

IV.H. Land Use and Planning

IV.H.1 Introduction

This section evaluates the potential land use and planning impacts of the proposed 2006 LRDP. The section reviews existing land use at the project site and relevant land use plans, policies, and regulations governing the project area affected by the LRDP. As stated earlier, although LBNL is exempt from compliance with local planning and zoning requirements, the EIR analyzes the consistency and potential conflicts of the 2006 LRDP with relevant local agency land use plans, policies, and regulations.

IV.H.2 Setting

IV.H.2.1 Project Site Location

The Lab's hill site covers approximately 200 acres in the eastern hills of Berkeley and Oakland. The site is largely buffered by undeveloped land owned by the University of California, although the northwest corner of the Lab generally abuts residential neighborhoods in the City of Berkeley.

Access to the Lab's hill site is limited to three controlled-access vehicular gates on Cyclotron Road (the main Blackberry Canyon Gate) and Centennial Drive (the Strawberry Canyon and Grizzly Peak gates), all of which are staffed by an on-site security firm contracted by LBNL. Visitors primarily use the Blackberry Canyon Gate. The Grizzly Peak Gate is an exit-only gate after the morning commute hours.

IV.H.2.2 Expansion of LBNL Site

Since LBNL last updated its LRDP in 1987, the Lab's hill site has increased in size by 50 percent, from 134 acres to 202 acres, due to the transfer of management responsibility for some University land from UC Berkeley to LBNL. As described in the Land Use section of the Lab's 1997 SEIR Addendum, the transfer of management was arranged to enable the Lab to implement a fuel management program to reduce risk of building damage from wildland fire, to facilitate more effective overall management of The Regents' land in this area, and to support the orderly development of the Lab site.

The additional acreage now under the Lab's management is generally within two distinct areas. The first area is along the southern perimeter of the Lab where it adjoins the UC Berkeley campus; the Lab has assumed jurisdiction over a swath of undeveloped land approximately 500 feet wide, on average, from the horseshoe curve of Cyclotron Road on the west, across the Berkeley-Oakland border to the curve of Lee Road around the southern edge of Building 62. The second area of expansion is at the eastern edge of the Lab, where LBNL has assumed control of an approximately 1,000-foot perimeter of undeveloped land to the north and east of the Lab's Life Sciences Cluster (Buildings 74, 83, 84, 85, and 85B). LBNL also has jurisdiction over land on both sides of Centennial Drive as the road makes its way uphill toward the Lawrence Hall of

Science, although access to Centennial Drive itself is not controlled because the roadway crosses above internal Lab roadways via an overpass.

IV.H.2.3 Surrounding Land Uses

LBNL is surrounded by a mix of land uses including open space, institutional, residential, and commercial uses. Northeast of the central portion of the hill site, located on the slopes above the Lab, are the Lawrence Hall of Science, the UC Berkeley Space Sciences Laboratory, and the UC Berkeley Mathematical Sciences Research Institute. These buildings and adjacent property are owned by the University of California and are publicly accessible via Centennial Drive. To the north, northwest, and west of LBNL are residential neighborhoods and a neighborhood-serving commercial area, centered on Euclid Avenue, within the city of Berkeley. Southwest of LBNL is the 1,230-acre UC Berkeley campus. Southeast of LBNL are the open space areas of Strawberry Canyon, also owned by the University of California. Land to the east, northeast, and southeast of LBNL consists primarily of open space, including the University of California's ecological study areas and the UC Berkeley Botanical Gardens. Northeast of LBNL is the 2,000-acre Tilden Regional Park and to the south is the 205-acre Claremont Canyon Regional Preserve, both of which are owned and managed by the East Bay Regional Park District.

IV.H.2.4 On-Site Land Uses

Existing land use at the approximately 200-acre hill site can be categorized as follows: Research and Academic (116 acres, or 57 percent of the overall site); Central Commons (six acres, or three percent of the site); Support Services (15 acres or eight percent of the site); and Perimeter Open Space (66 acres or 32 percent of the site). Existing buildings at the LBNL hill site contain approximately 1.76 million square feet of floor area, generally divided among four major categories: heavy-duty laboratories (approximately 14 percent of building space), wet and dry laboratories (14 percent), office space (22 percent), and other uses (50 percent). A general description of each category is provided below. Additional facility uses not included in the building square footage consist of infrastructure for utilities (e.g., on-site electricity, gas, and water distribution systems), roadways, and parking lots.

Heavy-Duty Laboratories

The heavy-duty laboratories for advanced research-equipment fabrication and operation house current and next-generation accelerators, particle storage rings for electrons and heavy ions, extensions to experimental halls, and facilities for advanced detectors. These facilities must meet requirements for ceiling height, floor loading, crane capacity, and cleanliness that are typical of LBNL's modern heavy-duty laboratory needs.

Wet and Dry Light-Duty Laboratories

The wet (plumbed with water and sinks) and dry laboratories for specialized and general-purpose needs include, for example, facilities with clean-room operating standards and with small-scale isotope-handling capability. Additional uses for the wet and dry laboratories include molecular

genetics studies on the human genome, bioreactor testing and development, chemical reaction dynamics studies, and lighting technology research.

Office Space

Office space is located near laboratories and shops to meet program requirements. Of the current office space, 31,000 square feet consist of temporary buildings. The office space land use category also accounts for conference rooms, cubicle space, file rooms, storage space, and additional uses related to general office functions.

Hazardous Waste and Material Handling

Transportation, use, storage, treatment, and disposal of LBNL's hazardous materials, as well as the potential releases of hazardous materials to the environment, are closely regulated by agencies including the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC). LBNL manages the storage and treatment of hazardous wastes at its Hazardous Waste Handling Facility (HWHF), which operates under a permit issued by DTSC. LBNL has an additional hazardous waste permit to operate five fixed treatment units (FTUs). The FTUs are operated independently of the HWHF, and the City of Berkeley administers the FTU permitting program under its Certified Unified Program Agency program authority. LBNL's waste management program sends hazardous, mixed, medical, and radioactive waste generated at the Laboratory off-site for treatment, recycling, or disposal, depending upon the particular waste in question. See Section IV.F, Hazards and Hazardous Materials, for further discussion of these facilities and programs.

Other Uses

Other uses include shop facilities for mechanical and electronics instrumentation, computer facilities, storage space, auditorium and conference space, and a number of other miscellaneous uses. This category also includes support space for technology-transfer activities, meeting facilities, visitor accommodations, cafeteria operations, and other functions.

IV.H.2.5 Local Plans and Policies

LBNL is a federal facility operated by the University of California and conducting work within the University's mission on land that is owned or controlled by The Regents of the University of California. As such, LBNL is generally exempted by the federal and state constitutions from compliance with local land use regulations, including general plans and zoning. However, LBNL seeks to cooperate with local jurisdictions to reduce any physical consequences of potential land use conflicts to the extent feasible. The western part of the LBNL site is within the Berkeley city limits, and the eastern part is within the Oakland city limits. This section summarizes relevant policies contained in the Berkeley and Oakland general plans.

Berkeley General Plan

The City of Berkeley Draft General Plan was published in October 2000; on December 18, 2001, the Berkeley City Council certified the Draft General Plan EIR and approved the Housing, Land Use, and Transportation Elements. In spring 2002, the City Council approved the six remaining elements of the General Plan.

The Berkeley General Plan assigns land within the city to one of 12 land use designations. The LBNL site is designated as “Institutional,” which includes institutional, government, educational, recreational, open space, natural habitat, woodlands, and public service uses and facilities, such as the University of California, Bay Area Rapid Transit District, Berkeley Unified School District, and East Bay Municipal Utility District facilities. Within these areas, building intensity generally ranges from a floor area ratio (FAR) of less than 1 to a FAR of 4.¹ The current FAR of the Berkeley Lab site is approximately 0.2.

The Land Use Element of the Berkeley General Plan contains comprehensive objectives and policies that guide physical development in the city. One objective of the Land Use Element is to “minimize the negative impacts and maximize the benefits of University of California on the citizens of Berkeley.” About 95 acres, or almost half of the LBNL site, is within the city of Berkeley. As noted above, LBNL is not subject to local land use regulations and policies, but seeks consistency with local plans and policies where feasible. Berkeley General Plan land use policies pertaining to the proposed LBNL 2006 LRDP are as follows:

Policy LU-38 University Impact on City Tax Revenue: Discourage to the maximum extent possible additional use of land by the University that would result in the removal of property from the tax rolls or a reduction of tax revenue to the City.

Policy LU-39 University Traffic: Reduce traffic impacts of the University on the citywide transportation system.

Policy LU-40 Public Use of University Facilities and Grounds: Continue to support maximum opportunities for citizen use of campus libraries and recreational facilities, the maintenance of the hill lands as open space, and the adoption of University development standards and policies to conserve and enhance present open space resources.

Policy LU-41 Public Agency Development: Ensure that all land use plans, development, and expansion by public agencies are consistent with City laws, the City’s General Plan and Zoning Ordinance to the extent feasible, and the California Environmental Quality Act.

