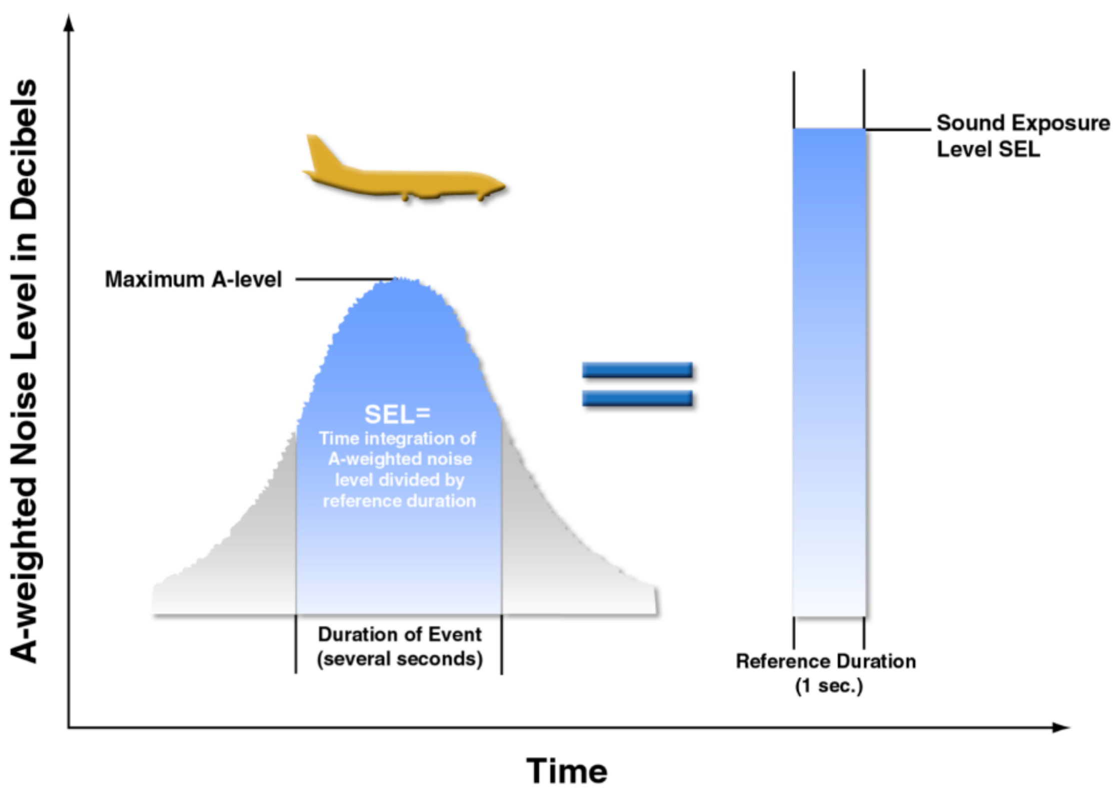
Lmax is the maximum, or peak, sound level during a noise event. The metric only accounts for the highest A-weighted sound level measured during a noise event, not for the duration of the event. For example, as an aircraft approaches, the sound of the aircraft begins to rise above ambient levels. The closer the aircraft gets, the louder the sound until the aircraft is at its closest point. As the aircraft passes, the sound level decreases until the sound returns to ambient levels. Some sound level meters measure and record the maximum sound level (Lmax). The Lmax for an aircraft flyover is illustrated on **Table A-1**.

TABLE A-1
COMMON SOUNDS ON THE A-WEIGHTED DECIBEL SCALE

Sound	Sound level (dBA)	Relative loudness (approximate)	Relative sound energy
Rock music, with amplifier	120	64	1,000,000
Thunder, snowmobile (operator)	110	32	100,000
Boiler shop, power mower	100	16	10,000
Orchestral crescendo at 25 feet, noisy kitchen	90	8	1,000
Busy street	80	4	100
Interior of department store	70	2	10
Ordinary conversation, 3 feet away	60	1	1
Quiet automobiles at low speed	50	1/2	.1
Average office	40	1/4	.01
City residence	30	1/8	.001
Quiet country residence	20	1/16	.0001
Rustle of leaves	10	1/32	.00001
Threshold of hearing	0	1/64	.000001

SOURCE: U.S. Department of Housing and Urban Development, Aircraft Noise Impact—Planning Guidelines for Local Agencies, 1972.

FIGURE A-2
SOUND EXPOSURE LEVEL AND MAXIMUM SOUND LEVEL



SOURCE: Brown-Buntin Associates, Inc., November 2004.

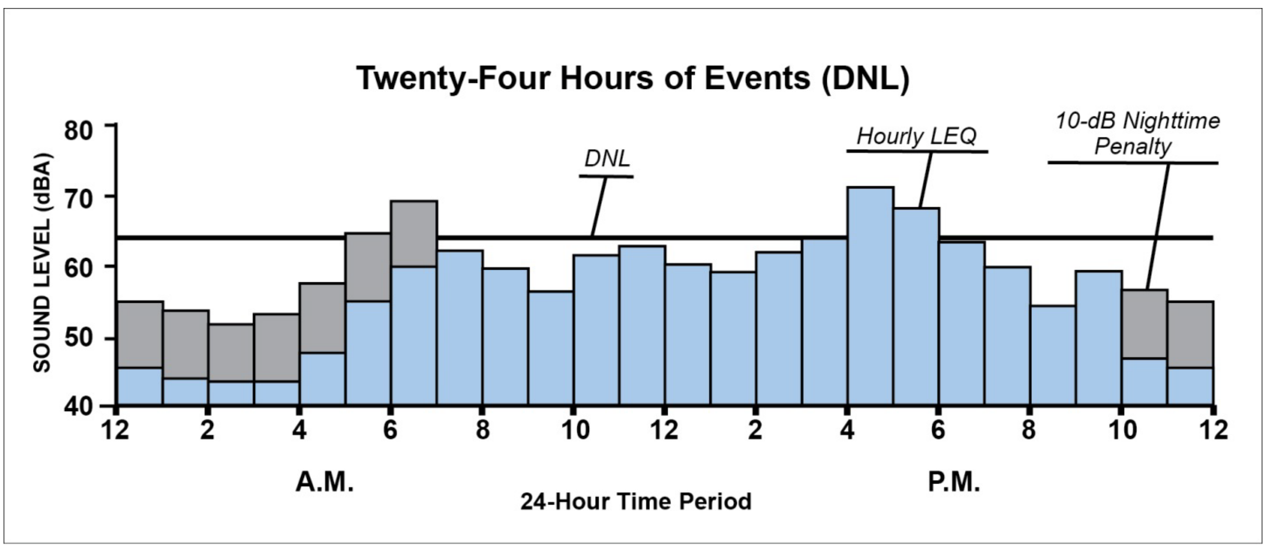
1.3.3 Sound Exposure Level (SEL)

Sound Exposure Level (SEL), is a time integrated measure, expressed in decibels, of the sound energy of a single noise event at a reference duration of one second. The sound level is integrated over the period that the level exceeds a threshold. Therefore, SEL accounts for both the maximum sound level and the duration of the sound. The standardization of discrete noise events into a one-second duration allows calculation of the cumulative noise exposure of a series of noise events that occur over a period of time. The SEL of an aircraft noise event is typically 7 to 12 dBA greater than the Lmax of the event. SELs for aircraft noise events depend on the location of the aircraft relative to the noise receptor, the type of operation (landing, takeoff, or overflight), and the type of aircraft. The SEL for an aircraft flyover is also illustrated on **Figure A-2**.

1.3.4 Equivalent Noise Level (L_{eq})

Equivalent Noise Level (Leq) is the sound level corresponding to a steady state, A-weighted sound level containing the same total energy as a time-varying signal over a given sample period. Leq is the “energy” average noise level during the time period of the sample. It is based on the observation that the potential for a noise to impact people is dependent on the total acoustical energy content of the noise. It is the energy sum of all the sound that occurs during that time period. This is graphically illustrated in the middle graph on **Figure A-3**. Leq can be measured for any time period, but is typically measured for 15 minutes, 1 hour, or 24 hours.

FIGURE A-3
DAY-NIGHT AVERAGE SOUND LEVEL



1.4 Aviation Environmental Design Tool

The noise analyses were conducted using the most current version of the FAA's Aviation Environmental Design Tool (AEDT). The AEDT is the FAA's standard model for evaluating aircraft noise, fuel burn/consumption, and emissions at airports. For this analysis, AEDT, Version 3e, was used to model aircraft noise exposure for aircraft flybys at the Pacific Airshow Huntington Beach.

The AEDT produces noise exposure contours that are used for land use compatibility maps. The program includes a built-in Geographic Information System (GIS) platform and tools for comparing contours and utilities that facilitate easy export to other GIS software suites. The model can also calculate predicted noise at specific sites such as hospitals, schools, or other noise-sensitive locations. For these discrete locations, the AEDT has the capability to report noise exposure levels at the specific location.

The AEDT accounts for each aircraft flight along flight tracks to or from the airport, or aircraft overflying the airport. Flight track definitions are coupled with information in the model's databases relating to noise levels at varying distances and flight performance data for each distinct type of aircraft selected. In general, the model computes noise levels at regularly-spaced grid receptors at ground level around the airport. The distance to each aircraft in flight is computed (slant distance), and the associated noise exposure of each aircraft flying along each flight track within the vicinity of the grid receptor is determined. The logarithmic acoustical energy levels for each individual aircraft single-event are then summed for each grid receptor. The AEDT can create contours of specific noise levels based on the acoustical energy summed at each of the grid receptors for the selected metric. The cumulative values of noise exposure at each grid receptor are used to interpolate contours of equal noise exposure. The AEDT can also compute noise levels at user-defined points on the ground.

1.5.1 Graphic Representation of Aircraft Noise Exposure

Noise exposure contours are lines on a map that connect points of equal values, much like topographic contours are drawn to indicate area of equal ground elevation. For example, a contour may be drawn to connect all points of 60 dB; another may be drawn to connect all points of 65 dB; and so forth. Generally, noise contours are plotted at 5-dB intervals.

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Technical Memorandum

Date April 5, 2024

To Paul Mitchell, ESA

From Chris Nottoli, ESA
Dominic Scarano, ESA
Justin Cook, ESA

Subject **UCSF BCH Oakland NHB Project Environmental Impact Report**
Helistop Noise and Air Quality Modeling Approach, Input Assumptions, and Results for Proposed Revised Project

1. Background

Since publication of the Draft EIR on January 16, 2024, UCSF BCH Oakland has refined certain aspects of the proposed New Hospital Building (NHB) Project, as part of the on-going planning, development, and design process. This includes the development of a smaller, shorter and redesigned new hospital building compared to the building design addressed in the Draft EIR, among other changes. The refined new hospital building would be 7 stories above grade plus full basement, a reduction in one story from the 8-story above grade plus full basement hospital building addressed in the Draft EIR. As refined, the height of the new hospital building above ground level to the building roof would be approximately 101 feet above ground level (agl), 15 feet lower than that previously proposed under the Project. Similar to the previously proposed new hospital building design, the revised Project includes the relocation of the existing helistop at Project site to the rooftop of the proposed revised new hospital building. The helistop deck under the proposed Revised Project would be located at 121 feet agl, or 15 feet lower than that previously proposed under the Project. Similar to the previously proposed new hospital building design, the helistop structure atop the building roof in approximately the same geographic location as was previously proposed.

The existing helistop is located on a 36-foot-tall above ground level (agl) helistop structure located in the southern portion of the campus site. As under the previously-proposed Project, the proposed Revised Project helistop would be relocated approximately 160 feet north of the existing location to the revised hospital building roof. In accordance with the scope of work, noise contours and an air emission inventory were produced for two scenarios: 2022 Existing Conditions and 2031 Proposed Revised Project. A speech interference and sleep disturbance analysis was also conducted as part of the scope. The previous Helistop Noise Assessment conducted in support of the Children's Hospital and Research Center Oakland (CHRCO) Campus Master Plan (CMP) Project Final EIR, completed by Brown-Buntin Associates, Inc. in July 2014 (hereinafter, "the BBA Report"), was used as the basis for some of the noise modeling inputs.[1] This technical memorandum discusses the noise modeling approach, input assumptions, and results of the analysis for the Revised Project. Please see Appendix A in this technical memorandum for additional information on aircraft noise and aircraft noise terminology.

[1] "Helistop Replacement Project Children's Hospital and Research Center Oakland," Brown-Buntin Associates, Inc., August 2014.

The following sections address the Federal Aviation Administration (FAA)'s Aviation Environmental Design Tool (AEDT)[2], Version 3e, inputs developed under the following categories:

- Helistop layout physical descriptions
- Aircraft operations
- Aircraft noise, air quality, and performance characteristics
- Flight track geometry and use
- Meteorological conditions
- Terrain
- Discussion of Results

2. Helistop Layout Physical Descriptions

The UCSF BCH Oakland campus site is located two miles northeast of downtown Oakland in Alameda County, California, between Martin Luther King Jr. Way and State Route 24 (SR 24). The campus site is surrounded by residential and commercial land uses. The existing UCSF BCH Oakland helistop is atop a 36-foot agl structure located in the southern portion of the Project site.

This technical memorandum includes the existing helistop layout, which is used in the 2022 Existing Conditions Scenario, and the Proposed Revised Project helistop layout which is used in the 2031 Proposed Revised Project Scenario. **Table 1** provides the helistop layout data for the Existing and Proposed Revised Project scenarios.

Table 1. Helistop Data
Source: AirportIQ 5010 Airport Master Records and Reports; Smith Group, 2023

Helistop	Latitude	Longitude	Elevation (Feet Mean Sea Level [MSL])
Existing	37.836174	-122.266796	136
Proposed Revised Project	37.836531	-122.267078	212

3. Aircraft Operations

Title 14 of the Code of Federal Regulations (CFR) Part 150 (14 CFR Part 150) and its table of noise/land use compatibility guidelines require the calculation of Day Night Average Sound Level (DNL), or Community Noise Equivalent Level (CNEL) for aircraft noise analyses in California. That is, the total noise exposure (in CNEL) averaged over a year – typically a calendar year. The AEDT produces these values of exposure utilizing an "average annual day" of aircraft operations.