Oakland General Plan

The Land Use and Transportation Element of the Oakland General Plan assigns land within the city to one of 15 land use designations. The General Plan designates a portion of the LBNL site as “Institutional,” a designation that is “intended to create, maintain, and enhance areas appropriate for educational facilities, cultural and institutional uses, health services and medical uses as well

¹ Floor area ratio is the ratio of floor area in a building to the land area of the lot on which the building sits.

as other uses of similar character.” The maximum building intensity in areas with Institutional designations is a FAR of 8; however, appropriate development standards for areas where the Institutional use is adjacent to sensitive land uses, such as residential uses, are addressed by the City’s zoning code. In addition to the “Institutional” designation, a portion of LBNL is also designated as a Resource Conservation Area, where future buildings are not permitted except as required to facilitate the maintenance of conservation areas.

The Oakland General Plan was adopted more recently than the City’s zoning regulations; thus, the General Plan and zoning regulations may conflict. When a conflict occurs between zoning regulations and the General Plan, the General Plan takes precedence (City of Oakland, 2001). Specific General Plan policies relating to the LBNL site give priority to the appropriate siting and design of institutional facilities, to minimizing conflicts between residential and nonresidential activities, and to developing regulations and procedures that allow an open, fair, timely, and fully informed permitting and enforcement process for future development.

The Oakland City Council adopted the Land Use and Transportation Element of the Oakland General Plan on March 24, 1998. Slightly over half of the 200-acre LBNL site is within the North Hills area of the City of Oakland. As noted above, LBNL is not subject to local land use regulations and policies, but seeks consistency with local plans and policies where feasible for this portion of the site. Oakland General Plan policies pertaining to the 2006 LRDP are as follows:

Objective N2: Encourage adequate civic, institutional, and educational facilities located within Oakland, appropriately designed and sited to serve the community.

Policy N2.1 Designing and Maintaining Institutions: As institutional uses are among the most visible activities in the City and can be sources of community pride, high-quality design and upkeep/maintenance should be encouraged. The facilities should be designed and operated in a manner that is sensitive to surrounding residential and other uses.

Policy N2.3 Supporting Institutional Facilities: The City should support many uses occurring in institutional facilities where they are compatible with surrounding activities and where the facility site adequately supports the proposed uses.

Policy N2.8 Long Range Development Planning: Require, where legally allowed, and in all other situations encourage, those institutions designated with the “Institutional” land use classification should be required to present Long Range Operation and Development Plans to the City Planning Commission. While these plans could be binding or non-binding, they should present realistic information regarding the continued operation and/or expansion of the facilities. The City suggests that substantial public input be built into the process of developing the plans. The plans could be required as a part of development applications, or on a periodic basis.

IV.H.3 Impacts and Mitigation Measures

IV.H.3.1 Significance Criteria

In accordance with Appendix G of the CEQA Guidelines and the UC CEQA Handbook, an impact of the proposed LRDP on land use and planning policies would be considered significant if it would exceed the following Standards of Significance:

- Physically divide an established community;
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect;
- Conflict with any habitat conservation plan or natural community conservation plan; or
- Conflict with local land use regulations such that a significant incompatibility is created with adjacent land uses.

As noted above, LBNL is not subject to local land use regulations and policies. The analysis in this section, therefore, focuses on the compatibility of the proposed LRDP with existing and planned land uses near the site.

IV.H.3.2 Impact Assessment Methodology

The impact analysis compares the net impact of the LRDP to the Standards of Significance and determines the impact's level of significance under CEQA. If the impact would be significant, the analysis identifies mitigation measures that would eliminate the impact or reduce it to a less-than-significant level. If the impact cannot be reduced to a less-than-significant level after implementation of all feasible mitigation measures, then the impact would remain significant and unavoidable. The methodology applied to assess and evaluate land use impacts in this EIR is based on information obtained from the following sources:

- Site reconnaissance;
- Review of published environmental documentation and land use studies published by local jurisdictions addressing land use issues within their jurisdiction; and
- Review of applicable policies of the Berkeley General Plan and the Oakland General Plan.

Before approving any subsequent activity implemented pursuant to the LRDP, the Lab would evaluate whether the land use impacts were examined in this program EIR before finding the activity to be within the scope of the project covered by the program EIR. If specific project differences from the presentation of the Illustrative Development Scenario and the 2006 LRDP EIR are such that the project is not within the scope of the LRDP EIR or the specific impact statements and mitigation measures do not cover the individual project pursuant to CEQA Guidelines Sections 15168(c)(2) and 15168(c)(5), then appropriate, project-specific CEQA analysis will be tiered from this 2006 LRDP EIR in accordance with CEQA Guidelines Section 15168(d)(1-3).

IV.H.3.3 2006 LRDP Principles, Strategies, and LBNL Design Guidelines

As described in Chapter III, Project Description, the 2006 LRDP would classify on-site land use into four broad categories that focus on the Lab's research mission and its place in the natural setting of the Oakland-Berkeley hills. Under the land use classification scheme presented in the 2006 LRDP, the majority of the Lab's hill site (approximately 72 percent of the 202-acre site) would be designated as developable area, encompassing developed areas with buildings, roads, parking lots, major infrastructure, and related facilities (see Table III-3 in Chapter III, Project Description). Further development of laboratory, office, and functional support spaces as well as utilities and other associated structures is anticipated under the 2006 LRDP.

The 2006 LRDP divides the open space classification in the 1987 LRDP into two distinct categories. The distinction between the two categories is the degree to which vegetation management is applied. In the Vegetation/Wildland Fire Risk Management Areas (about 27 percent of the hill site), which separate the Lab from adjacent residential properties and the more rural surroundings to the east, vegetation would be regularly managed to reduce the intensity of potential wind-driven fire. In Limited Management Areas (about 2.5 percent of the Lab site), only infrequent management is anticipated. Operations within Limited Management Areas would consist of adjustment of utility lines and monitoring stations, selected control of invasive non-native plants, and removal of fallen trees, as well as removal of ground-level plant material on the outer perimeter of these zones that could allow a wind-driven fire to move into the tree canopy. (See further discussion of vegetation management and fire risk issues in Chapter IV.C, Biological Resources, and Chapter IV.K, Public Services and Recreation.)

2006 LRDP Principles and Strategies

Future development at Berkeley Lab would build upon and strengthen the existing hillside cluster development pattern to create a more campus-like setting that reflects the Lab's unique site and functional needs. The main site would be organized into six "research clusters" defined by major topographic features encompassing research functions that share common needs and interests. One "service cluster" would provide a central location for facilities and shipping/receiving operations.

A network of pedestrian paths would link these clusters to the "Central Commons" area that would serve as the social heart of the Laboratory. The Central Commons and pedestrian pathways would be essential elements of the Laboratory's functional and experiential qualities and are discussed in further detail on the pages that follow.

Most new buildings would be located on infill sites and/or adjacent to existing facilities, resulting in a higher density of development within each cluster, improving operational efficiencies, and creating a more collegial setting. These new facilities would also be planned and designed to segregate vehicular and pedestrian uses. Spaces for vehicular circulation, parking, deliveries, and service activities would be located at the perimeter of each research cluster. Outdoor spaces for pedestrian uses would be located toward the center of these clusters, in spaces formally defined by the edges of new and existing buildings.

The specific configuration and design of new development within these clusters would be guided by illustrative plans and design guidelines prepared by the Laboratory. LBNL Design Guidelines support the objectives of the Laboratory and address the specific design of outdoor spaces and buildings. They are intended to result in an arrangement of facilities that would improve the Laboratory's appearance and functionality, and foster a sense of community and interaction.

The 2006 LRDP proposes four fundamental principles that form the basis for the development strategies provided for each element of the LRDP. All four principles are expressed in the land use plan: "Preserve and enhance the environmental qualities of the site as a model of resource conservation and environmental stewardship"; "build a safe, efficient, cost effective scientific infrastructure capable of long-term support of evolving scientific missions"; "build a more campus-like research environment"; and "improve access and connections to enhance scientific and academic collaboration and interaction."

Development strategies provided by the 2006 LRDP are intended to minimize potential environmental impacts that could result from implementation of the 2006 LRDP (see Chapter III, Project Description, for further discussion, and see Appendix B for a full listing of principles, strategies and design guidelines). Development strategies set forth in the 2006 LRDP applicable to land use include the following:

Land Use Strategies

- Protect and enhance the site's natural and visual resources, including native habitats, streams and mature tree stands by focusing future development primarily within the already developed areas of the site.
- Provide flexibility in the identification of land uses and in the siting of future facilities to accommodate the continually evolving scientific endeavor.
- Configure and consolidate uses to improve operational efficiencies, adjacencies and ease of access.
- Minimize the visibility of Laboratory development from neighboring areas.

Development Framework Strategies

- Increase development densities within the most developed areas of the site to preserve open space, enhance operational efficiencies and improve access.
- To the extent possible site new projects to replace existing outdated facilities and ensure the best use of limited land resources.
- To the extent possible site new projects adjacent to existing development where existing utility and access infrastructure may be utilized.
- Site and design new facilities in accordance with University of California energy efficiency and sustainability policy to reduce energy, water and material consumption and provide improved occupant health, comfort and productivity.
- Exhibit the best practices of modern sustainable development in new projects as a way to foster a greater appreciation of sustainable practices at the Laboratory.