Helistop operations for the modeling scenarios were derived based on flight log data provided by UCSF BCH Oakland. It is projected that operations will increase at a rate of 1% per year through the completion date of the proposed helistop. As under the previously-proposed Project, the annual operations modeled for the 2022 Existing Conditions and the 2031 Scenarios were 786 and 858, respectively.[3]

As under the previously-proposed Project assessment, the AgustaWestland A-109 was modeled as the primary helicopter operating at UCSF BCH Oakland campus site under the Revised Project, as is consistent with the BBA Report. The A-109 is a twin-engine helicopter with a four-bladed main rotor and a conventional (unshrouded) tail

2 https://aedt.faa.gov/
3 Each helicopter landing/takeoff counts as one aircraft operation.

rotor. The operational characteristics and noise levels of the A-109 are representative of the older and relatively noisy helicopters that currently utilize or would be expected to utilize the existing or replacement helistop. As such the modeling of this helicopter reflects a conservative approach to noise exposure. As under the previously-proposed Project assessment, the day-evening-night split for arrivals and departures were derived from calendar year 2022 flight logs and applied to the annual operations. The arrival split was modeled as 55.4% (day), 15.7% (evening), and 28.9% (night). The departure split was modeled as 51.2% (day), 18.4% (evening), and 30.4% (night). **Table 2** presents the 2022 Existing Conditions annual operations. **Table 3** presents the 2031 Proposed Revised Project forecast annual operations.

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Table 2. Annual Aircraft Operations – 2022 Existing Conditions
Source: BCH, 2023; ESA, 2023

Operation	Aircraft	Day	Evening	Night	Total
Arrivals	A-109	217.61	61.71	113.68	393
Departures	A-109	201.43	72.25	119.32	393
	Subtotal	**419.04**	**133.96**	**233.0**	**786**

Table 3. Annual Aircraft Operations – 2031 Proposed Revised Project
Source: BCH, 2023; ESA, 2023

Operation	Aircraft	Day	Evening	Night	Total
Arrivals	A-109	237.55	67.36	124.09	429
Departures	A-109	219.88	78.87	130.25	429
	Subtotal	**457.42**	**146.23**	**254.34**	**858**

4. Aircraft Noise, Air Emissions, and Performance Characteristics

Specific noise and performance data must be entered into the AEDT for the helicopter operating at the campus site. Noise data is included in the form of Sound Exposure Level (SEL) at a range of distances (from 200 feet to 25,000 feet) from a particular aircraft with engines operating at a specific thrust level. Performance data includes thrust, speed and altitude profiles for takeoff and landing operations. The AEDT database contains standard noise and performance data for helicopter aircraft most of which are civilian aircraft. The AEDT automatically accesses the noise and performance data for takeoff and landing operations by those aircraft.

Besides identifying the aircraft types in the database, the AEDT has STANDARD, ICAO, and Noisemap aircraft flight profiles for takeoffs, landings, and flight patterns or touch-and-go operations. ESA used standard profiles for the AgustaWestland A-109, consistent with the previous conservative approach to the helicopter noise assessment conducted in support of the CHRCO CMP Project Final EIR.

Air emissions sources at the helistop within this analysis are from the helicopters operating at the hospital. Emissions inventories from the operation of helicopter main engines during each phase of flight were prepared using the AEDT.

5. Flight Track Geometry and Use

As under the previously-proposed Project assessment, model flight track geometry was taken from the BBA Report. ESA updated the proposed arrival and departure tracks by shifting and snapping the existing flight tracks to the proposed helistop location, and confirmed with Heliplanners, an aviation consulting firm for the Revised Project, that the proposed flight tracks are representative. **Figure 1** and **Figure 2** present the Existing Conditions and Proposed Revised Project model flight tracks, respectively. It is expected that 90% of helicopter operations will arrive from the east and depart to the west. Usage was distributed evenly when multiple tracks arrive from or depart to the same direction.[4] **Table 4** presents the modeled flight track usage percentages.

Figure 1. Existing Conditions Model Flight Tracks

Source: AEDT, 2023; ESA, 2023

4 The previous BAA Report applied 100% track utilization to each of the eight model flight tracks resulting in a 600% increase in annual helicopter operations.

Figure 2. Proposed Revised Project Model Flight Tracks

Source: AEDT, 2023; ESA, 2024

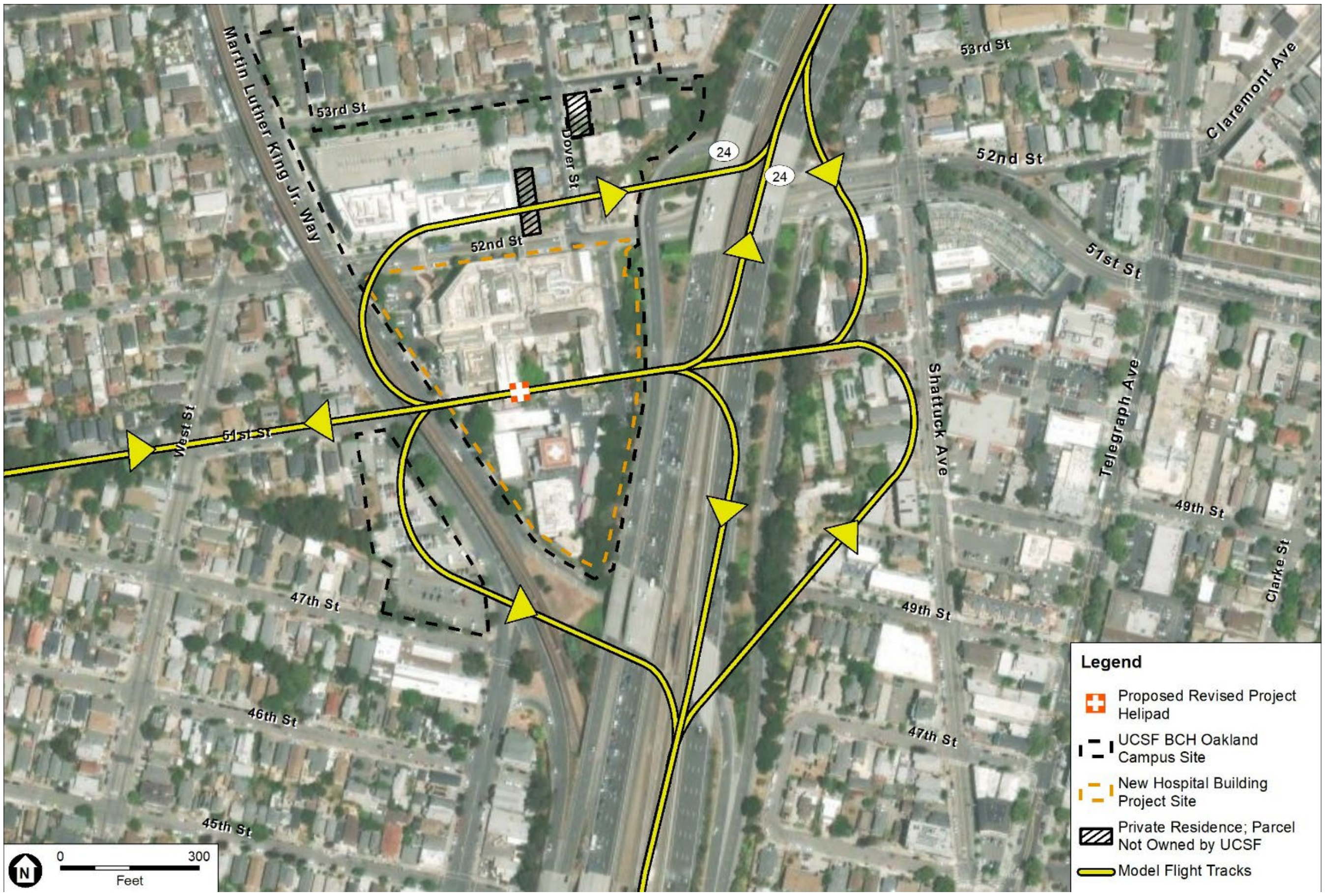


Table 4. Arrival and Departure Track Usage
Source: ESA, 2023

Track Name	Direction of Travel	Track Use
		Arrivals
ASW	Westbound	45%
ANW	Westbound	45%
AE	Eastbound	10%
	Arrivals Subtotal	**100%**
		Departures
DNE	Eastbound	5%
DSE	Eastbound	5%
DNW	Westbound	30%
DSW	Westbound	30%
DW	Westbound	30%
	Departures Subtotal	**100%**

6. Meteorological Conditions

The AEDT has several settings that affect aircraft performance profiles and sound propagation based on meteorological data. Meteorological settings include 10-year average temperature, barometric pressure, and relative humidity at the airport. Weather data from Oakland International Airport (OAK) was used as weather information for UCSF BCH Oakland is not available in the AEDT. The AEDT holds the following values for annual average weather conditions at OAK:

- Temperature: 58.38º F
- Pressure: 1013.47 millibars
- Sea-level Pressure: 1016.75 millibars
- Relative Humidity 72.61%
- Dew Point: 49.62° F
- Wind Speed: 7.2 Knots

7. Terrain

Terrain data describes the elevation of the ground surrounding the helistop. If the AEDT user selects the use of terrain data, the AEDT uses terrain data to adjust the ground level under the flight paths. The terrain data does not affect the aircraft's performance or noise levels but does affect the vertical distance between the aircraft and a "receiver" on the ground. This in turn affects noise propagation assumptions about how noise propagates over ground. ESA obtained 1/3 arcsecond terrain data from the United States Geological Survey (USGS) National Map Viewer and used it with the terrain feature of the AEDT in generating the noise contours.[5]

[5] USGS terrain obtain on June 22, 2023.

8. Discussion of Results

Changes in Noise Contours and Noise Exposure

The 2022 Existing Conditions and 2031 Proposed Revised Project CNEL contours are presented in **Figure 3** and **Figure 4**, respectively. A comparison of the 2022 Existing Conditions and 2031 Proposed Revised Project is presented in **Figure 5**. Each figure shows the 60 through 75 CNEL contours in 5 dB increments over an aerial basemap and includes the noise impact assessment site locations. As under the previously-proposed Project analysis, noise impact assessment site locations for the Revised Project analysis were selected as part of the ambient noise measurements conducted between May 23rd through May 25th, 2023. Site locations were selected to be consistent with the helicopter noise assessment conducted in support of the CHRCO CMP Project Final EIR.

Figure 3. 2022 Existing Conditions CNEL Contours

Source: AEDT, 2023; ESA, 2023

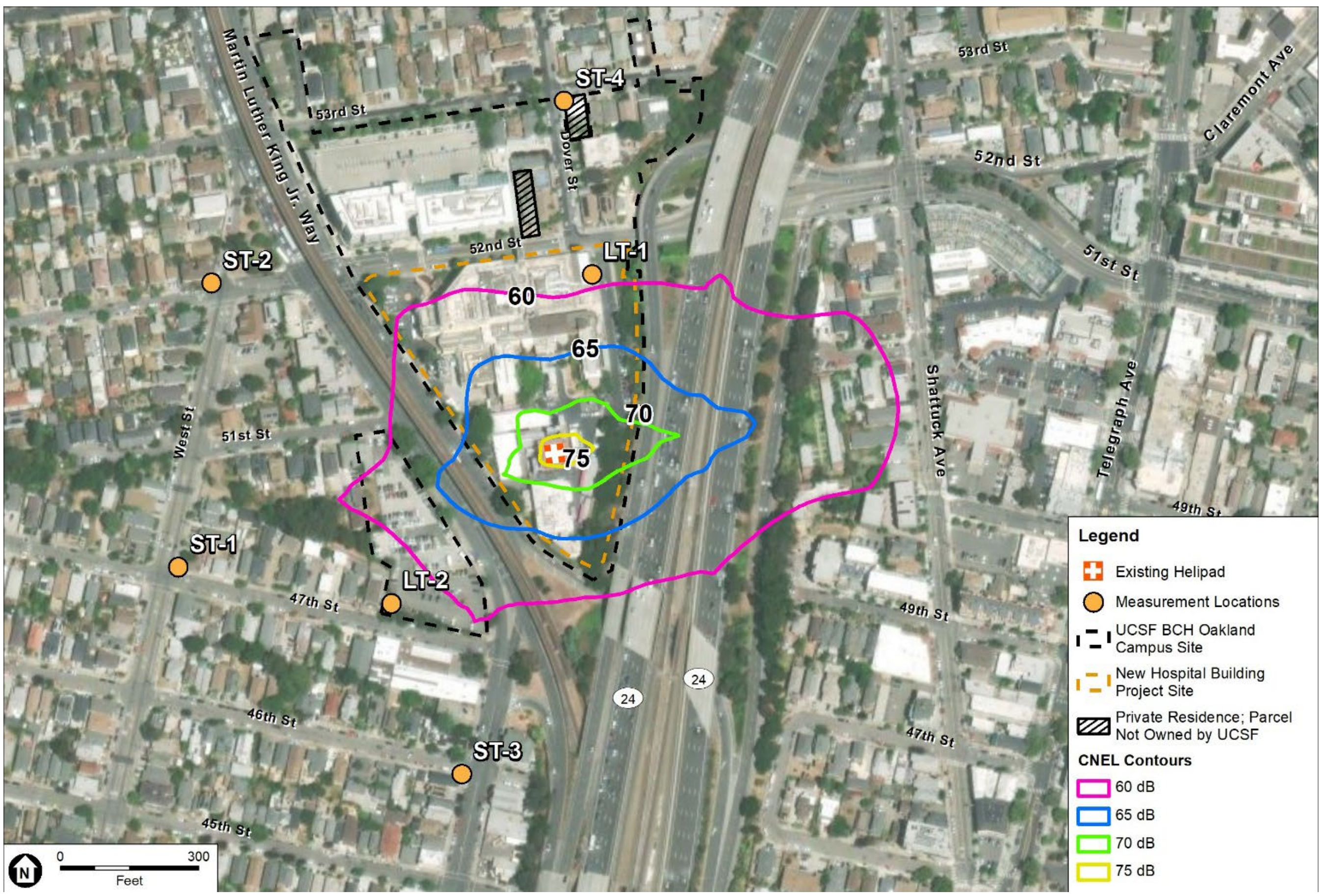


Figure 4. 2031 Proposed Revised Project CNEL Contours

Source: AEDT, 2024; ESA, 2024

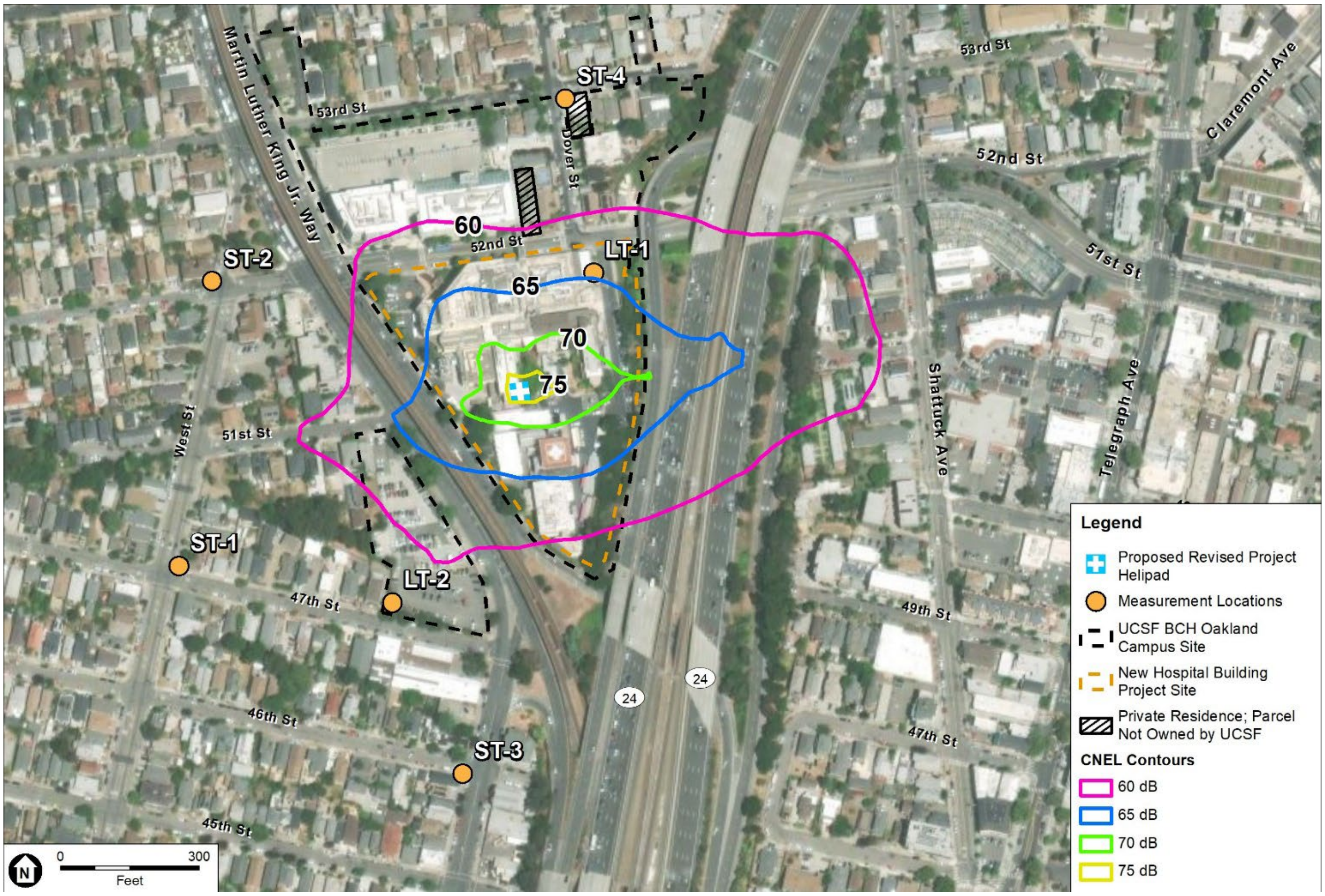
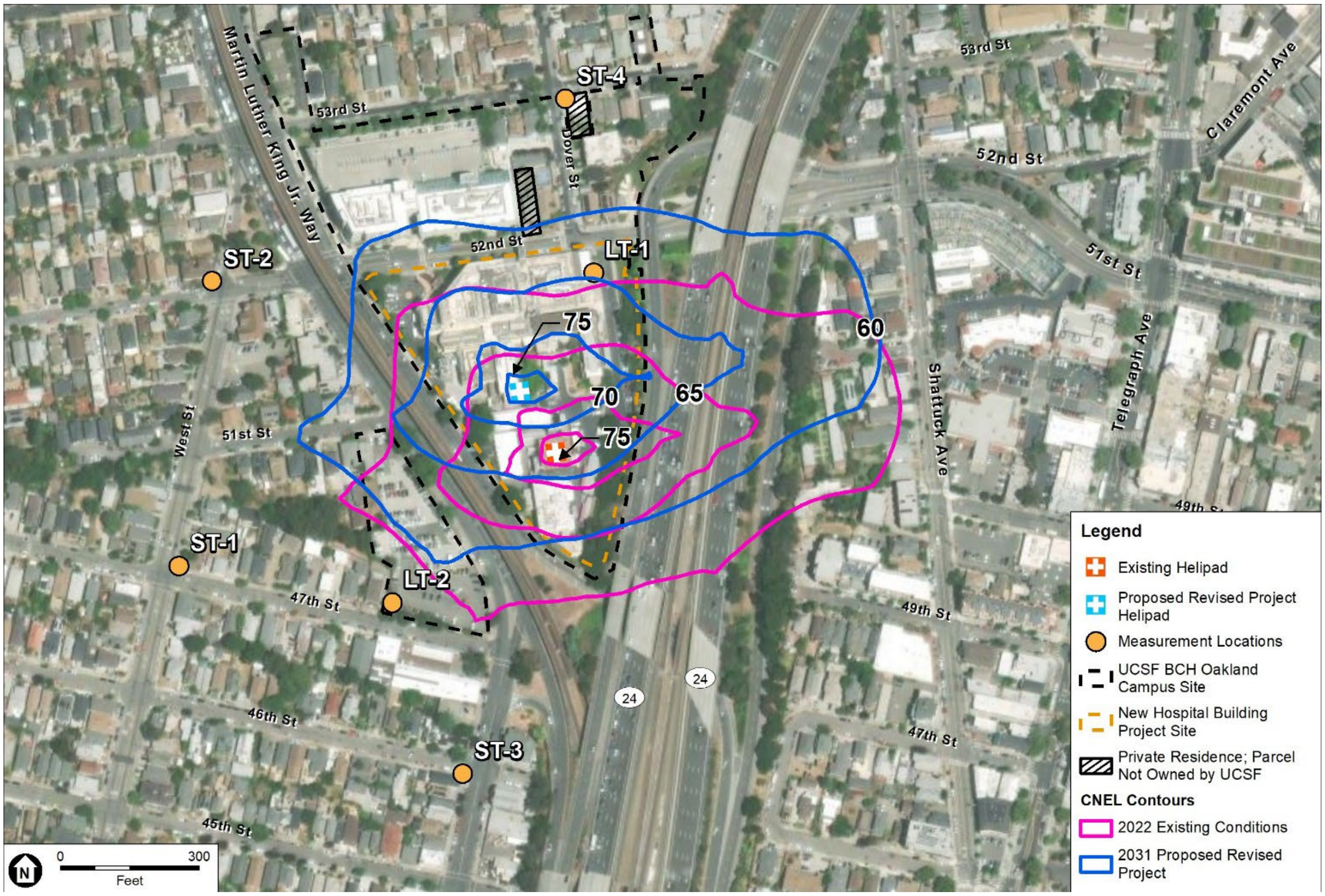


Figure 5. 2022 Existing Conditions and 2031 Proposed Revised Project CNEL Contours Comparison

Source: AEDT, 2024; ESA, 2024



Noise levels, in terms of CNEL, were calculated for the 2022 Existing Conditions and 2031 Proposed Revised Project based on the location of the existing helistop and for the Proposed Revised Project scenario based on the location of the relocated helistop. **Table 5** provides the modeled results at each of the noise impact assessment site locations. Sites LT-1, ST-2, and ST-4 are located to the north of both helistops, while LT-2, ST-1 and ST-3 are located to the south of both helistops.

At LT-1, at the northeast corner of the hospital, the CNEL under the Proposed Revised Project scenario is higher at 64.6 dB compared to the existing level of 59.0 dB, resulting in a project-related change of 5.6 dB. Residential sites ST-2 and ST-4 also show an increase in CNEL of 1.8 dB (from 50.8 dB to 52.6 dB) and 2.4 dB (from 52.2 dB to 54.6 dB), respectively.

South of the helistops, residential site LT-2 experiences a decrease in CNEL under the Proposed Revised Project scenario, decreasing from 56.9 dB under existing conditions to 56.0 dB, resulting in a project-related change of -0.9 dB. Residential sites ST-1 and ST-3 also show a decrease in CNEL of -1.1 dB (from 53.8 dB to 52.7 dB) and -1.0 dB (from 52.3 dB to 51.3 dB), respectively, under the Proposed Revised Project scenario.

Overall Revised Project-related changes show increase in noise exposure ranging from 1.8 dB to 5.6 dB at sensitive land uses to the north of the helistops and decrease in noise exposure ranging from -0.9 dB to -1.1 dB at sensitive land uses to the south of the helistops.

Table 5. Modeled CNEL Values at Noise Impact Assessment Sites

Source: ESA, 2024

Site	Land Use	Existing Helistop CNEL (dB)	Proposed Revised Project Helistop CNEL (dB)	
		2022	2031	Revised Project Related Change
LT-1	Hospital	59.0	64.6	5.6
LT-2	Residential	56.9	56.0	-0.9
ST-1	Residential	53.8	52.7	-1.1
ST-2	Residential	50.8	52.6	1.8
ST-3	Residential	52.3	51.3	-1.0
ST-4	Residential	52.2	54.6	2.4

Land uses within the CNEL contours were analyzed using Google Earth aerial photography with results shown in **Table 6**. It should be noted that the hospital and all associated facilities were considered as one noise-sensitive use which is located within the CNEL 65+ under all scenarios analyzed. There are no churches, schools, or public parks located within the CNEL 60-65 under all modeling scenarios. Project-related changes show a net increase of four residential homes and two apartment buildings within the CNEL 60-65. Project-related changes show a net decrease of one mixed-use building within the CNEL 60-65.

Table 6. Land Use
Source: ESA, 2024

Land Use	Existing Helistop			Proposed Revised Project Helistop			Revised Project-Related Changes - 2031								
	2022			2031			Noise Exposure Increase			Noise Exposure Decrease			Net Noise Exposure Change		
	60-65	65-70	70+	60-65	65-70	70+	60-65	65-70	70+	60-65	65-70	70+	60-65	65-70	70+
Homes	3	0	0	7	0	0	4	0	0	0	0	0	4	0	0
Apartment Buildings	14	0	0	16	0	0	2	0	0	0	0	0	2	0	0
Mixed Use	1	0	0	0	0	0	0	0	0	-1	0	0	-1	0	0
Churches	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Schools	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hospitals	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
Commercial	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Parks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Single-Event Noise Impacts on Sleep and Speech

A single event analysis was performed for each noise impact assessment site location, utilizing three metrics: SEL to evaluate the potential for sleep disturbance, and Maximum A-Weighted Sound Level (Lmax), and Time Above (TA) to assess the potential for speech interference. Single event metrics such as SEL and Lmax represent worst-case noise exposure for a single noise event, and as such, are not affected by changes to the total number of annual operations. The single event metrics were modeled using the closest track to each noise impact assessment site location.

To determine potential sleep disturbance, an outdoor-to-indoor noise level reduction (NLR) must be applied. A typical NLR for a residence in the project area with windows open is 10-15 dB and 15-20 dB when windows and doors are closed.[6] For this analysis, an NLR of 15 dB was applied to modeled results. For example, a single event with an exterior SEL of 90 dB would result in an interior SEL of 75 dB.

Table 7 summarizes the calculated SEL values at each noise impact assessment site location for potential sleep disturbance. The 15 dB NLR was subtracted from the exterior SEL and the Federal Interagency Committee on Aviation Noise (FICAN) dose response was calculated based on the interior SEL.[7]

As previously mentioned, sites LT-1, ST-2, and ST-4 are located to the north of the helistops, while LT-2, ST-1 and ST-3 are located to the south of the helistops.

At LT-1, at the northeast corner of the hospital, the maximum percent awakened under the Proposed Revised Project scenario is higher at 12.3% compared to the existing level of 11.1%, resulting in a project-related change of 1.2%. Residential sites ST-2 and ST-4 also show an increase in maximum percent awakened of 0.7% (from 8.2% to 9.0%) and 0.9% (from 7.1% to 8.0%), respectively.

South of the helistops, residential site LT-2 experiences a decrease in maximum percent awakened under the Proposed Revised Project scenario, increasing from 9.7% to 8.9%, resulting in a project-related change of -0.8%. Residential sites ST-1 and ST-3 also show a decrease in maximum percent awakened of -0.9% (from 10.6% to 9.7%) and -2.1% (from 9.3% to 7.2%), respectively.