Vehicle Access, Circulation, and Parking Strategies

- Reduce the percentage of parking spaces relative to the adjusted daily population.
- Consolidate parking into larger lots and/or parking structures, locate these facilities near Laboratory entrances to reduce traffic within the main site.
- Remove parking from areas targeted for outdoor social spaces and service areas.
- Consolidate service functions wherever possible in the Corporation Yard.
- Develop new campus-like outdoor spaces such as plazas within clusters of facilities and improve those that already exist.
- Minimize impervious surfaces to reduce storm water run-off and provide landscape elements and planting to stabilize slopes, reduce erosion and sedimentation.
- Consolidate utility distribution into centralized utility corridors that generally coincide with major roadways.

LBNL Design Guidelines

The LBNL Design Guidelines were developed in parallel with the LRDP and are proposed to be adopted by the Lab following The Regents' consideration of the 2006 LRDP. The LBNL Design Guidelines provide specific guidelines for site planning, landscape and building design as a means to implement the LRDP's development principles as each new project is developed. Specific design guidelines are organized by a set of design objectives that essentially correspond to the strategies provided in the LRDP. The document provides the following specific planning and design guidance relevant to land use:

From "A. The Land, Topography and Views":

- Provide screening landscape elements to visually screen large building;
- Mass and site buildings to minimize their visibility;
- Respect View Corridors; and
- Minimize further increases in impermeable surfaces at the Lab.

From "B. Research Clusters":

- Create new Commons Spaces in clusters that currently lack them;
- Create as high a density and critical mass around commons spaces as possible;
- Segregate public entries and paths from service entries and paths where feasible; and
- Develop Research Clusters in a way that is mindful of future expansion.

From "C. Linkages":

- Reduce the amount of impermeable surfaces at the Lab;
- Minimize visual and environmental impacts of new parking lots; and
- Site and design parking structures to integrate with the natural surroundings.

IV.H.3.4 Impacts and Mitigation Measures

Impact LU-1: Implementation of the proposed 2006 LRDP would increase building square footage and adjusted daily population (ADP) at LBNL. Because new construction would be within developed areas and would not introduce substantially new land uses, the 2006 LRDP would not physically divide an established community. (Less than Significant)

The Lab is surrounded by a mix of land uses, including open space, institutional uses, housing, and neighborhood commercial areas, in the cities of Berkeley and Oakland. The Lab is largely buffered by undeveloped University-owned land, although the northwest corner of the Lab is generally adjacent to residential neighborhoods in the city of Berkeley. As described in the Introduction to this EIR, the proposed 2006 LRDP was reduced in scope in response to comments from the City of Berkeley. Consistent with this reduction in scope, occupiable (research and support) building space on the LBNL hill campus would increase by 660,000 square feet, from 1.76 million to 2.42 million square feet. Additionally, the ADP would increase from 3,650 to 4,650 at the hill site. To accommodate this level of growth, a combination of building replacement and new construction² is proposed on the hill site. All development would occur within the area designated by the 2006 LRDP as developable area. Consistent with the direction in the LRDP, most new construction (and all renovation of existing buildings) would occur on infill sites and locations adjacent to existing buildings.

Currently, the ratio of the total building area to the total site acreage is approximately 20 percent (a FAR of 0.2), and site coverage by building footprints is approximately 11 percent. With implementation of the 2006 LRDP, the FAR on the hill site would increase to approximately 0.27, while site coverage by buildings would increase to about 17 percent.

Because all new development would occur within the area designated by the 2006 LRDP as developable area, and because most new construction (and all renovation of existing buildings) would occur on infill sites and locations adjacent to existing buildings, LRDP projects would not physically divide adjacent neighborhoods or communities. Furthermore, the 2006 LRDP would maintain the hill site as a scientific research institution, and would not introduce substantially new land uses at the hill site. Based on the foregoing, the 2006 LRDP would not result in a substantial effect on the existing character of the area or surrounding communities, and the impact would be less than significant.

Mitigation: None required.

Project Variant. The project variant proposes an increase in the ADP on the hill site, compared to the proposed LRDP, but does not propose additional building space. Under the project variant, LBNL employees currently working at off-site locations would be relocated to the hill site. The project variant does not propose additional building space on the hill site, nor does the project

² For the purposes of this EIR, the term “construction,” unless specifically indicated otherwise, includes activities that involve construction of new facilities, major rehabilitation or modification of existing facilities, and demolition of existing facilities.

variant propose any land uses that would differ from the 2006 LRDP. Therefore, the project variant, similar to the 2006 LRDP, would not physically divide an established community or substantially affect the existing character of the area or surrounding communities.

Individual Future Projects/Illustrative Development Scenario. The Illustrative Development Scenario is a conceptual portrayal of potential development under the 2006 LRDP. Actual overall development that is approved and constructed pursuant to the 2006 LRDP would be less intense than portrayed in the scenario. The scenario was developed before the 2006 LRDP was reduced in scope in response to comments from the City of Berkeley, and thus the scenario includes an overall level of potential development that is greater than is being proposed in the 2006 LRDP. Each of the proposed buildings that is included in the scenario, however, might be constructed pursuant to the 2006 LRDP, and thus the scenario remains an appropriate and conservative basis for the evaluation of impacts to land use and planning. For the reasons stated above, potential individual projects under the LRDP such as those identified in the Illustrative Development Scenario would not physically divide an established community, and the impact of such projects would also be less than significant.

Impact LU-2: Implementation of the proposed 2006 LRDP would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect, nor would the project conflict with local land use regulations such that a significant incompatibility is created with adjacent land uses. (Less than Significant)

The LBNL site is owned by the University of California, which also operates the Lab under a contract with the Department of Energy (DOE); DOE owns most of the facilities and structures within LBNL.³ LBNL is therefore generally not subject to local policies, plans, or regulations. The University of California and DOE are the agencies with jurisdiction over LBNL projects. Thus, the potential land use impact resulting from the proposed 2006 LRDP with respect to conflicts with applicable land use plans, policies, or regulations of an agency with jurisdiction over the project is considered less than significant.

It is important to note, however, that the LRDP would be consistent with the “Institutional” land use designations for the hill site provided by the Berkeley General Plan and Oakland General Plan. The 2006 LRDP does propose an increase in the density of existing land use on the hill site. Although the future distribution of specific research-related uses could change with implementation of the LRDP, the types of land use at the Lab would not, and the Berkeley Lab would continue to operate as a scientific research institution.

³ Contract 31 provides for 27,556 square feet of University-owned buildings on the hill, specifically Chemistry Building No. 5 with 4,742 square feet and 22,814 square feet of Building 6 (Advanced Light Source).

Since the 2006 LRDP proposes land use at the hill site that would be similar to existing land uses, the LRDP would not result in any change with respect to compatibility with adjacent uses, either in Berkeley or Oakland.

Since the 2006 LRDP would provide for land uses that are generally consistent with Berkeley and Oakland general plan land use designations and that would not conflict with adjacent land uses, the impact would be less than significant.

The project site is not located within an area with an adopted habitat conservation plan or natural community conservation plan; therefore, the project would not conflict with such plans. The *Draft Recovery Plan for Chaparral and Scrub Community Species East of San Francisco Bay* (USFWS, 2003) that would apply to the LBNL site is discussed in Section IV.C, Biological Resources.

Mitigation: None required.

Project Variant. The project variant proposes an increase in the ADP on the hill site, compared to the proposed LRDP, but does not propose additional building space. Under the project variant, LBNL employees currently working at off-site locations would be relocated to the hill site. Building space currently used by LBNL employees at off-site locations would be vacated, and re-use would be expected to be consistent with the appropriate jurisdiction's general plan and zoning ordinance. The project variant does not propose any land uses that would differ from the 2006 LRDP. Therefore, the project variant, similar to the 2006 LRDP, would result in less-than-significant impacts with regard to plan consistency and land use compatibility.

Individual Future Projects/Illustrative Development Scenario. The Illustrative Development Scenario is a conceptual portrayal of potential development under the 2006 LRDP. Actual overall development that is approved and constructed pursuant to the 2006 LRDP would be less intense than portrayed in the scenario. The scenario was developed before the 2006 LRDP was reduced in scope in response to comments from the City of Berkeley, and thus the scenario includes an overall level of potential development that is greater than is being proposed in the 2006 LRDP. Each of the proposed buildings that is included in the scenario, however, might be constructed pursuant to the 2006 LRDP, and thus the scenario remains an appropriate and conservative basis for the evaluation of impacts to land use and planning. For the reasons stated above, potential individual projects under the LRDP such as those identified in the Illustrative Development Scenario would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project, nor conflict with local land use regulations such that a significant incompatibility is created with adjacent land uses. Therefore, the impacts of such projects in this regard would be less than significant.