Overall, project-related changes show an increase in maximum percent awakened north of the existing helistop, from 0.7 dB to 1.2 dB, and a decrease in maximum percent awakened south of the existing helistop, from -0.8 dB to -2.1 dB.

6 US Environmental Protection Agency, *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare With an Adequate Margin of Safety*, March 1974.

7 Federal Interagency Committee on Aviation Noise, *Effects of Aviation Noise on Awakenings from Sleep*, June 1997.

Table 7. Potential Sleep Disturbance
Source: ESA, 2024, FICAN

Site	Land Use	Existing Helistop			Proposed Revised Project Helistop			Revised Project Related Change (%)
		Exterior SEL (dB)[1]	Interior SEL (dB)[2]	Maximum % Awakened[3]	Exterior SEL (dB)[1]	Interior SEL (dB)[2]	Maximum % Awakened[3]	
LT-1	Hospital	99.4	84.4	11.1	102.6	87.6	12.3	1.2
LT-2	Residential	95.3	80.3	9.7	93.0	78.0	8.9	-0.8
ST-1	Residential	98.1	83.1	10.6	95.3	80.3	9.7	-0.9
ST-2	Residential	91.0	76.0	8.2	93.2	78.2	9.0	0.7
ST-3	Residential	94.2	79.2	9.3	87.6	72.6	7.2	-2.1
ST-4	Residential	87.4	72.4	7.1	90.4	75.4	8.0	0.9

Notes:
[1] AEDT calculated SEL value for the A-109 on flight track closest to receiver.
[2] Outdoor-to-indoor noise level reduction of 15 was applied to all receivers.
[3] Maximum percent awakened calculated using FICAN dose-response curve.

Potential speech interference is assumed to occur at interior noise levels at or above 65 dB. The AEDT was used to calculate exterior noise levels that exceeded 80 dB, (e.g., TA 80 dB in minutes per day) to account for the 15 dB NLR inside the residence. **Table 8** summarizes the calculated Lmax and TA 65 values at each noise impact assessment site location for potential speech interference. The data shows that the overall project-related changes would either have no change or small increase in the existing potential speech interference duration at the modeled residential site locations and no change.at LT-1.

Table 8. Potential Speech Interference
Source: ESA, 2024

Site	Land Use	Existing Helistop		Proposed Revised Project Helistop		
		Lmax (dB)[1]	2022 TA65 (min/day)	Lmax (dB)[1]	2031 TA65 (min/day)	Revised Project Related Change (min/day)
LT-1	Hospital	98.7	0.4	97.4	0.4	0.0
LT-2	Residential	101.0	0.1	101.9	0.2	0.1
ST-1	Residential	100.6	0.0	93.8	0.1	0.1
ST-2	Residential	85.1	0.0	89.3	0.1	0.1
ST-3	Residential	90.4	0.1	85.5	0.1	0.0
ST-4	Residential	88.1	0.1	93.1	0.2	0.1

Notes:
[1] AEDT calculated SEL value for the A-109 on flight track closest to receiver.
[2] Outdoor-to-indoor noise level reduction of 15 was applied to all receivers.

Criteria Pollutant Emissions from Helistop Operations

Emissions inventories for the following CARB criteria air pollutants were prepared for the 2022 Existing Conditions and 2031 Proposed Revised Project scenarios using the modeling methodology described in previous sections: carbon monoxide, volatile organic compounds (a precursor to ozone), oxides of nitrogen, oxides of sulfur, particulate matter, and fine particulate matter. The emissions inventories for the 2022 Existing Conditions and 2031 Revised Project scenarios are shown in **Table 9**. Based on the emissions modeling results, helistop operations under the Proposed Revised Project scenario would not result in air emissions that would exceed applicable threshold of significance for any criteria air pollutants.

Table 9. Helicopter Air Emissions Inventories (Short Tons Per Year)

Source: ESA, 2024

Scenario	CO	VOC	NO_X	SO_X	PM_{10}	$PM_{2.5}$
2022 Existing Conditions	0.15	0.01	0.09	0.02	0.00	0.00
2031 Proposed Revised Project	0.16	0.01	0.10	0.02	0.00	0.00

APPENDIX A
Aircraft Noise

1.1 Environmental Noise Fundamentals

The measurement and human perception of sound involve two basic physical characteristics: intensity and frequency. Intensity is a measure of the acoustic energy of sound vibrations, expressed in terms of sound pressure. The higher the sound pressure, the more energy carried by the sound and the louder the perception of that sound. The second important physical characteristic is sound frequency, which is the number of times per second the air vibrates or oscillates. Low-frequency sounds are characterized as rumbles or roars, while high-frequency sounds are typified by sirens or screeches.

Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level), which is measured in decibels (dB). On this scale, zero dB corresponds roughly to the threshold of human hearing and 120 to 140 dB corresponds to the threshold of pain. Pressure waves traveling through air exert a force registered by the human ear as sound. Noise is commonly defined as unwanted sound.

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude (sound power). When all the audible frequencies of a sound are measured, a sound spectrum is plotted consisting of a range of frequencies spanning 20 to 20,000 Hz. The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the sound frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts on humans, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to extremely low and extremely high frequencies. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). A-weighting follows an international standard methodology of frequency weighting and is typically applied to community noise measurements. Some representative noise sources and their corresponding A-weighted noise levels are shown on **Figure A-1**.

1.2 General Characteristics of Aircraft Noise

Outdoor sound levels decrease as a function of distance from the source and as a result of wave divergence, atmospheric absorption, and ground attenuation. If sound is radiated from a source in a homogenous and undisturbed manner, the sound travels as spherical waves. As the sound wave travels away from the source, the sound energy is distributed over a greater area, dispersing the sound power of

the wave. Spherical spreading of the sound wave reduces the noise level, for most sound sources, at a rate of 6 dB per doubling of the distance.

Atmospheric absorption also influences the levels that are received by the observer. The greater the distance sound travels, the greater the influence of atmospheric effects. Atmospheric absorption becomes important at distances of greater than 1,000 feet. The degree of absorption is a function of the sound frequency, as well as the humidity and temperature of the air. For example, atmospheric absorption is lowest at high humidity and higher temperatures. Turbulence and gradients of wind, temperature, and humidity also play a significant role in determining the degree of attenuation. Certain conditions, such as inversions, can also result in higher sound levels that would result from spherical spreading as a result of channeling or focusing the sound waves.

Absorption effects in the atmosphere vary with frequency. The higher frequencies are more readily absorbed than the lower frequencies. Over large distances, the lower frequencies become the dominant sound as the higher frequencies are attenuated.

The effects of ground attenuation on aircraft noise propagation are a function of the height of the source and/or receiver and the characteristics of the terrain. The closer the source of the noise is to the ground, the greater the ground absorption. Terrain consisting of soft surfaces, such as vegetation, provide for more ground absorption than hard surfaces, such as a large parking lot.

Aircraft noise originates from both the engines and the airframe of an aircraft, but the engines are, by far, the more significant source of noise. Meteorological conditions affect the transmission of aircraft noise through the air. Wind speed and direction, and the temperature immediately above ground level, cause diffraction and displacement of sound waves. Humidity and temperature materially affect the transmission of air-to-ground sound through absorption associated with the instability and viscosity of the air.

1.3 Aircraft Noise Descriptors

The description, analysis, and reporting of aircraft noise levels is made difficult by the complexity of human response to sound and the myriad of sound-rating scales and metrics that have been developed for describing acoustic effects. Various rating scales have been devised to approximate the human response to the “loudness” or “noisiness” of a sound. Noise metrics have been developed to account for additional parameters, such as duration and cumulative effect of multiple events.

Noise metrics can be categorized as single-event metrics and cumulative metrics. Single-event metrics describe the noise from individual events, such as an aircraft flyover. Cumulative metrics describe the noise in terms of the total noise exposure over a period of time.

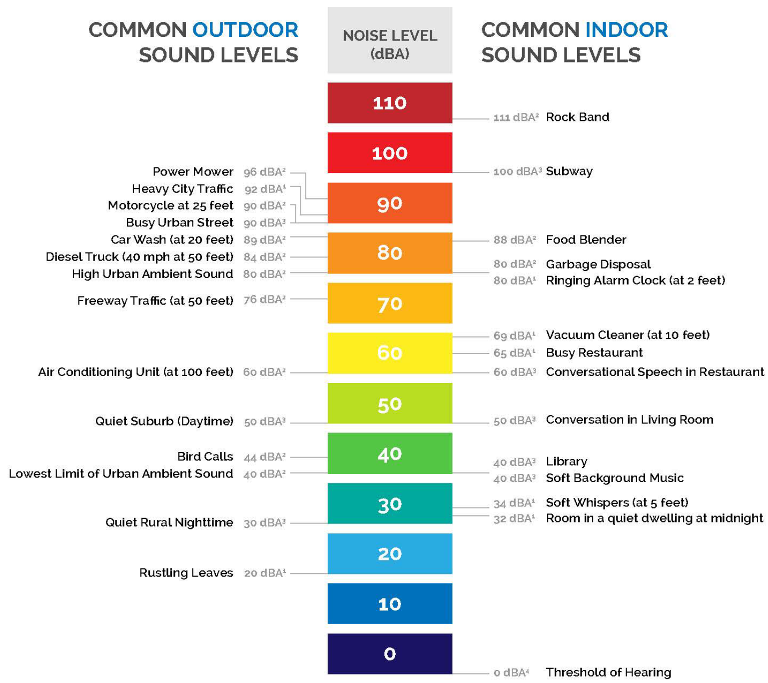
1.3.1 A-Weighted Sound Pressure Level (dBA)

The decibel is a unit used to describe sound pressure level. When expressed in dBA, the sound has been filtered to reduce the effect of very low and very high frequency sounds, much as the human ear filters sound frequencies. Without this filtering, calculated and measured sound levels would include events that the human ear cannot hear (e.g., dog whistles and low frequency sounds, such as the groaning sounds emanating from large buildings with changes in temperature and wind). With A-weighting, calculations

and sound monitoring equipment approximate the sensitivity of the human ear to sounds of different frequencies.

Some common sound levels on the dBA scale are listed in **Figure A-1**. As shown, the relative perceived loudness of a sound doubles for each increase of 10 dBA, although a 10-dBA change in the sound level corresponds to a factor of 10 changes in relative sound energy. Generally, single-event sound levels with differences of 2 dBA or less are not perceived to be noticeably different by most listeners.

FIGURE A-1
COMMON SOUNDS ON THE A WEIGHTED DECIBEL SCALE



1 Aviation Noise Effects, FAA, AEE, March, 1985 (FAA-EE-85-2), Table 1.1
2 Federal Agency Review of Selected Airport Noise Analysis Issues (Federal Interagency Committee on Noise), August 1992, Table B.1
3 Children's health and the environment, A Global Perspective, World Health Organization, 2005, Table 15.1
4 OSHA Technical Manual, TED 01-00-015, Section III (Health Hazards), Chapter 5 (Noise, Updated 8/15/2013)
Source: Environmental Science Associates, 2023.

1.3.2 Maximum A-Weighted Sound Level (Lmax)

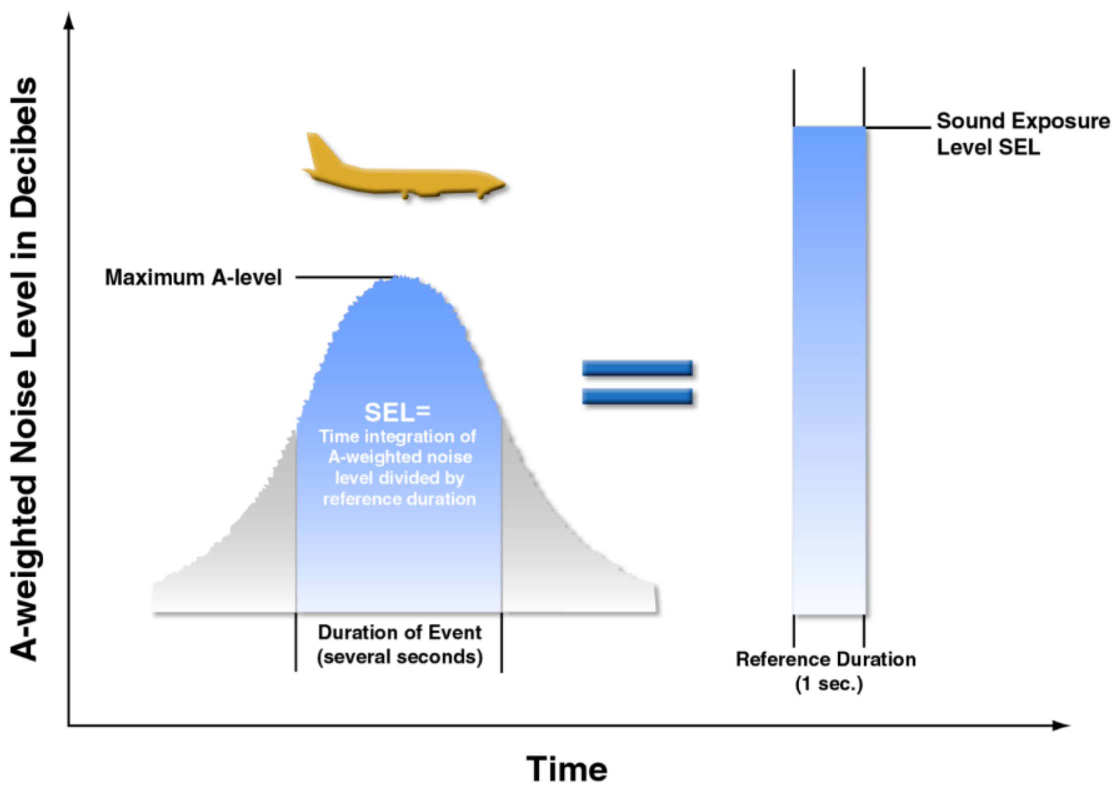
Lmax is the maximum, or peak, sound level during a noise event. The metric only accounts for the highest A-weighted sound level measured during a noise event, not for the duration of the event. For example, as an aircraft approaches, the sound of the aircraft begins to rise above ambient levels. The closer the aircraft gets, the louder the sound until the aircraft is at its closest point. As the aircraft passes, the sound level decreases until the sound returns to ambient levels. Some sound level meters measure and record the maximum sound level (Lmax). The Lmax for an aircraft flyover is illustrated on **Table A-1**.

TABLE A-1
COMMON SOUNDS ON THE A-WEIGHTED DECIBEL SCALE

Sound	Sound level (dBA)	Relative loudness (approximate)	Relative sound energy
Rock music, with amplifier	120	64	1,000,000
Thunder, snowmobile (operator)	110	32	100,000
Boiler shop, power mower	100	16	10,000
Orchestral crescendo at 25 feet, noisy kitchen	90	8	1,000
Busy street	80	4	100
Interior of department store	70	2	10
Ordinary conversation, 3 feet away	60	1	1
Quiet automobiles at low speed	50	1/2	.1
Average office	40	1/4	.01
City residence	30	1/8	.001
Quiet country residence	20	1/16	.0001
Rustle of leaves	10	1/32	.00001
Threshold of hearing	0	1/64	.000001

SOURCE: U.S. Department of Housing and Urban Development, Aircraft Noise Impact—Planning Guidelines for Local Agencies, 1972.

FIGURE A-2
SOUND EXPOSURE LEVEL AND MAXIMUM SOUND LEVEL



SOURCE: Brown-Buntin Associates, Inc., November 2004.

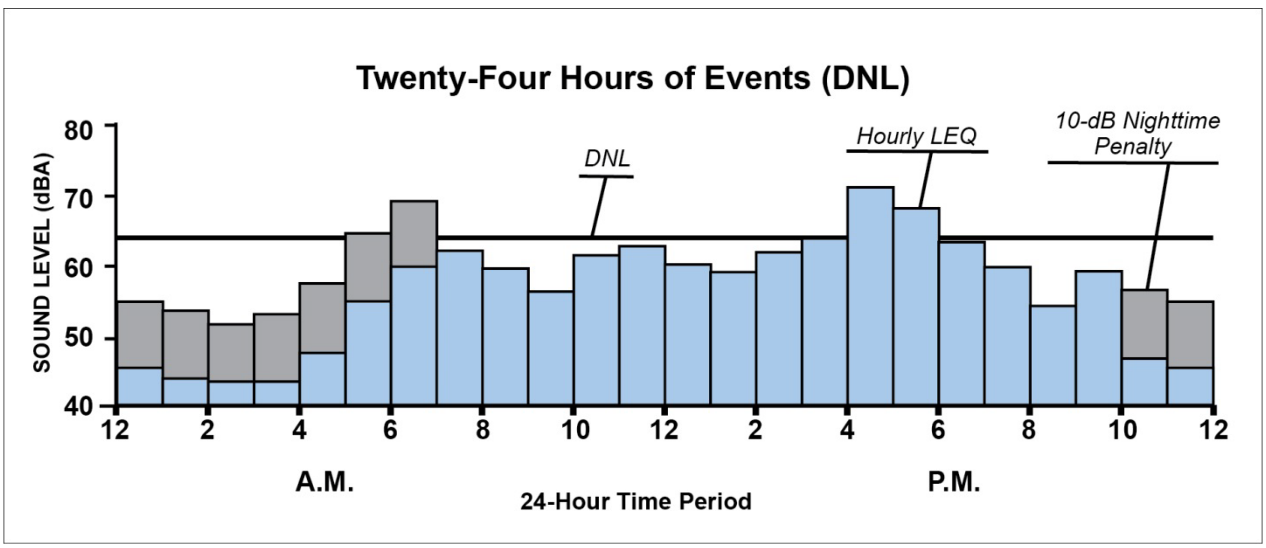
1.3.3 Sound Exposure Level (SEL)

Sound Exposure Level (SEL), is a time integrated measure, expressed in decibels, of the sound energy of a single noise event at a reference duration of one second. The sound level is integrated over the period that the level exceeds a threshold. Therefore, SEL accounts for both the maximum sound level and the duration of the sound. The standardization of discrete noise events into a one-second duration allows calculation of the cumulative noise exposure of a series of noise events that occur over a period of time. The SEL of an aircraft noise event is typically 7 to 12 dBA greater than the Lmax of the event. SELs for aircraft noise events depend on the location of the aircraft relative to the noise receptor, the type of operation (landing, takeoff, or overflight), and the type of aircraft. The SEL for an aircraft flyover is also illustrated on **Figure A-2**.

1.3.4 Equivalent Noise Level (L_{eq})

Equivalent Noise Level (Leq) is the sound level corresponding to a steady state, A-weighted sound level containing the same total energy as a time-varying signal over a given sample period. Leq is the "energy" average noise level during the time period of the sample. It is based on the observation that the potential for a noise to impact people is dependent on the total acoustical energy content of the noise. It is the energy sum of all the sound that occurs during that time period. This is graphically illustrated in the middle graph on **Figure A-3**. Leq can be measured for any time period, but is typically measured for 15 minutes, 1 hour, or 24 hours.

FIGURE A-3
DAY-NIGHT AVERAGE SOUND LEVEL



1.4 Aviation Environmental Design Tool

The noise analyses were conducted using the most current version of the FAA's Aviation Environmental Design Tool (AEDT). The AEDT is the FAA's standard model for evaluating aircraft noise, fuel burn/consumption, and emissions at airports. For this analysis, AEDT, Version 3e, was used to model aircraft noise exposure for aircraft flybys at the Pacific Airshow Huntington Beach.

The AEDT produces noise exposure contours that are used for land use compatibility maps. The program includes a built-in Geographic Information System (GIS) platform and tools for comparing contours and utilities that facilitate easy export to other GIS software suites. The model can also calculate predicted noise at specific sites such as hospitals, schools, or other noise-sensitive locations. For these discrete locations, the AEDT has the capability to report noise exposure levels at the specific location.

The AEDT accounts for each aircraft flight along flight tracks to or from the airport, or aircraft overflying the airport. Flight track definitions are coupled with information in the model's databases relating to noise levels at varying distances and flight performance data for each distinct type of aircraft selected. In general, the model computes noise levels at regularly-spaced grid receptors at ground level around the airport. The distance to each aircraft in flight is computed (slant distance), and the associated noise exposure of each aircraft flying along each flight track within the vicinity of the grid receptor is determined. The logarithmic acoustical energy levels for each individual aircraft single-event are then summed for each grid receptor. The AEDT can create contours of specific noise levels based on the acoustical energy summed at each of the grid receptors for the selected metric. The cumulative values of noise exposure at each grid receptor are used to interpolate contours of equal noise exposure. The AEDT can also compute noise levels at user-defined points on the ground.

1.5.1 Graphic Representation of Aircraft Noise Exposure

Noise exposure contours are lines on a map that connect points of equal values, much like topographic contours are drawn to indicate area of equal ground elevation. For example, a contour may be drawn to connect all points of 60 dB; another may be drawn to connect all points of 65 dB; and so forth. Generally, noise contours are plotted at 5-dB intervals.

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Technical Memorandum

Date	April 5, 2024
To	Paul Mitchell, ESA
From	Chris Nottoli, ESA Dominic Scarano, ESA Justin Cook, ESA
Subject	**UCSF BCH Oakland NHB Project Environmental Impact Report Helistop Noise and Air Quality Modeling Approach, Input Assumptions, and Results for Revised Project Variant**

1. Background

Since publication of the Draft EIR on January 16, 2024, UCSF BCH Oakland has refined certain aspects of the proposed New Hospital Building (NHB) Project Variant, as part of the on-going planning, development, and design process. This includes a reshaped, slightly taller parking garage and associated rooftop helistop. The Revised Project Variant parking garage would be slightly taller with the addition of a proposed half-parking level [i.e., increasing the parking garage from 4 levels (32 feet agl) under the previous design to 5 levels (45 feet agl) with the Project refinements.] The rooftop helistop landing under the Revised Project Variant would measure approximately 12 feet above the roof of the parking structure (i.e., approximately 57 feet agl). The helistop for the Revised Project Variant would be located on the west side of the parking structure roof, in approximately the same geographic location on the Project site as was previously proposed.

The existing helistop is located on a 36-foot-tall above ground level (agl) helistop structure located in the southern portion of the campus. As under the previously-proposed Project Variant, the Revised Project variant helistop would be relocated approximately 125 feet south of the existing location to the rooftop of the proposed parking structure. In accordance with the scope of work, noise contours and an air emission inventory were produced for two scenarios: 2022 Existing Conditions and 2031 Proposed Revised Project Variant. A speech interference and sleep disturbance analysis was also conducted as part of the scope. The previous Helistop Noise Assessment conducted in support of the Children's Hospital and Research Center Oakland (CHRCO) Campus Master Plan (CMP) Project Final EIR, completed by Brown-Buntin Associates, Inc. in July 2014 (hereinafter, "the BBA Report"), was used as the basis for some of the noise modeling inputs.[1] This technical memorandum discusses the noise modeling approach, input assumptions, and results of the analysis for the Revised Project variant. Please see Appendix A in this technical memorandum for additional information on aircraft noise and aircraft noise terminology.

The following sections address the Federal Aviation Administration (FAA)'s Aviation Environmental Design Tool (AEDT)[2], Version 3e, inputs developed under the following categories:

1 "Helistop Replacement Project Children's Hospital and Research Center Oakland," Brown-Buntin Associates, Inc., August 2014.
2 https://aedt.faa.gov/

- Helistop layout physical descriptions
- Aircraft operations
- Aircraft noise, air quality, and performance characteristics
- Flight track geometry and use
- Meteorological conditions
- Terrain
- Discussion of Results

2. Helistop Layout Physical Descriptions

The UCSF BCH Oakland campus site is located two miles northeast of downtown Oakland in Alameda County, California, between Martin Luther King Jr. Way and State Route 24 (SR 24). The campus site is surrounded by residential and commercial land uses. The existing UCSF BCH Oakland helistop is atop a 36-foot AGL structure located in the southern portion of the Project site.

This technical memorandum includes the existing helistop layout, which is used in the 2022 Existing Conditions, and the proposed helistop layout which is used in the 2031 Revised Project Variant Scenario. **Table 1** provides the helistop layout data for the Existing and Revised Project Variant scenarios.

Table 1. Helistop Data
Source: AirportIQ 5010 Airport Master Records and Reports; Smith Group, 2023

Helistop	Latitude	Longitude	Elevation (Feet Mean Sea Level [MSL])
Existing	37.836174	-122.266796	136
Revised Project Variant	37.835813	-122.266702	148

3. Aircraft Operations

Title 14 of the Code of Federal Regulations (CFR) Part 150 (14 CFR Part 150) and its table of noise/land use compatibility guidelines require the calculation of Day Night Average Sound Level (DNL), or Community Noise Equivalent Level (CNEL) for aircraft noise analyses in California. That is, the total noise exposure (in CNEL) averaged over a year – typically a calendar year. The AEDT produces these values of exposure utilizing an "average annual day" of aircraft operations.

Helistop operations for all the modeling scenarios were derived based on flight log data provided by UCSF BCH Oakland. It is projected that operations will increase at a rate of 1% per year through the completion date of the proposed helistop. As under the previously-proposed Project Variant, the annual operations modeled for the 2022 Existing Conditions and the 2031 Scenarios were 786 and 858, respectively.[3],

As under the previously-proposed Project Variant assessment, the AgustaWestland A-109 was modeled as the primary helicopter operating at UCSF BCH Oakland campus site under the Revised Project Variant, as is consistent with the BBA Report. The A-109 is a twin-engine helicopter with a four-bladed main rotor and a conventional (unshrouded) tail rotor. The operational characteristics and noise levels of the A-109 are representative of the older and relatively noisy helicopters that currently utilize or would be expected to utilize the existing or replacement helistop. As such the modeling of this helicopter, reflects a conservative approach to noise exposure. As under the previously-proposed Project Variant assessment, the day-evening-night split for arrivals and departures were

3 Each helicopter landing/takeoff counts as one aircraft operation.

derived from calendar year 2022 flight logs and applied to the annual operations. The arrival split was modeled as 55.4% (day), 15.7% (evening), and 28.9% (night). The departure split was modeled as 51.2% (day), 18.4% (evening), and 30.4% (night). **Table 2** presents the 2022 Existing Conditions annual operations. **Table 3** presents the 2031 Revised Project Variant forecast annual operations.

Table 2. Annual Aircraft Operations – 2022 Existing Conditions
Source: BCH, 2023; ESA, 2023

Operation	Aircraft	Day	Evening	Night	Total
Arrivals	A-109	217.61	61.71	113.68	393
Departures	A-109	201.43	72.25	119.32	393
	Subtotal	**419.04**	**133.96**	**233.0**	**786**

Table 3. Annual Aircraft Operations – 2031 Revised Project Variant
Source: BCH, 2023; ESA, 2023

Operation	Aircraft	Day	Evening	Night	Total
Arrivals	A-109	237.55	67.36	124.09	429
Departures	A-109	219.88	78.87	130.25	429
	Subtotal	**457.42**	**146.23**	**254.34**	**858**

4. Aircraft Noise, Air Emissions, and Performance Characteristics

Specific noise and performance data must be entered into the AEDT for the helicopter operating at the campus site. Noise data is included in the form of Sound Exposure Level (SEL) at a range of distances (from 200 feet to 25,000 feet) from a particular aircraft with engines operating at a specific thrust level. Performance data includes thrust, speed and altitude profiles for takeoff and landing operations. The AEDT database contains standard noise and performance data for helicopter aircraft most of which are civilian aircraft. The AEDT automatically accesses the noise and performance data for takeoff and landing operations by those aircraft.

Besides identifying the aircraft types in the database, the AEDT has STANDARD, ICAO, and Noisemap aircraft flight profiles for takeoffs, landings, and flight patterns or touch-and-go operations. ESA used standard profiles for the AgustaWestland A-109, consistent with the previous conservative approach to the helicopter noise assessment conducted in support of the CHRCO CMP Project Final EIR.