IV.H.3.5 Cumulative Impacts

This analysis considers cumulative growth as represented by the implementation of the Berkeley and Oakland general plans (and thus includes growth anticipated by the City of Berkeley General Plan EIR), and implementation of the UC Berkeley 2020 LRDP (including the Southeast Campus Integrated Projects) along with implementation of the proposed LBNL 2006 LRDP. (Demolition of the Building 51 complex—housing the Bevatron accelerator—although the subject of a separate project-specific EIR, is analyzed as part of the 2006 LRDP because the buildings were in place when the EIR analyses were undertaken.) Additional projects currently under way at UC Berkeley, described in Section VI.C, Cumulative Impacts, of this EIR, are also accounted for in the cumulative analysis.

The geographic context for this cumulative analysis includes Berkeley Lab and areas proximate to the Lab within the cities of Berkeley and Oakland. This analysis evaluates whether the impacts of the proposed LRDP, together with the impacts of cumulative development, would result in a significant impact (based on the significance criteria on p. IV.H-6) and, if so, whether the contribution of the LRDP to this impact would be considerable. Both conditions must apply in order for the project's cumulative impacts to rise to the level of significance.

Impact LU-3: The proposed 2006 LRDP, when combined with cumulative growth in the project vicinity, would increase the intensity of existing land uses in the area but would not physically divide an established community, conflict with applicable land use regulations, or cause conflicts with existing uses. (Less than Significant)

Implementation of the 2006 LRDP combined with cumulative growth would not physically divide an established community. The project site is surrounded by open space and residential neighborhoods that are largely built out. Growth at UC Berkeley pursuant to the campus' 2020 LRDP would contribute to cumulative development in Berkeley and the vicinity.⁴ However, neither LBNL nor UC Berkeley would grow or expand in such a way that the fundamental nature of the institutions or their relationship with surrounding communities would be altered; therefore, the cumulative impact would be less than significant.

Development under the 2006 LRDP would intensify existing land use on the LBNL hill site, but would not substantially affect the broader study area, because LRDP development projects would occur within the existing LBNL site borders, with potential minor modifications, e.g., environmental monitoring stations, utility connections, and small research structures on other Regents-owned lands. On-site changes could include the conversion of undeveloped land to infill development, replacement of certain research-related uses with other uses, an increase in intensity of use, or changes from one land use to another. Although land use distribution by specific research-related use could change at LBNL, in general future uses would be consistent with the existing uses.

⁴ The EIR for the UC Berkeley Southeast Campus Integrated Projects (SCIP) found that those projects would not result in any adverse land use impacts, and thus the SCIP would not contribute to any cumulative impacts (UC Berkeley, 2006).

LBNL leases off-site space in Berkeley, Oakland, Walnut Creek, and Washington D.C., the amount of which is not expected to substantially increase, on average, during the 2006 LRDP planning period. However, this amount could periodically be higher or lower than current levels, depending on future Lab needs and market conditions. Private development on non-University-owned land leased by LBNL would be subject to separate environmental review and would be subject to municipal general plans, zoning regulations, and design review, thus ensuring consistency of such projects with local regulations. Therefore, implementation of the 2006 LRDP, together with the cumulative impacts of regional growth, would not conflict with local land use regulations such that an incompatibility would occur among local land uses, and the project would not result in a cumulatively considerable effect.

Mitigation: None required.

Project Variant. The project variant would result in land use and planning impacts substantially similar to the land use and planning impacts that would result from the 2006 LRDP development. The cumulative land use and planning impacts of the project variant would therefore be less than significant as described above.

Individual Future Project/Illustrative Development Scenario. The Illustrative Development Scenario is a conceptual portrayal of development under the LRDP. A potential future project under the LRDP such as those identified in the Illustrative Development Scenario, when combined with other projects under the LRDP and other development as discussed above, would also, for the reasons stated above, result in cumulative land use and planning impacts that would be less than significant.

IV.H.4 References – Land Use and Planning

City of Berkeley, Berkeley General Plan, Land Use Element, 2002.

City of Berkeley, Berkeley General Plan EIR, 2001.

City of Oakland, Community and Economic Development Agency. *Guidelines for Determining Project Conformity with the General Plan and Zoning Regulations*. December 5, 2001.

City of Oakland, Oakland General Plan Land Use and Transportation Element, 1998.

U.S. Fish and Wildlife Service (USFWS), *Draft Recovery Plan for Chaparral Species in Northern California*, April 7, 2003.
http://sacramento.fws.gov/ea/News_Releases/Chaparral_Recovery_NOA.htm, viewed December 8, 2003.

UC (University of California) Berkeley, *Southeast Campus Integrated Projects Tiered Focused Final Environmental Impact Report (SCH #2005112056)*; October 31, 2006. Available on the internet at http://www.cp.berkeley.edu/SCIP/FEIR/SCIP_FEIR.html.

IV.I. Noise

IV.I.1 Introduction

This chapter evaluates the potential noise impacts of the proposed 2025 Long Range Development Plan (LRDP) for the Lawrence Berkeley National Laboratory (LBNL). This section discusses the existing noise environment at and around the LBNL site and the regulatory framework for regulation of noise, and analyzes the potential for the project to affect the existing ambient noise environment during construction, demolition, and operational activities. Although LBNL is exempt, the EIR analyzes the consistency and potential conflicts of the LRDP with relevant local agency noise policies and regulations. The analysis in this section is based on a review of existing documentation for the project site, a noise monitoring survey conducted by ESA, the general plans for the cities of Berkeley and Oakland, the EIR for the Berkeley General Plan, and the *University of California CEQA Handbook* prepared by the UC Office of the President.

IV.I.2 Setting

IV.I.2.1 Technical Background

Sound is mechanical energy transmitted by pressure waves through a medium such as air. Noise is defined as unwanted sound. Sound is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. Sound pressure level is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding to the threshold of pain. Because sound pressure can vary by over one trillion times within the range of human hearing, a logarithmic loudness scale is used to keep sound intensity numbers at a convenient and manageable level.

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 frequency 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, 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 low and extremely high frequencies instead of the frequency mid-range. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA).¹ Frequency A-weighting

¹ All noise levels reported herein reflect A-weighted decibels unless otherwise stated.

follows an international standard methodology of frequency de-emphasis and is typically applied to community noise measurements.

Noise Exposure and Community Noise

An individual's noise exposure is a measure of the noise experienced by the individual over a period of time. A noise level is a measure of noise at a given instant in time. However, noise levels rarely persist consistently over a long period of time. Rather, community noise varies continuously with time with respect to the contributing sound sources. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic and atmospheric conditions. What makes community noise constantly variable throughout a day, besides the slowly changing background noise, is the addition of short duration single event noise sources (e.g., aircraft flyovers, motor vehicles, sirens), which are readily identifiable to the individual.

These successive additions of sound to the community noise environment vary the community noise level from instant to instant, requiring the measurement of noise exposure over a period of time to legitimately characterize a community noise environment and evaluate noise impacts. This time-varying characteristic of environmental noise is described using statistical noise descriptors. The most frequently used noise descriptors are summarized as follows:

- L_{eq} : The equivalent sound level, which is used to describe noise over a specified period of time, typically one hour, in terms of a single numerical value. The L_{eq} is the constant sound level that would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).
- L_{max} : The instantaneous maximum noise level measured during the measurement period of interest.
- L_{min} : The instantaneous minimum noise level measured during the measurement period of interest.
- L_x : The sound level that is equaled or exceeded x percent of a specified time period. The L_{50} represents the median sound level (i.e., the noise level exceeded 50 percent of the time).
- DNL: The energy average of the A-weighted sound levels occurring during a 24-hour period, accounting for the greater sensitivity of most people to nighttime noise by weighting noise levels at night ("penalizing" nighttime noises). Noise between 10:00 p.m. and 7:00 a.m. is weighted by adding 10 dBA to take into account the greater annoyance of nighttime noises.
- CNEL: The Community Noise Equivalent Level, which, similar to the DNL, adds a 5-dBA "penalty" for the evening hours between 7:00 p.m. and 10:00 p.m. in addition to a 10-dBA penalty between the hours of 10:00 p.m. and 7:00 a.m.

Effects of Noise on People

The effects of noise on people can be placed into three categories:

- Subjective effects of annoyance, nuisance, dissatisfaction;
- Interference with activities such as speech, sleep, and learning; and
- Physiological effects such as hearing loss or sudden startling.

Environmental noise typically produces effects in the first two categories. Workers in industrial plants generally experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction. A wide variation exists in the individual thresholds of annoyance, and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting human reaction to a new or changed noise environment is the way the noise levels compare to the existing environment to which one has adapted: the so-called "ambient noise" level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference;
- A change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and
- A 10-dBA change is subjectively heard as approximately a doubling in loudness, and can cause adverse response.

These relationships occur in part because of the logarithmic nature of sound and the decibel system. The human ear perceives sound in a non-linear fashion; hence, the decibel scale was developed. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, but rather logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA.