Air emissions sources at the helistop within this analysis are from the helicopters operating at the hospital. Emissions inventories from the operation of helicopter main engines during each phase of flight were prepared using the AEDT.

5. Flight Track Geometry and Use

As under the previously-proposed Project Variant assessment, model flight track geometry was taken from the BBA Report. ESA updated the proposed arrival and departure tracks by shifting and snapping the existing flight tracks to the proposed helistop location, and confirmed with Heliplanners, an aviation consulting firm for the Revised Project Variant, that the proposed flight tracks are representative. **Figure 1** and **Figure 2** present the Existing Conditions and Revised Project Variant model flight tracks, respectively. It is expected that 90% of helicopter operations will arrive from the east and depart to the west. Usage was distributed evenly when multiple tracks arrive from or depart to the same direction.[4] **Table 4** presents the modeled flight track usage percentages.

Figure 1. Existing Conditions Model Flight Tracks

Source: AEDT, 2023; ESA, 2023

[4] The previous BAA Report applied 100% track utilization to each of the eight model flight tracks resulting in a 600% increase in annual helicopter operations.

Figure 2. Revised Project Variant Model Flight Tracks

Source: AEDT, 2023; ESA, 2024

Table 4. Arrival and Departure Track Usage
Source: ESA, 2023

Track Name	Direction of Travel	Track Use
		Arrivals
ASW	Westbound	45%
ANW	Westbound	45%
AE	Eastbound	10%
	Arrivals Subtotal	**100%**
		Departures
DNE	Eastbound	5%
DSE	Eastbound	5%
DNW	Westbound	30%
DSW	Westbound	30%
DW	Westbound	30%
	Departures Subtotal	**100%**

6. Meteorological Conditions

The AEDT has several settings that affect aircraft performance profiles and sound propagation based on meteorological data. Meteorological settings include 10-year average temperature, barometric pressure, and relative humidity at the airport. Weather data from Oakland International Airport (OAK) was used as weather information for UCSF BCH Oakland is not available in the AEDT. The AEDT holds the following values for annual average weather conditions at OAK:

- Temperature: 58.38º F
- Pressure: 1013.47 millibars
- Sea-level Pressure: 1016.75 millibars
- Relative Humidity 72.61%
- Dew Point: 49.62° F
- Wind Speed: 7.2 Knots

7. Terrain

Terrain data describes the elevation of the ground surrounding the helistop. If the AEDT user selects the use of terrain data, the AEDT uses terrain data to adjust the ground level under the flight paths. The terrain data does not affect the aircraft's performance or noise levels but does affect the vertical distance between the aircraft and a "receiver" on the ground. This in turn affects noise propagation assumptions about how noise propagates over ground. ESA obtained 1/3 arcsecond terrain data from the United States Geological Survey (USGS) National Map Viewer and used it with the terrain feature of the AEDT in generating the noise contours.[5]

[5] USGS terrain obtain on June 22, 2023.

8. Discussion of Results

Changes in Noise Contours and Noise Exposure

The 2022 Existing Conditions and 2031 Project Variant CNEL contours are presented in **Figure 3** and **Figure 4**, respectively. A comparison of the 2022 Existing Conditions and 2031 Revised Project Variant is presented in **Figure 5**. Each figure shows the 60 through 75 CNEL contours in 5 dB increments over an aerial basemap and includes the noise impact assessment site locations. As under the previously-proposed Project Variant analysis, noise impact assessment site locations for the Revised Project Variant were selected as part of the ambient noise measurements conducted between May 23rd through May 25th, 2023. Site locations were selected to be consistent with the helicopter noise assessment conducted in support of the CHRCO CMP Project Final EIR.

Figure 3. 2022 Existing Conditions CNEL Contours

Source: AEDT, 2023; ESA, 2023

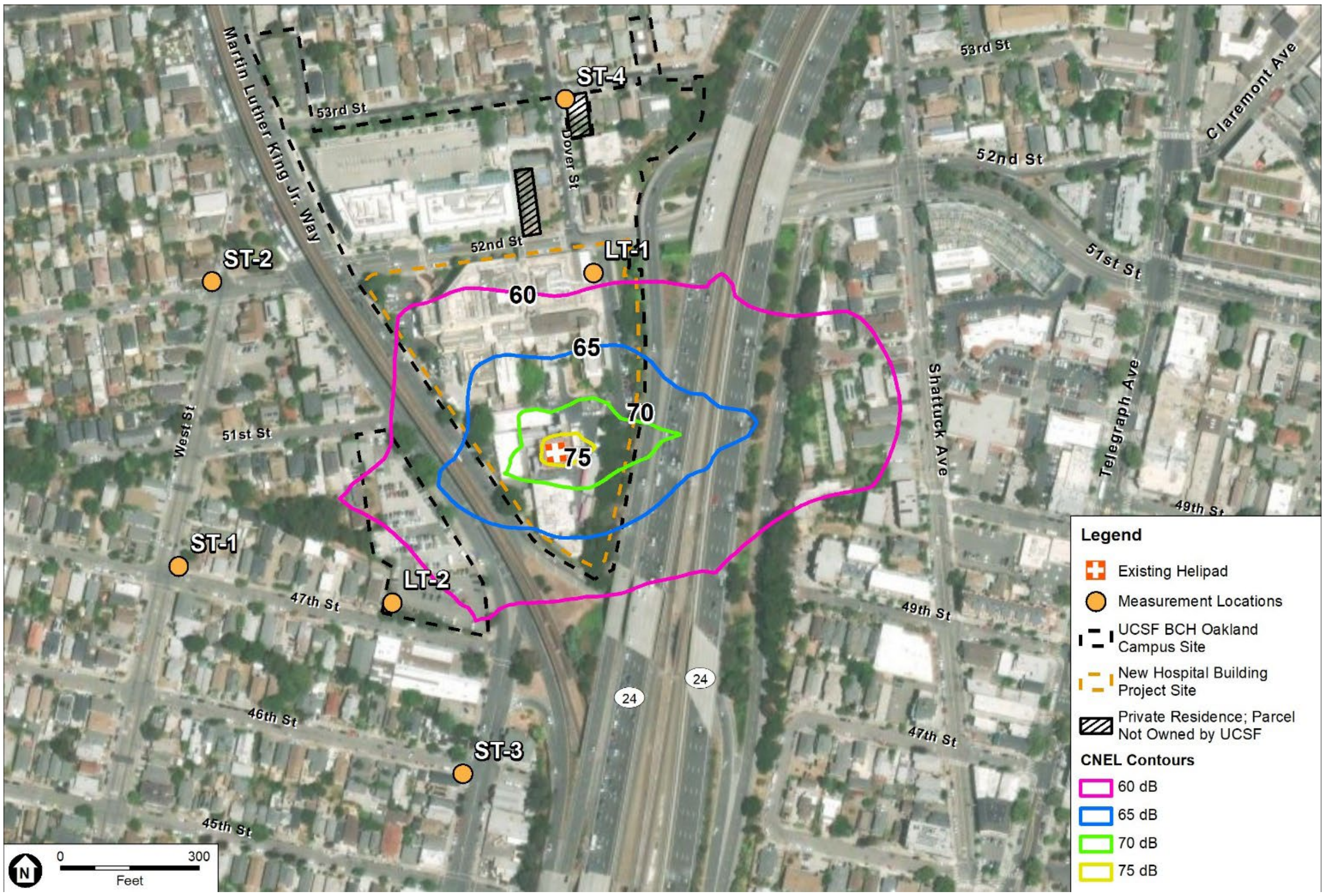


Figure 4. 2031 Revised Project Variant CNEL Contours

Source: AEDT, 2024; ESA, 2024

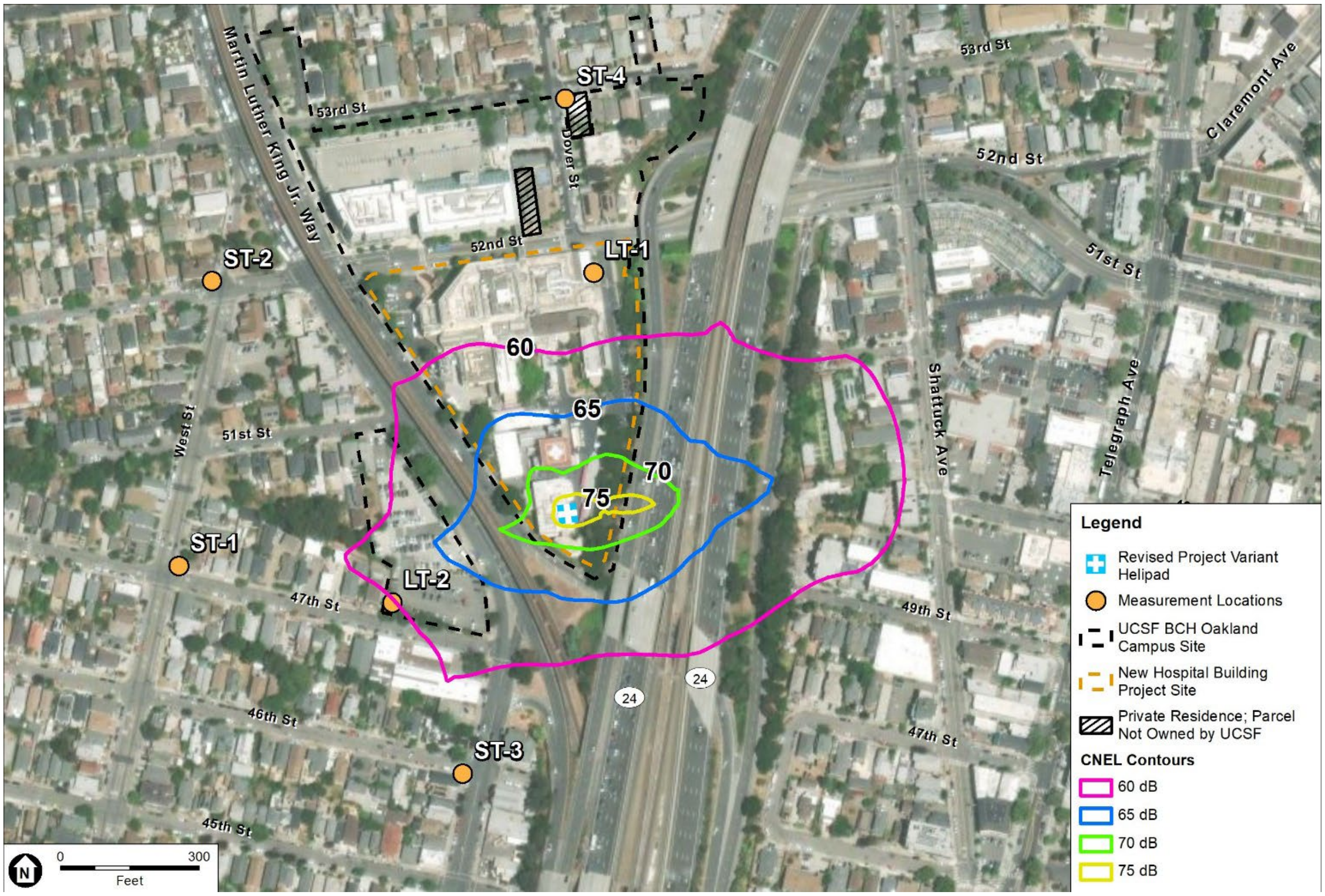
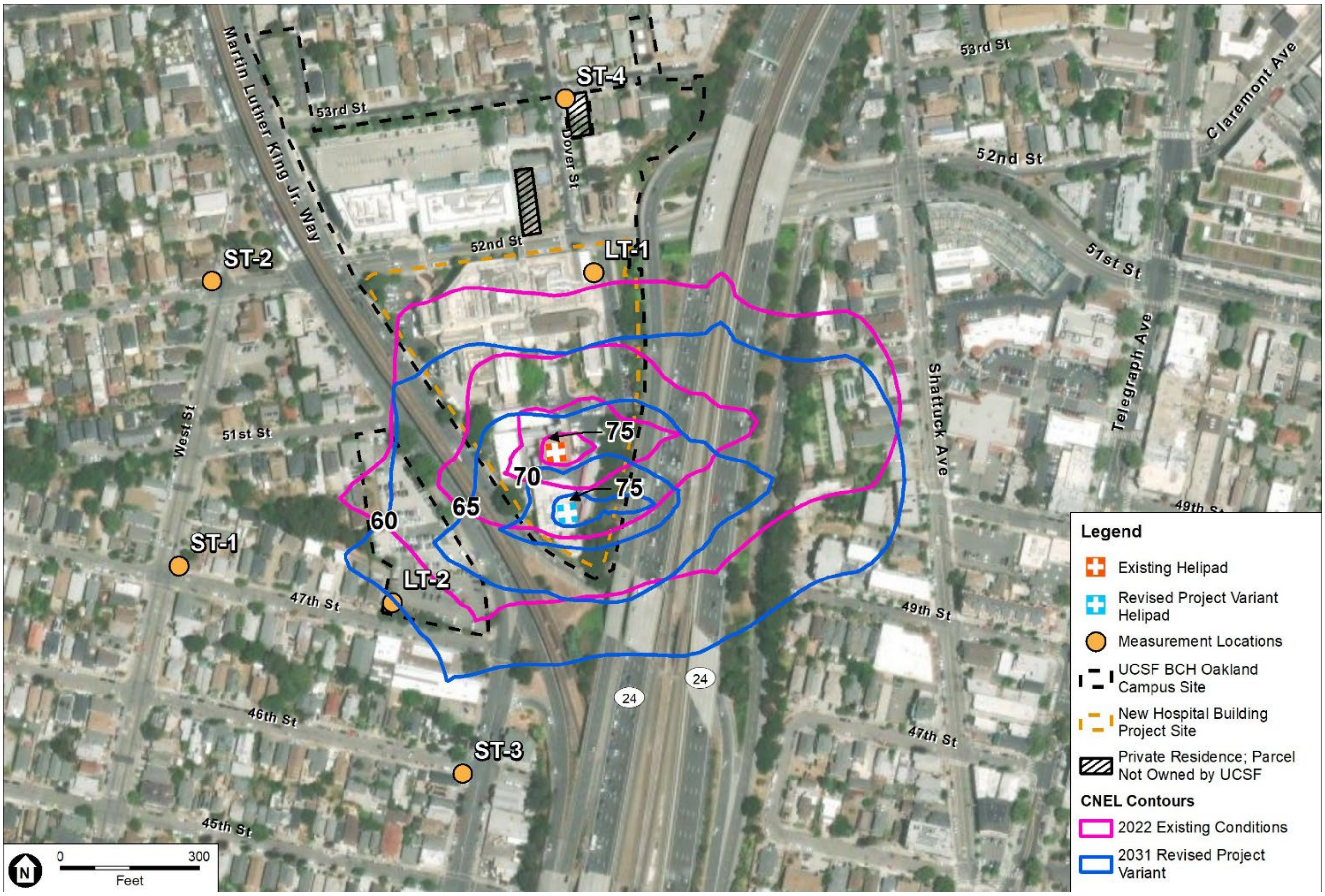


Figure 5. 2022 Existing Conditions and 2031 Revised Project Variant CNEL Contours Comparison

Source: AEDT, 2024; ESA, 2024



Noise levels, in terms of CNEL, were calculated for the 2022 Existing Conditions and 2031 Revised Project Variant based on the location of the existing helistop and for the Revised Project Variant scenario based on the location of the relocated helistop. **Table 5** provides the modeled results at each of the noise impact assessment site locations. Sites LT-1, ST-2, and ST-4 are located to the north of both helistops, while LT-2, ST-1 and ST-3 are located to the south of both helistops.