Noise Attenuation

Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate of 6 to 7.5 dBA per doubling of distance from the source, depending on the topography of the area and environmental conditions (e.g., atmospheric conditions, noise barriers [either vegetative or manufactured]). Thus, a noise measured at 90 dBA 50 feet from the source would be about 84 dBA at 100 feet, 78 dBA at 200 feet, 72 dBA at 400 feet, and so forth. Widely distributed noise, such as a large industrial facility spread over many acres or a street with moving vehicles, would typically attenuate at a lower rate, approximately 4 to 6 dBA per doubling of distance from the source.

IV.I.2.2 Local Plans and Policies

LBNL is a federal facility managed and operated by the University of California under a U.S. DOE-UC contract. The research, service and training work is within the University's mission and the land is owned by The Regents of the University of California. As such, LBNL is generally exempted by the federal and state constitutions from compliance with local land use regulations, including general plans and zoning. However, LBNL seeks to cooperate with local jurisdictions to reduce any physical consequences of potential land use conflicts to the extent feasible. The western part of the LBNL site is within the Berkeley city limits, and the eastern part is within the Oakland city limits. This section summarizes relevant policies contained in both the Berkeley and Oakland general plans, as well as the most relevant City of Berkeley and City of Oakland ordinances relevant to noise impacts at LBNL.

City of Berkeley

The City of Berkeley's General Plan Environmental Management Element contains guidelines for determining the compatibility of various land uses with different noise environments. Generally, the noise level for residential, hotel and motel uses is 60 dBA or less, while conditionally acceptable noise levels range from over 60 dBA to 75 dBA (may require insulation, etc.). Noise levels over 75 dBA are, in general, unacceptable. The City of Berkeley's Community Noise Ordinance sets limits for permissible noise levels during the day and night according to the zoning of the area. If ambient noise exceeds the standard, the ambient noise level becomes the allowable noise level. Areas adjacent to the southwestern portion of LBNL are zoned R-1H, R-2AH, and R-3H.² Table IV.I-1 presents the maximum allowable receiving noise standards for residential land uses.

**TABLE IV.I-1
CITY OF BERKELEY
MAXIMUM ALLOWABLE RECEIVING NOISE STANDARDS^a FOR
RESIDENTIAL LAND USES, DBA**

Residential Zoning District	Daytime 7:00 a.m. To 10:00 p.m.	Nighttime 10:00 p.m. To 7:00 a.m.
R-1, R-2	55	45
R-3	60	55

^a Noise level not to be exceeded by more than thirty minutes any hour

SOURCE: Berkeley Noise Ordinance

² "H" is a Hillside overlay district designed to protect views and the character of Berkeley's hills, and allows modification of lot sizes and building heights when justified by steep topography, irregular lot size, etc. R-2A districts permit small multiple-family and garden-type apartment structures consistent with adjacent areas and with a maximum of open space.

For construction/demolition noise, with certain exceptions, the Noise Ordinance (Sec. 13.40.070 of the Municipal Code) prohibits operating tools and equipment used in these activities between 7:00 p.m. and 7:00 a.m. on weekdays and 8:00 p.m. and 9:00 a.m. on weekends or holidays such that the sound creates a noise disturbance across a residential or commercial real property line. The Noise Ordinance states that, “where technically and economically feasible,” maximum weekday construction noise levels must be controlled so as not to exceed 75 dBA at the nearest properties for mobile equipment (“nonscheduled, intermittent, short-term operation (less than 10 days)”) and 60 dBA at the nearest properties for stationary equipment (“repetitively scheduled and relatively long-term operation (periods of 10 days or more)”), in R-1 and R-2 zoning districts; in the R-3 district, the permitted noise levels are 5 dBA higher. The noise standards are more restrictive on weekends, by 10 dBA for stationary equipment and 15 dBA for mobile equipment.

Berkeley General Plan policies pertaining to noise that are relevant to implementation of the LBNL LRDP include the following:

Environmental Management Objective 8: Protect the community from excessive noise levels.

Policy EM-43 Noise Reduction: Reduce significant noise levels and minimize new sources of noise.

Policy EM-44 Noise Prevention and Elimination: Protect public health and welfare by eliminating existing noise problems where feasible and by preventing significant future degradation of the acoustic environment.

Policy EM-45 Traffic Noise: Work with local and regional agencies to reduce local and regional traffic, which is the single largest source of unacceptable noise in the city.

Policy EM-46 Noise Mitigation: Require operational limitations and all feasible noise buffering for new uses that generate significant noise impacts near residential, institutional, or recreational uses.

Policy EM-47 Land Use Compatibility: Ensure that noise-sensitive uses, including, but not limited to, residences, child-care centers, hospitals and nursing homes, are protected from detrimental noise levels.

City of Oakland

The Oakland General Plan contains guidelines for determining the compatibility of various land uses with different noise environments. The Noise Element recognizes that some land uses are more sensitive to ambient noise levels than others, due to the amount of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities typically involved. Present and proposed uses are consistent with the City of Oakland’s General Plan designation of institutional use and resource conservation.

The City of Oakland also regulates short-term noise through city ordinances, which include a general provision against nuisance noise sources (Planning Code, Section 17.120). The factors that are considered when determining whether the ordinance is violated include a) the level,

intensity, character, and duration of the noise; b) the level, intensity, and character of the background noise; and c) the time when, and the place and zoning district where, the noise occurred. Table IV.I-2 presents the maximum allowable receiving noise standards for land uses in Oakland. With the maximum construction noise expected to be associated with the project, noise levels at the property line of the nearest residences would not exceed the City standards.

**TABLE IV.I-2
CITY OF OAKLAND
MAXIMUM ALLOWABLE RECEIVING NOISE STANDARDS, DBA**

Cumulative Number of Minutes in Either the Daytime or Nighttime One Hour Period ^b	Residential and Civic Uses ^a		Commercial Uses
	Daytime 7:00 a.m. to 10:00 p.m.	Nighttime 10:00 p.m. to 7:00 a.m.	Day or Night
20	60	45	65
10	65	50	70
5	70	55	75
1	75	60	80
0	80	65	85

^a Legal residences, schools and childcare facilities, health care and nursing homes, public open space, or similarly sensitive land uses.

^b The concept of “20 minutes in an hour” is equivalent to the $L_{33.3}$, which is a noise descriptor identifying the noise level exceeded one-third (33.3 percent) of the time. Likewise, “10 minutes in an hour,” “5 minutes in an hour,” and “1 minute in an hour” are equivalent to the $L_{16.7}$, $L_{8.3}$, and $L_{1.7}$, respectively. L_{max} or maximum noise level, represents the standard defined in terms of “0 minutes in an hour.”

SOURCE: Oakland Planning Code Sec. 17.120.050

The Oakland Noise Ordinance (Oakland Planning Code Sec. 17.120.050) specifies that, for residential receptors, the maximum allowable receiving noise for weekday (Monday through Friday, 7:00 a.m. to 7:00 p.m.) construction activity of greater than 10 days in duration is 65 dBA, while on weekends (9:00 a.m. to 8:00 p.m.), the maximum allowable receiving noise for long-term construction is 55 dBA. For commercial and industrial receptors, the maximum allowable receiving noise for construction activity greater than 10 days is 70 dBA on weekdays and 60 dBA on weekends. For construction activity of 10 days or less, the residential receiving standard is 80 dBA on weekdays and 65 dBA on weekends, while the commercial/industrial standards are 85 dBA on weekdays and 70 dBA on weekends. Nighttime construction is subject to the nighttime noise standards in Table IV.I-2.

IV.I.2.3 Existing Noise Environment

Within the boundaries of LBNL, the ambient noise environment is generated by vehicular traffic on the roadway network (particularly the shuttle buses), heating, ventilating, and air-conditioning equipment associated with buildings and other stationary equipment at the Lab including pumps, generators, cooling towers, exhaust hoods, and machine shop equipment. Construction projects have been undertaken continuously on the LBNL site over the past few years. Therefore the noise environment in the immediate vicinity of these construction sites is dominated by the activity of

construction equipment and service vehicles. However, most of the noise generated by the on-site stationary sources and construction equipment attenuates to levels that are not noticeable above the ambient noise environment at the nearby receptors.

A noise monitoring survey was conducted to document existing noise levels at various locations in and around the LBNL site. Short-term measurements (ranging from 5 to 15 minutes) were taken using a Metrosonics dB-108 noise meter. The results are presented in Table IV.I-3. The noise monitoring locations are shown in Figure IV.I-1.

**TABLE IV.I-3
MEASURED NOISE LEVELS ON OR WITHIN THE VICINITY OF THE PROJECT AREA**

Site No. ^b	Measurement Location	Noise Level in dBA ^a			
		L _{eq}	L _{max}	L ₁₀	L ₉₀
Based on 15-Minute Noise Measurement Data					
1	299 Panoramic Way	46	53	NM	NM
2	Foothill Parking Lot	57	67	58	49
3	Tibetan Nyingma Institute (n. side)	48	57	49	46
4	LBNL Building 76	68	81	68	64
5	LBNL Building 85	53	72	51	46
6	LBNL Building 74	64	81	63	59
7	LBNL Buildings 62 and 63	54	71	53	45
8	LBNL Buildings 6 and 7	58	68	60	54
9	LBNL Building 71	60	74	62	46
10	LBNL Buildings 56 and 61	52	61	54	49
11	LBNL Building 65	66	83	70	48
12	LBNL Building 70A	58	73	59	50
13 ^c	End of Canyon Road	58	68	60	53
14 ^c	Hearst Avenue at Highland Place	64	80	55	57

^a L_{eq} = equivalent steady-state noise level over a one-hour period produced by the same noise energy as the variable noise levels during that period; L_{max} = instantaneous maximum noise level; L₁₀ = noise level exceeded 10 percent of the time; L₉₀ = noise level exceeded 90 percent of the time.