At LT-1, at the northeast corner of the hospital, the CNEL under the Revised Project Variant scenario is lower at 56.5 dB compared to the existing level of 59.0 dB, resulting in a project-related change of -2.6 dB. Residential sites ST-2 and ST-4 also show a slight decrease in CNEL of -0.5 dB (from 50.8 dB to 50.4 dB) and -0.9 dB (from 52.2 dB to 51.3 dB), respectively.

South of the helistops, residential site LT-2 experiences an increase in CNEL under the Revised Project Variant scenario, increasing from 56.9 dB under existing conditions to 59.7 dB, resulting in a project-related change of 2.8 dB. Residential site ST-1 experiences an increase of 0.2 dB from 53.8 dB to 54.0 dB and ST-3 displays a 2.2 dB increase from 52.3 dB to 54.5 dB under the Revised Project Variant scenario.

In summary, overall Revised Project variant-related changes show decreases in noise exposure ranging from -0.4 dB to -2.5 dB at sensitive land uses to the north of the helistops and increases in noise exposure ranging from 0.2 dB to 2.8 dB at sensitive land uses to the south of the helistops.

Table 5. Modeled CNEL Values at Noise Impact Assessment Sites

Source: ESA, 2024

Site	Land Use	Existing Helistop CNEL (dB)	Revised Project Variant Helistop CNEL (dB)	
		2022	2031	Revised Project Variant Related Change
LT-1	Hospital	59.0	56.5	-2.5
LT-2	Residential	56.9	59.7	2.8
ST-1	Residential	53.8	54.0	0.2
ST-2	Residential	50.8	50.4	-0.4
ST-3	Residential	52.3	54.5	2.2
ST-4	Residential	52.2	51.3	-0.9

Land uses within the CNEL contours were analyzed using Google Earth aerial photography with results shown in **Table 6**. It should be noted that the hospital and all associated facilities were considered as one noise-sensitive use which is located within the CNEL 65+ under both scenarios analyzed. There are no churches, schools, or public parks exposed to CNEL 60-65 under both modeling scenarios. Project variant-related changes show a net decrease of three single-family residential homes and one commercial building within the CNEL 60-65. Project variant-related changes show a net increase of four apartment complexes within the CNEL 60-65.

Table 6. Land Use

Source: ESA, 2024

Land Use	Existing Helistop			Revised Project Variant Helistop			Revised Project Variant-Related Changes - 2031								
	2022			2031			Noise Exposure Increase			Noise Exposure Decrease			Net Noise Exposure Change		
	60-65	65-70	70+	60-65	65-70	70+	60-65	65-70	70+	60-65	65-70	70+	60-65	65-70	70+
Homes	3	0	0	0	0	0	0	0	0	3	0	0	-3	0	0
Apartment Buildings	14	0	0	18	0	0	4	0	0	0	0	0	4	0	0
Mixed Use	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Churches	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Schools	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hospitals	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
Commercial	1	0	0	0	0	0	0	0	0	1	0	0	-1	0	0
Parks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Single-Event Noise Impacts on Sleep and Speech

A single event analysis was performed for each noise impact assessment site location, utilizing three metrics: SEL to evaluate the potential for sleep disturbance, and Maximum A-Weighted Sound Level (Lmax), and Time Above (TA) to assess the potential for speech interference. Single event metrics such as SEL and Lmax represent worst-case noise exposure for a single noise event, and as such, are not affected by changes to the total number of annual operations. The single event metrics were modeled using the closest track to each noise impact assessment site location.

To determine potential sleep disturbance, an outdoor-to-indoor noise level reduction (NLR) must be applied. A typical NLR for a residence in the project area with windows open is 10-15 dB and 15-20 dB when windows and doors are closed.[6] For this analysis, an NLR of 15 dB was applied to modeled results. For example, a single event with an exterior SEL of 90 dB would result in an interior SEL of 75 dB.

Table 7 summarizes the calculated SEL values at each noise impact assessment site location for potential sleep disturbance. The 15 dB NLR was subtracted from the exterior SEL and the Federal Interagency Committee on Aviation Noise (FICAN) dose response was calculated based on the interior SEL.[7]

As previously mentioned, sites LT-1, ST-2, and ST-4 are located to the north of the helistops, while LT-2, ST-1 and ST-3 are located to the south of the helistops.

At LT-1, at the northeast corner of the hospital, the maximum percent awakened under the Revised Project Variant scenario is lower at 10.7% compared to the existing level of 11.1%, resulting in a Project variant-related change of -0.4%. Residential sites ST-2 and ST-4 show a slight decrease in maximum percent awakened of -0.4% (from 8.2% to 7.8%) and -0.5% (from 7.1% to 6.6%), respectively.

South of the helistops, residential site LT-2 experiences an increase in maximum percent awakened under the Revised Project Variant scenario, increasing from 9.7% to 10.7%, resulting in a project variant-related change of 1.0%. Residential sites ST-1 and ST-3 show a slight decrease in maximum percent awakened of -0.2% (from 10.6% to 10.4%) and -0.8% (from 9.3% to 8.5%), respectively.

Overall, project variant-related changes show a decrease in maximum percent awakened from -0.2 dB to -0.8 dB at all modeled site locations except one. An increase of 1.0% is expected at LT-2, southwest of the hospital.

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6 US Environmental Protection Agency, *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare With an Adequate Margin of Safety*, March 1974.

7 Federal Interagency Committee on Aviation Noise, *Effects of Aviation Noise on Awakenings from Sleep*, June 1997.

Table 7. Potential Sleep Disturbance
Source: ESA, 2024, FICAN

Site	Land Use	Existing Helistop			Revised Project Variant Helistop			Revised Project Variant Related Change (%)
		Exterior SEL (dB)[1]	Interior SEL (dB)[2]	Maximum % Awakened[3]	Exterior SEL (dB)[1]	Interior SEL (dB)[2]	Maximum % Awakened[3]	
LT-1	Hospital	99.4	84.4	11.1	98.2	83.2	10.7	-0.4
LT-2	Residential	95.3	80.3	9.7	98.3	83.3	10.7	1.0
ST-1	Residential	98.1	83.1	10.6	97.5	82.5	10.4	-0.2
ST-2	Residential	91.0	76.0	8.2	89.6	74.6	7.8	-0.4
ST-3	Residential	94.2	79.2	9.3	91.8	76.8	8.5	-0.8
ST-4	Residential	87.4	72.4	7.1	85.5	70.5	6.6	-0.5

Notes:
[1] AEDT calculated SEL value for the A-109 on flight track closest to receiver.
[2] Outdoor-to-indoor noise level reduction of 15 was applied to all receivers.
[3] Maximum percent awakened calculated using FICAN dose-response curve.

Potential speech interference is assumed to occur at interior noise levels at or above 65 dB. The AEDT was used to calculate exterior noise levels that exceeded 80 dB, (e.g., TA 80 dB in minutes per day) to account for the 15 dB NLR inside the residence. **Table 8** summarizes the calculated Lmax and TA 65 values at each noise impact assessment site location for potential speech interference. The data shows that the overall Revised Project variant-related changes would not increasethe existing speech interference duration at the modeled residential site locations and a small decrease at LT-1.

Table 8. Potential Speech Interference
Source: ESA, 2024

Site	Land Use	Existing Helistop		Revised Project Variant Helistop		
		Lmax (dB)[1]	2022 TA65 (min/day)	Lmax (dB)[1]	2031 TA65 (min/day)	Revised Project Variant Related Change (min/day)
LT-1	Hospital	98.7	0.4	98.4	0.3	-0.1
LT-2	Residential	101.0	0.1	104.7	0.1	0.0
ST-1	Residential	100.6	0.0	102.4	0.0	0.0
ST-2	Residential	85.1	0.0	82.8	0.0	0.0
ST-3	Residential	90.4	0.1	97.5	0.1	0.0
ST-4	Residential	88.1	0.1	85.7	0.1	0.0

Notes:
[1] AEDT calculated SEL value for the A-109 on flight track closest to receiver.
[2] Outdoor-to-indoor noise level reduction of 15 was applied to all receivers.

Criteria Pollutant Emissions from Helistop Operations

Emissions inventories for the following CARB criteria air pollutants were prepared for the 2022 Existing Conditions and 2031 Revised Project Variant scenarios using the modeling methodology described in previous sections: carbon monoxide, volatile organic compounds (a precursor to ozone), oxides of nitrogen, oxides of sulfur, particulate matter, and fine particulate matter. The emissions inventories for the 2022 Existing Conditions and Revised Project Variant scenarios are shown in **Table 9**. Based on the emissions modeling results, helistop operations under the Revised Project Variant scenario would not result in air emissions that would exceed applicable threshold of significance for any criteria air pollutants.

Table 9. Helicopter Air Emissions Inventories (Short Tons Per Year)

Source: ESA, 2024

Scenario	CO	VOC	NO_X	SO_X	PM_{10}	$PM_{2.5}$
2022 Existing Conditions	0.15	0.01	0.09	0.02	0.00	0.00
2031 Revised Project Variant	0.16	0.01	0.10	0.02	0.00	0.00

APPENDIX A

Aircraft Noise

1.1 Environmental Noise Fundamentals

The measurement and human perception of sound involve two basic physical characteristics: intensity and frequency. Intensity is a measure of the acoustic energy of sound vibrations, expressed in terms of sound pressure. The higher the sound pressure, the more energy carried by the sound and the louder the perception of that sound. The second important physical characteristic is sound frequency, which is the number of times per second the air vibrates or oscillates. Low-frequency sounds are characterized as rumbles or roars, while high-frequency sounds are typified by sirens or screeches.

Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level), which is measured in decibels (dB). On this scale, zero dB corresponds roughly to the threshold of human hearing and 120 to 140 dB corresponds to the threshold of pain. Pressure waves traveling through air exert a force registered by the human ear as sound. Noise is commonly defined as unwanted sound.

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude (sound power). When all the audible frequencies of a sound are measured, a sound spectrum is plotted consisting of a range of frequencies spanning 20 to 20,000 Hz. The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the sound frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts on humans, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to extremely low and extremely high frequencies. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). A-weighting follows an international standard methodology of frequency weighting and is typically applied to community noise measurements. Some representative noise sources and their corresponding A-weighted noise levels are shown on **Figure A-1**.

1.2 General Characteristics of Aircraft Noise

Outdoor sound levels decrease as a function of distance from the source and as a result of wave divergence, atmospheric absorption, and ground attenuation. If sound is radiated from a source in a homogenous and undisturbed manner, the sound travels as spherical waves. As the sound wave travels away from the source, the sound energy is distributed over a greater area, dispersing the sound power of

the wave. Spherical spreading of the sound wave reduces the noise level, for most sound sources, at a rate of 6 dB per doubling of the distance.

Atmospheric absorption also influences the levels that are received by the observer. The greater the distance sound travels, the greater the influence of atmospheric effects. Atmospheric absorption becomes important at distances of greater than 1,000 feet. The degree of absorption is a function of the sound frequency, as well as the humidity and temperature of the air. For example, atmospheric absorption is lowest at high humidity and higher temperatures. Turbulence and gradients of wind, temperature, and humidity also play a significant role in determining the degree of attenuation. Certain conditions, such as inversions, can also result in higher sound levels that would result from spherical spreading as a result of channeling or focusing the sound waves.

Absorption effects in the atmosphere vary with frequency. The higher frequencies are more readily absorbed than the lower frequencies. Over large distances, the lower frequencies become the dominant sound as the higher frequencies are attenuated.

The effects of ground attenuation on aircraft noise propagation are a function of the height of the source and/or receiver and the characteristics of the terrain. The closer the source of the noise is to the ground, the greater the ground absorption. Terrain consisting of soft surfaces, such as vegetation, provide for more ground absorption than hard surfaces, such as a large parking lot.

Aircraft noise originates from both the engines and the airframe of an aircraft, but the engines are, by far, the more significant source of noise. Meteorological conditions affect the transmission of aircraft noise through the air. Wind speed and direction, and the temperature immediately above ground level, cause diffraction and displacement of sound waves. Humidity and temperature materially affect the transmission of air-to-ground sound through absorption associated with the instability and viscosity of the air.