^b Measurement locations correspond to those shown in Figure IV.I-1.

^c Noise measurement reported in UC Berkeley LRDP EIR, Table 4.9-3.

NM – Not Measured

SOURCE: Environmental Science Associates, 2003 and 2004; UC Berkeley, 2004.

IV.I.2.4 Sensitive Receptors

Some land uses are considered more sensitive to ambient noise levels than others are, due to the amount of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities typically involved. Residences, motels and hotels, schools, libraries, churches, hospitals, nursing homes, auditoriums, and parks and other outdoor recreation areas generally are more sensitive to noise than are commercial and industrial land uses.

Sensitive land uses surrounding the project site include residences, open space areas, and student dormitories. LBNL does not immediately border residential areas, except along its western and northern boundary near Cyclotron Road. North of the central portion of LBNL, located on the slopes above LBNL, are the Lawrence Hall of Science, the Space Sciences Laboratory, and the



SOURCE: Lawrence Berkeley National Laboratory;
ESA (2003, 2004); UC Berkeley (2004)

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Figure IV.I-1
Noise Measurement Locations

Mathematical Sciences Research Institute. These buildings and the adjacent property are owned by the University of California. Also to the north and northwest of LBNL are residential neighborhoods and a neighborhood commercial area within the City of Berkeley.

There are several vibration-sensitive laboratories and scientific instruments at the LBNL main site. Potential vibration effects on these laboratories and instruments are managed through internal communication and project coordination and are thus not a subject in this EIR. This coordination would continue under the proposed 2006 LDRP.

IV.I.3 Impacts and Mitigation Measures

IV.I.3.1 Significance Criteria

The impact of the proposed LRDP on the ambient noise environment would be considered significant if it would exceed the following Standards of Significance, in accordance with Appendix G of the CEQA Guidelines and the UC CEQA Handbook:

- Expose people to or generate noise levels in excess of standards established in any applicable plan or noise ordinance, or applicable standards of other agencies;
- Expose people to or generate excessive ground-borne vibration or ground-borne noise levels;
- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- Result in exposure of people residing or working in the project area to excessive noise levels if the project is located within an area covered by an airport land use plan, or where such a plan has not been adopted, within two miles of a public airport or public use airport; or
- Result in exposure of people residing or working in the project area to excessive noise levels if the project is located in the vicinity of a private airstrip.

Berkeley Lab is not within an area covered by an airport land use plan, nor is it within the vicinity of a private airstrip. Therefore, the last two criteria are not addressed further in this section.

To assess whether the development under the proposed LRDP would expose persons to or generate noise levels that are excessively high, the EIR evaluates the absolute change in noise levels due to the project and the relationship between the resultant noise level and the noise/land use compatibility guidelines of the Governor's Office of Planning and Research (OPR, 1998) OPR has developed specific planning guidelines for noise/land use compatibility, which are shown in Table IV.I-4. These standards form the basis of the noise/land use compatibility guidelines adopted by the cities of Berkeley and Oakland in the noise elements of their general plans.

For low-density residential uses, normally acceptable exterior noise levels are those below 60 dBA DNL or CNEL. For multi-family residences, normally acceptable exterior noise levels are those below 65 dBA DNL or CNEL. Campus support housing falls into the category of multi-family housing (medium- to high-density) and therefore is subject to the 65-dBA acceptability level for normally acceptable noise levels. Offices, laboratories, and academic buildings on the LBNL site would be subject to the 70-dBA acceptability level for normally acceptable noise levels, which is the same threshold for schools and office buildings.

For the purposes of this EIR, noise impacts would be considered significant if the project resulted in the following DNL levels at locations that affect human receptors:

- An increase of 3 dBA DNL where the noise levels without the project are above the OPR standards for “normally acceptable” noise levels; or
- An increase of 5 dBA DNL, where the noise levels without the project are 50 to 65 dBA DNL for residential uses and the increase in noise from the project does not cause the OPR standards to be exceeded.

It should be noted that a noise increase of 3 decibels is generally regarded as the minimum perceptible increase and has been used as a standard in this EIR to evaluate impacts in areas where the ambient or background noise levels without the project are close to or exceed the OPR noise/land use compatibility standard for affected land uses. Increases of 5 and 10 decibels have been used as a standard in areas where the ambient or background noise levels without the project are low or moderate. The use of this “sliding scale” is appropriate because where ambient/background levels are low, an increase over 3 decibels would be perceptible but would not cause annoyance or activity interference. In contrast, if the ambient/background noise levels are high (above 65 dBA in multi-family residential areas), any perceptible increase could cause an increase in annoyance.

The standards described above have been used to assess the significance of any long-term increases in noise generated by the project. Long-term increases are associated with campus operations and campus-related traffic.

Construction- and demolition-related noise associated with the implementation of the LRDP is analyzed to assess whether the LRDP would result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without implementation of the LRDP. The criterion noise level for determining the impact significance of such noise on sensitive receptors varies according to the time of day, as noted in the discussion of the Berkeley and Oakland noise ordinances, beginning on p. IV.I-4. Construction/demolition noise is considered a significant impact if it would result in violations of noise ordinance standards of the cities of Berkeley or Oakland (as applicable, depending on the location of off-site receptors).

**TABLE IV.I-4
ACCEPTABLE EXTERIOR NOISE LEVELS FOR LAND USE CATEGORIES**

Land Use Category	Levels of Acceptability ^a , DNL ^b or CNEL ^c (dBA) ^d			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential –Low Density Single Family, Duplex, Mobile Homes	Less than 60	55 to 70	70 to 75	More than 75
Residential –Multi Family	Less than 65	60 to 70	70 to 75	More than 75
Transient Lodging – Motels, Hotels	Less than 65	60 to 70	70 to 80	More than 80
Schools, Libraries, Churches, Hospitals, Nursing Homes	Less than 70	60 to 70	70 to 80	More than 80
Auditoriums, Concert Halls, Amphitheaters	–	Less than 70	–	More than 65
Sports Arena, Outdoor Spectator Sports	–	Less than 75	–	More than 70
Playgrounds, Neighborhood Parks	Less than 70	–	67 to 75	More than 73
Golf Courses, Riding Stables, Water Recreation, Cemeteries	Less than 75	–	70 to 80	More than 80
Office Buildings, Business Commercial and Professional	Less than 70	68 to 73	More than 75	–
Industrial, Manufacturing, Utilities, Agriculture	Less than 75	70 to 80	More than 75	–

^a Levels of Acceptability are defined as follows:

Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.

Normally Unacceptable: New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Clearly Unacceptable: New construction or development clearly should not be undertaken.

^b Day-Night Level (DNL) is a descriptor of the community noise environment that represents the energy average of the A-weighted sound levels occurring during a 24-hour period, and that accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night (“penalizing” nighttime noises). Noise between 10:00 p.m. and 7:00 a.m. is weighted (penalized) by adding 10 dBA to take into account the greater annoyance of nighttime noises.

^c Community Noise Equivalent Level (CNEL) is the average A-weighted noise level during a 24-hour day, obtained by addition of five decibels in the evening from 7:00 to 10:00 p.m., and an addition of a ten-decibel penalty in the night between 10:00 p.m. and 7:00 a.m.

^d A definition of decibels and A-weighted decibels (dBA) is provided under “Technical Background” in this section.

SOURCE: Governor’s Office of Planning and Research, *General Plan Guidelines*, Appendix A: Guidelines for the Preparation and Content of the Noise Element of the General Plan, 1998.

IV.I.3.2 Impact Methodology

The impact analysis compares the net impact to the standards of significance stated above and determines the impact's level of significance under CEQA. If the impact would be a significant impact, the analysis identifies mitigation measures that would eliminate the impact or reduce it to a less-than-significant level. If the impact cannot be reduced to a less-than-significant level, then the impact would remain significant and unavoidable after implementation of all feasible mitigation measures.

The methodology applied to assess and evaluate land use impacts in the EIR is based on information obtained from site reconnaissance and review of published environmental documentation and land use studies of the Berkeley Lab, including documents published by local jurisdictions addressing land use issues within their jurisdiction.

In addition to providing the environmental impact analysis for the LRDP, the analysis in this EIR will be used in connection with later approvals of specific activities pursuant to the LRDP. The Lab will evaluate the impacts on noise of any later activity implemented pursuant to the LRDP and compare those impacts with the evaluation in this program EIR to determine the appropriate level of any further CEQA documentation that may be required prior to the approval of the later activity. If specific project differences from the presentation of the Illustrative Development Scenario and the 2006 LRDP EIR are such that the project is not within the scope of the LRDP EIR or the specific impact statements and mitigation measures do not cover the individual project pursuant to CEQA Guidelines Sections 15168(c)(2) and 15168(c)(5), then appropriate, project-specific CEQA analysis will be tiered from this 2006 LRDP EIR in accordance with CEQA Guidelines Section 15168(d)(1-3).

IV.I.3.3 2006 LRDP Principles, Strategies and LBNL Design Guidelines

2006 LRDP Principles and Strategies

The 2006 LRDP proposes four fundamental principles that form the basis for the Plan's development strategies provided for each element of the Plan. The one principle most applicable to noise is to "Preserve and enhance the environmental qualities of the site as a model of resource conservation and environmental stewardship."

Development strategies provided by the 2006 LRDP are intended to minimize potential environmental impacts that could result from implementation of the 2006 LRDP. (See *Chapter III, Project Description* for further discussion, and see Appendix B for a full listing of principles, strategies and design guidelines.) Development Strategies set forth in the 2006 LRDP applicable to noise include the following:

- Protect and enhance the site's natural and visual resources, including native habitats, streams and mature tree stands by focusing future development primarily within the already developed areas of the site;

- Increase development densities within the most developed areas of the site to preserve open space, enhance operational efficiencies and access;
- Site and design new facilities in accordance with University of California energy efficiency and sustainability policy to reduce energy, water and material consumption and provide improved occupant health, comfort and productivity;
- Preserve and enhance the native rustic landscape and protect sensitive habitats;
- Develop new campus-like outdoor spaces such as plazas within clusters of facilities and improve those that already exist; and
- Maintain and enhance tree stands to reduce the visibility of Laboratory buildings from significant public areas in neighboring communities.

LBNL Design Guidelines

The LBNL Design Guidelines were developed in parallel with the LRDP and are proposed to be adopted by the Lab, following The Regents' consideration of the 2006 LRDP. The LBNL Design Guidelines provide specific guidelines for site planning, landscape and building design as a means to implement the Plan's development principles as each new project is developed. Specific design guidelines are organized by a set of design objectives that essentially correspond to the strategies provided in the LRDP. The LBNL Design Guidelines provides the following specific planning and design guidance relevant to noise to achieve these design objectives:

- Provide screening landscape elements to visually screen large buildings;
- Minimize impacts of Disturbed Slopes;
- Mass and site buildings to minimize their visibility;
- Screen Roofscapes;
- Create as high a density and critical mass around commons spaces as possible; and
- Minimize visual and environmental impacts of new parking lots.

IV.I.3.4 Impacts and Mitigation Measures

Impact NOISE-1: Development under the proposed LRDP would result in temporary noise impacts related to construction and demolition activities. (Significant and Unavoidable)

Construction/demolition³ activities would occur intermittently at different sites in the LBNL campus throughout the period of implementation of the proposed LRDP. Although the related impacts at any one location would be temporary, construction of individual projects under the proposed project could cause adverse effects on the ambient noise environment within the planning area. Noise from construction/demolition activities would result primarily from the operation of equipment. Construction preparation activities such as excavation, grading, earth

³ For the purposes of this EIR, the term "construction," unless specifically indicated otherwise, includes activities that involve construction of new facilities, major rehabilitation or modification of existing facilities, and demolition of existing facilities.

movement, stockpiling, and batch-dropping operations generate noise. Construction activities such as foundation laying, building construction, and finishing operations would also generate noise. Construction-related noise levels at and near the project site would fluctuate depending on the particular type, number, and duration of uses of various pieces of construction equipment. Table IV.I-5 shows typical noise levels during different construction stages.

**TABLE IV.I-5
TYPICAL CONSTRUCTION NOISE LEVELS**

Construction Activity	Noise Level (Leq)^a
Ground Clearing	84
Excavation	89
Foundations	78
Erection	85
Finishing	89

^a Average noise levels correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase of construction and 200 feet from the rest of the equipment associated with that phase.

SOURCE: U.S. Environmental Protection Agency, *Noise from Construction Equipment and Building Operations, Building Equipment, and Home Appliances*, December 1971.

Construction-related material haul trips would raise ambient noise levels along haul routes, depending on the number of haul trips made and types of vehicles used. In addition, impulsive noises generated by certain types of construction equipment (such as earth compactors and pile driving) can be particularly annoying. Table IV.I-6 shows typical noise levels produced by various types of construction equipment. Standard demolition activities employ equipment similar to that used for construction activities and would have similar, but shorter duration, noise impacts.

**TABLE IV.I-6
TYPICAL NOISE LEVELS FROM CONSTRUCTION EQUIPMENT**

Construction Equipment	Noise Level (dBA at 50 feet)
Dump Truck	88
Portable Air Compressor	81
Concrete Mixer (Truck)	85
Jack Hammer	88
Scraper	88
Dozer	87
Paver	89
Generator	76
Pile Driver	101
Rock Drill	98
Pump	76
Pneumatic Tools	85
Backhoe	85

SOURCE: Cunniff, *Environmental Noise Pollution*, 1977.

Construction/demolition activities would generate noise corresponding to the appropriate phase of, and the noise-generating equipment used during, those phases. Depending on the proximity of construction/demolition activities to sensitive receptors, the presence of intervening barriers, and the number, types and duration of equipment used, sensitive receptors could be exposed to significantly high noise levels. Noise levels could be greater than existing noise levels at nearby sensitive receptor locations and could increase day-night levels in close proximity to the construction site by greater than 5 DNL. These temporary increases in noise levels would occur intermittently at various locations in the project area throughout the life of the project. However, most construction/demolition activities undertaken at LBNL pursuant to the 2006 LRDP would occur at some distance from sensitive receptors. For example, the Lab has in recent years assumed jurisdictional control over a band of undeveloped land approximately 500 feet wide, on average, from the horseshoe curve of Cyclotron Road on the west, across the Berkeley-Oakland border to the curve of Lee Road around the southern edge of Building 62. Only in the Lab's northwest corner are Lab buildings and development sites located closer to potential receptors.

LBNL has infrequently (twice in the last 15 years) employed pile driving in construction projects. Alternate methods of drilled piers are more appropriate for most Berkeley Lab locations, and pile driving is not considered likely for subsequent projects under the LRDP.

As noted in the Setting, noise generally attenuates (decreases) at a rate of 6 to 7.5 dBA per doubling of distance. Conservatively assuming an attenuation of 6 dBA per doubling of distance,⁴ noise during the noisiest phases of construction/demolition activity (89 L_{eq} at 50 feet) would generate noise levels of approximately 67 L_{eq} if the nearest sensitive off-site receptors were located 600 feet away.⁵ In many cases, sensitive receptors are much farther away from locations on the LBNL hill site; in such instances, noise levels at the nearest receptors would be lower.

Depending on the locations of future development projects undertaken pursuant to the 2006 LRDP, construction/demolition noise levels could exceed the City of Berkeley's maximum allowable receiving noise standard of 60 to 65 dBA (depending on the residential zone where noise is heard) for stationary equipment (i.e., construction/demolition equipment that is operated over a period of 10 days or more). However, implementation of Mitigation Measure NOISE-1 would normally reduce such noise to a less-than-significant level.

⁴ The 6 dBA attenuation with every doubling of distance assumes only geometric spreading of the sound waves and does not take into account other factors such as topography, atmospheric absorption and reflection, etc. Because of the hilly terrain at LBNL, topography plays an important role in attenuating noise as there may be no line of sight between specific locations on the LBNL hill site and the nearest sensitive receptor to that site. Previous noise testing conducted by ESA to determine site-specific attenuation factors has revealed that the attenuation factor may be nearly twice the 6 dBA per doubling of distance from the source. However, because the measurements could be influenced by variation in topography and by buildings and other structures that sometimes attenuate noise, the measured attenuation is valid only for the specific locations evaluated. The published value of 6 dBA per doubling of distance is a widely accepted standard and would make the analysis more conservative. Therefore, an attenuation rate of 6 dBA was used in the evaluation of significance of project impacts.

⁵ Building S-1 on the Illustrative Development Scenario is analyzed to be constructed approximately 600 feet from the nearest sensitive receptors. The analysis positions the building just inside the main Blackberry Canyon Gate; many other development projects to be undertaken pursuant to the 2006 LRDP, such as development in the Old Town area adjacent to the Advanced Light Source (Building 6) and redevelopment of the Bevatron (Building 51), would be considerably farther from off-site receptors.

Noise impacts due to the demolition of Building 51 would be less than significant, as well. Based on the analysis in the Building 51 Draft EIR (LBNL, 2005), in which noise tests and calculations were conducted to measure sound propagation from Building 51 to the nearest sensitive receptor areas, demolition-related noise levels at the nearest sensitive receptors would be well below the Berkeley Noise Ordinance limits applicable to construction/demolition operations at all of these locations, and inaudible at most of them. The tests used an artificial noise source producing a noise level of 95 dBA at 50 feet. This artificial noise source served as a surrogate for noise levels associated with the loudest stage of demolition activities. Moreover, as part of project contract specifications, LBNL would require its subcontractors to employ noise control procedures. Therefore, it was concluded that demolition of Building 51 would not result in significant impacts due to noise.