1.3 Aircraft Noise Descriptors

The description, analysis, and reporting of aircraft noise levels is made difficult by the complexity of human response to sound and the myriad of sound-rating scales and metrics that have been developed for describing acoustic effects. Various rating scales have been devised to approximate the human response to the “loudness” or “noisiness” of a sound. Noise metrics have been developed to account for additional parameters, such as duration and cumulative effect of multiple events.

Noise metrics can be categorized as single-event metrics and cumulative metrics. Single-event metrics describe the noise from individual events, such as an aircraft flyover. Cumulative metrics describe the noise in terms of the total noise exposure over a period of time.

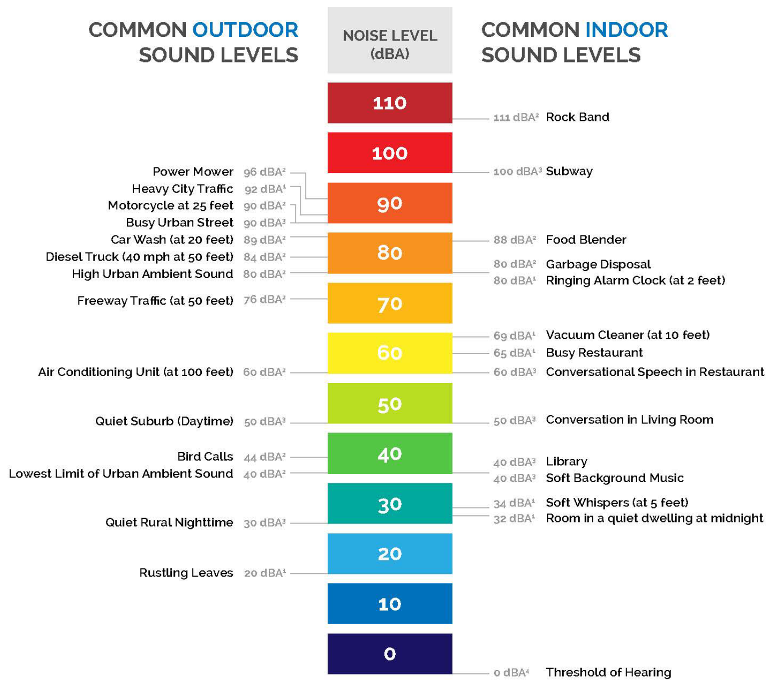
1.3.1 A-Weighted Sound Pressure Level (dBA)

The decibel is a unit used to describe sound pressure level. When expressed in dBA, the sound has been filtered to reduce the effect of very low and very high frequency sounds, much as the human ear filters sound frequencies. Without this filtering, calculated and measured sound levels would include events that the human ear cannot hear (e.g., dog whistles and low frequency sounds, such as the groaning sounds emanating from large buildings with changes in temperature and wind). With A-weighting, calculations

and sound monitoring equipment approximate the sensitivity of the human ear to sounds of different frequencies.

Some common sound levels on the dBA scale are listed in **Figure A-1**. As shown, the relative perceived loudness of a sound doubles for each increase of 10 dBA, although a 10-dBA change in the sound level corresponds to a factor of 10 changes in relative sound energy. Generally, single-event sound levels with differences of 2 dBA or less are not perceived to be noticeably different by most listeners.

FIGURE A-1
COMMON SOUNDS ON THE A WEIGHTED DECIBEL SCALE



1 Aviation Noise Effects, FAA, AEE, March, 1985 (FAA-EE-85-2), Table 1.1
2 Federal Agency Review of Selected Airport Noise Analysis Issues (Federal Interagency Committee on Noise), August 1992, Table B.1
3 Children's health and the environment. A Global Perspective, World Health Organization, 2005, Table 15.1
4 OSHA Technical Manual, TED 01-00-015, Section III (Health Hazards), Chapter 5 (Noise, Updated 8/15/2013)
Source: Environmental Science Associates, 2023.

1.3.2 Maximum A-Weighted Sound Level (Lmax)

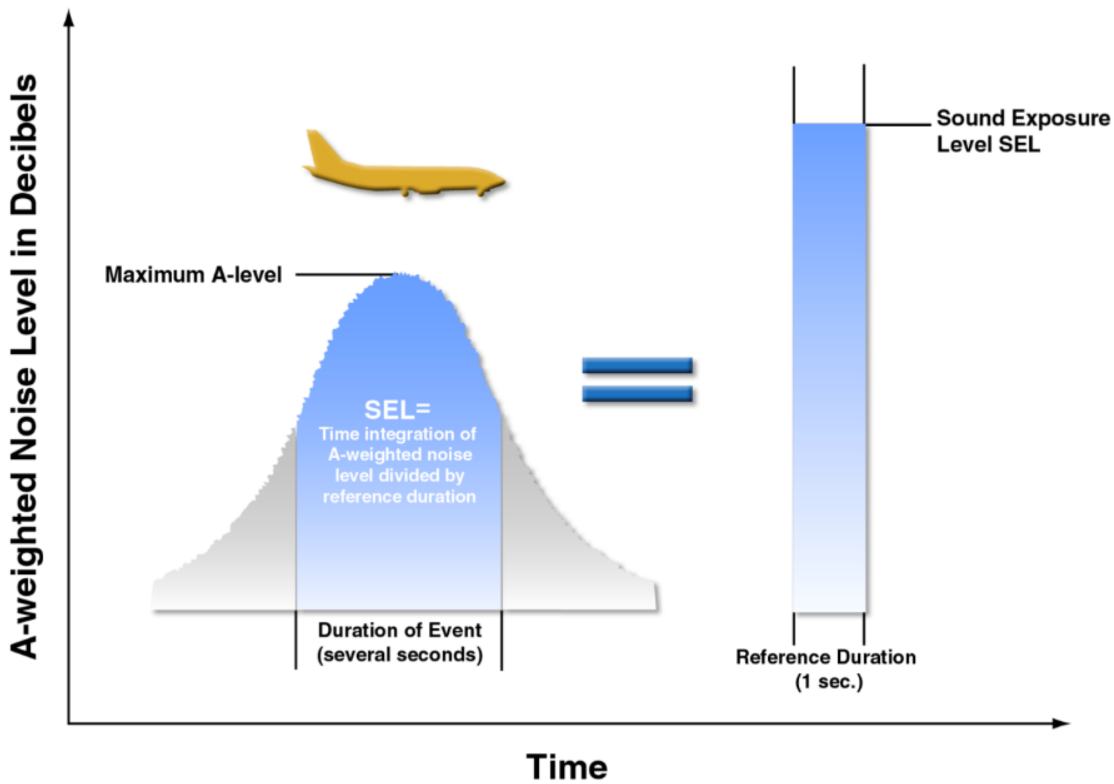
Lmax is the maximum, or peak, sound level during a noise event. The metric only accounts for the highest A-weighted sound level measured during a noise event, not for the duration of the event. For example, as an aircraft approaches, the sound of the aircraft begins to rise above ambient levels. The closer the aircraft gets, the louder the sound until the aircraft is at its closest point. As the aircraft passes, the sound level decreases until the sound returns to ambient levels. Some sound level meters measure and record the maximum sound level (Lmax). The Lmax for an aircraft flyover is illustrated on **Table A-1**.

TABLE A-1
COMMON SOUNDS ON THE A-WEIGHTED DECIBEL SCALE

Sound	Sound level (dBA)	Relative loudness (approximate)	Relative sound energy
Rock music, with amplifier	120	64	1,000,000
Thunder, snowmobile (operator)	110	32	100,000
Boiler shop, power mower	100	16	10,000
Orchestral crescendo at 25 feet, noisy kitchen	90	8	1,000
Busy street	80	4	100
Interior of department store	70	2	10
Ordinary conversation, 3 feet away	60	1	1
Quiet automobiles at low speed	50	1/2	.1
Average office	40	1/4	.01
City residence	30	1/8	.001
Quiet country residence	20	1/16	.0001
Rustle of leaves	10	1/32	.00001
Threshold of hearing	0	1/64	.000001

SOURCE: U.S. Department of Housing and Urban Development, Aircraft Noise Impact—Planning Guidelines for Local Agencies, 1972.

FIGURE A-2
SOUND EXPOSURE LEVEL AND MAXIMUM SOUND LEVEL



SOURCE: Brown-Buntin Associates, Inc., November 2004.

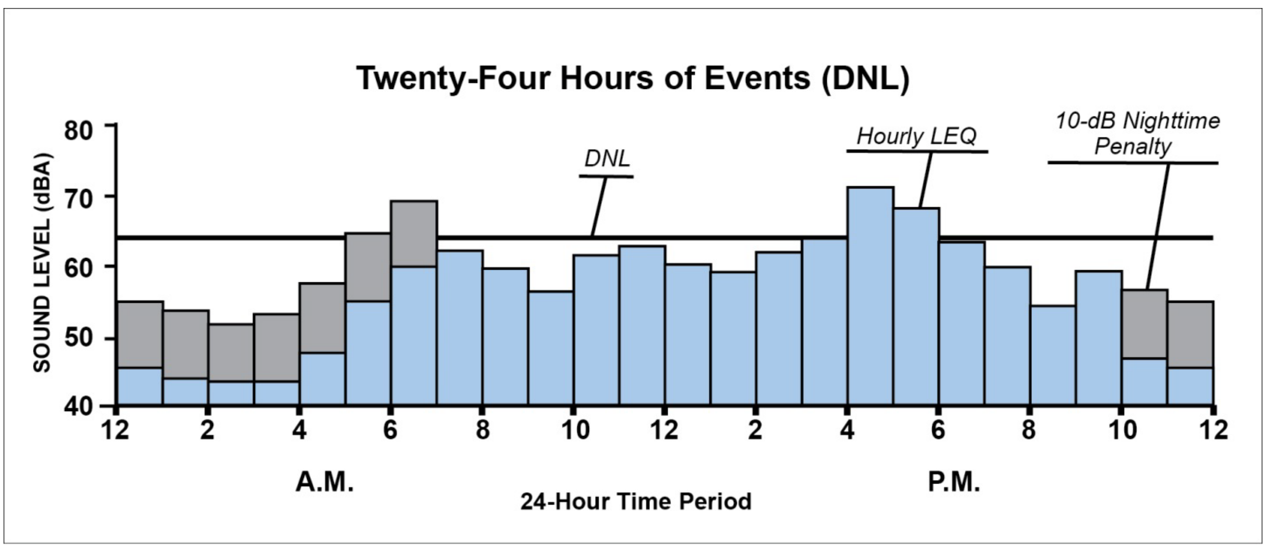
1.3.3 Sound Exposure Level (SEL)

Sound Exposure Level (SEL), is a time integrated measure, expressed in decibels, of the sound energy of a single noise event at a reference duration of one second. The sound level is integrated over the period that the level exceeds a threshold. Therefore, SEL accounts for both the maximum sound level and the duration of the sound. The standardization of discrete noise events into a one-second duration allows calculation of the cumulative noise exposure of a series of noise events that occur over a period of time. The SEL of an aircraft noise event is typically 7 to 12 dBA greater than the Lmax of the event. SELs for aircraft noise events depend on the location of the aircraft relative to the noise receptor, the type of operation (landing, takeoff, or overflight), and the type of aircraft. The SEL for an aircraft flyover is also illustrated on **Figure A-2**.

1.3.4 Equivalent Noise Level (L_{eq})

Equivalent Noise Level (Leq) is the sound level corresponding to a steady state, A-weighted sound level containing the same total energy as a time-varying signal over a given sample period. Leq is the "energy" average noise level during the time period of the sample. It is based on the observation that the potential for a noise to impact people is dependent on the total acoustical energy content of the noise. It is the energy sum of all the sound that occurs during that time period. This is graphically illustrated in the middle graph on **Figure A-3**. Leq can be measured for any time period, but is typically measured for 15 minutes, 1 hour, or 24 hours.

FIGURE A-3
DAY-NIGHT AVERAGE SOUND LEVEL



1.4 Aviation Environmental Design Tool

The noise analyses were conducted using the most current version of the FAA's Aviation Environmental Design Tool (AEDT). The AEDT is the FAA's standard model for evaluating aircraft noise, fuel burn/consumption, and emissions at airports. For this analysis, AEDT, Version 3e, was used to model aircraft noise exposure for aircraft flybys at the Pacific Airshow Huntington Beach.

The AEDT produces noise exposure contours that are used for land use compatibility maps. The program includes a built-in Geographic Information System (GIS) platform and tools for comparing contours and utilities that facilitate easy export to other GIS software suites. The model can also calculate predicted noise at specific sites such as hospitals, schools, or other noise-sensitive locations. For these discrete locations, the AEDT has the capability to report noise exposure levels at the specific location.

The AEDT accounts for each aircraft flight along flight tracks to or from the airport, or aircraft overflying the airport. Flight track definitions are coupled with information in the model's databases relating to noise levels at varying distances and flight performance data for each distinct type of aircraft selected. In general, the model computes noise levels at regularly-spaced grid receptors at ground level around the airport. The distance to each aircraft in flight is computed (slant distance), and the associated noise exposure of each aircraft flying along each flight track within the vicinity of the grid receptor is determined. The logarithmic acoustical energy levels for each individual aircraft single-event are then summed for each grid receptor. The AEDT can create contours of specific noise levels based on the acoustical energy summed at each of the grid receptors for the selected metric. The cumulative values of noise exposure at each grid receptor are used to interpolate contours of equal noise exposure. The AEDT can also compute noise levels at user-defined points on the ground.

1.5.1 Graphic Representation of Aircraft Noise Exposure

Noise exposure contours are lines on a map that connect points of equal values, much like topographic contours are drawn to indicate area of equal ground elevation. For example, a contour may be drawn to connect all points of 60 dB; another may be drawn to connect all points of 65 dB; and so forth. Generally, noise contours are plotted at 5-dB intervals.