Mitigation Measure NOISE-1a: To reduce daytime noise impacts due to construction/demolition, LBNL shall require construction/demolition contractors to implement noise reduction measures appropriate for the project being undertaken. Measures that might be implemented could include, but not be limited to, the following:

- Construction/demolition activities would be limited to a schedule that minimizes disruption to uses surrounding the project site as much as possible. Such activities would be limited to the hours designated in the Berkeley and/or Oakland noise ordinance(s), as applicable to the location of the project. This would eliminate or substantially reduce noise impacts during the more noise-sensitive nighttime hours and on days when construction noise might be more disturbing.
- To the maximum extent feasible, equipment and trucks used for project construction shall utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds, wherever feasible).
- Stationary noise sources shall be located as far from adjacent receptors as possible.
- At locations where noise may affect neighboring residential uses, LBNL will develop a comprehensive construction noise control specification to implement construction/demolition noise controls, such as noise attenuation barriers, siting of construction laydown and vehicle staging areas, and community outreach, as appropriate to specific projects. The specification will include such information as general provisions, definitions, submittal requirements, construction limitations, requirements for noise and vibration monitoring and control plans, noise control materials and methods. This document will be modified as appropriate for a particular construction project and included within the construction specification.

Mitigation Measure NOISE-1b: For each subsequent project pursuant to the LRDP that would involve construction and/or demolition activities, LBNL shall engage a qualified noise consultant to determine whether, based on the location of the site and the activities proposed, construction/demolition noise levels could approach the property-line receiving noise standards of the cities of Berkeley or Oakland (as applicable). If the consultant determines that the standards would not be exceeded, no further mitigation is required. If the standards would be reached or exceeded absent further mitigation, one or more of the following additional measures would be required, as determined necessary by the noise consultant.

- Stationary noise sources shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or other measures to the extent feasible.
- Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for project construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, 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, and this could achieve a reduction of 5 dBA. Quieter procedures shall be used, such as drills rather than impact equipment, whenever feasible.
- Noise from idling trucks shall be kept to a minimum. No trucks shall be permitted to idle for more than 10 minutes if waiting within 100 feet of a residential area.
- If determined necessary by the noise consultant, a set of site-specific noise attenuation measures shall be developed before construction begins; possible measures might include erection of temporary noise barriers around the construction site, use of noise control blankets on structures being erected to reduce noise emission from the site, evaluation of the feasibility of noise control at the receivers by temporarily improving the noise reduction capability of adjacent buildings, and monitoring the effectiveness of noise attenuation measures by taking noise measurements.
- If determined necessary by the noise consultant, at least two weeks prior to the start of excavation, LBNL or its contractor shall provide written notification to all neighbors within 500 feet of the construction site. The notification shall indicate the estimated duration and completion date of the construction, construction hours, and necessary contact information for potential complaints about construction noise (i.e., name, telephone number, and address of party responsible for construction). The notice shall indicate that noise complaints resulting from construction can be directed to the contact person identified in the notice. The name and phone number of the contact person also shall be posted outside the LBNL boundaries.

Although in most instances, it can reasonably be anticipated that construction noise impacts on off-site receptors would be reduced to a less-than-significant level through implementation of the above mitigation measures, there may be individual construction and/or demolition projects undertaken during the life of the 2006 LRDP that result in noise impacts that could not be fully mitigated. For example, for future projects undertaken in specific locations near the Lab fence line, if construction activities were determined to be “repetitively scheduled and relatively long-term operations” of 10 days or more of stationary equipment, such activities could exceed the Berkeley Noise Ordinance limits within approximately 1,000 to 1,500 feet of a single-family residence, 500 to 1,000 feet from a multi-family residence, and 500 feet of a commercial/industrial land use. Given no other attenuating factors, where these circumstances are met construction-generated noise from stationary equipment would be expected to exceed limits set forth in local noise ordinances.

Given the above, and for purposes of a conservative analysis, the impact of construction noise is considered to be significant and unavoidable.

Significance after Mitigation: Significant and unavoidable.

Project Variant. The project variant would result in substantially the same construction and demolition noise impacts as the 2006 LRDP. While the project variant would include implementation of Mitigation Measure NOISE-1, the impact would, for the reasons stated regarding implementation of the LRDP, remain significant and unavoidable.

Future Projects/Illustrative Development Scenario. The Illustrative Development Scenario is a conceptual portrayal of potential development under the 2006 LRDP. Actual overall development that is approved and constructed pursuant to the 2006 LRDP would be less intense than portrayed in the scenario. The scenario was developed before the 2006 LRDP was reduced in scope in response to comments from the City of Berkeley, and thus the scenario includes an overall level of potential development that is greater than is being proposed in the 2006 LRDP. Each of the proposed buildings that is included in the scenario, however, might be constructed pursuant to the 2006 LRDP, and thus the scenario remains an appropriate and conservative basis for the evaluation of construction noise impacts. For the reasons stated above, potential individual projects under the LRDP such as identified in the Illustrative Development Scenario could result in temporary noise impacts related to construction and/or demolitions activities. Individual projects under the LRDP such as those identified in the scenario would include implementation of Mitigation Measure NOISE -1. In most instances it can be anticipated that implementation of this mitigation measure would reduce construction noise impacts of potential individual projects on off-site receptors to a less-than-significant level, for the reasons stated above. As stated above, however, some potential future projects could exceed local noise standards, such as some projects located near the Lab fence line. For such projects, the impact would remain significant and unavoidable.

Impact NOISE-2: Development under the proposed LRDP would result in temporary vibration impacts related to construction activities. (Less than Significant)

Construction activities can cause vibration that varies in intensity depending on several factors. Of all construction activities, use of pile driving and vibratory compaction equipment typically generate high ground-borne vibration levels.

Construction-induced vibration attenuates more or less rapidly at distance from the source, depending on soil conditions. Perceptible vibrations from impact pile driving can occur at distances of up to approximately 500 feet. As mentioned above, pile driving is not considered likely for subsequent projects under the LRDP. Furthermore, the distance to off-site residential receptors from most potential construction sites is greater than 1,000 feet. If pile driving were to be employed, a CEQA analysis separate from this LRDP EIR would be performed to assess vibration impacts. Vibration impacts from other construction equipment would be considerably less substantial than those from pile driving. Because pile driving is not likely, and because of the distance from potential construction projects at Berkeley Lab to off-site receptors, construction-generated vibration would be attenuated such that there would be no discernible impact.

Mitigation: None required.

Project Variant. The project variant would result in substantially the same noise impacts as the 2006 LRDP. Thus, the vibration impact would be less than significant.

Future Projects/Illustrative Development Scenario. The Illustrative Development Scenario is a conceptual portrayal of potential development under the 2006 LRDP. Actual overall development that is approved and constructed pursuant to the 2006 LRDP would be less intense than portrayed in the scenario. The scenario was developed before the 2006 LRDP was reduced in scope in response to comments from the City of Berkeley, and thus the scenario includes an overall level of potential development that is greater than is being proposed in the 2006 LRDP. Each of the proposed buildings that is included in the scenario, however, might be constructed pursuant to the 2006 LRDP, and thus the scenario remains an appropriate and conservative basis for the evaluation of noise impacts. Potential individual projects under the LRDP such as those identified in the Illustrative Development Scenario could result in temporary vibration impacts. Construction-generated vibration would be assessed in a separate CEQA analysis if pile driving were to be employed, which is unlikely. For the reasons stated above regarding implementation of the LRDP as a whole, other construction-generated vibration associated with a specific project identified in the Illustrative Development Scenario would be attenuated such that there would be no discernible vibration, and thus the noise impact would be less than significant.

Impact NOISE-3: Project-generated vehicle traffic associated with the proposed LRDP would result in an incremental, and likely imperceptible, long-term increase in ambient noise levels. (Less than Significant)

Development pursuant to the 2006 LRDP would add, at most, 9 percent to the volume of any of the intersections evaluated in the transportation analysis of this EIR, and these greatest increases would occur only at the intersections in closest proximity to the Lab's entrance gates. For example, at Hearst and LeRoy Avenues, leading to Cyclotron Road and the Lab's main Blackberry Canyon Gate, project traffic would add 7.9 percent to projected future volumes in the p.m. peak hour, and 8.6 percent to (slightly lower) projected future volumes in the a.m. peak hour. The increased traffic volumes would not be sufficient to generate perceptible increases in traffic noise. At more heavily traveled intersections, such as Hearst and Oxford Avenues, the project's increment would be far less – approximately 2 percent. Although the total volumes would be greater at these intersections, traffic generated by LRDP development would result in even less of an increase in noise and, again, the increase would not be perceptible.

Compared to existing traffic volumes, future volumes – including LRDP traffic and traffic generated by cumulative development, including implementation of the UC Berkeley 2020 LRDP – would manifest a much greater increase than that resulting from Berkeley Lab's LRDP development alone. For example, at the above-noted Hearst/LeRoy intersection, traffic volumes are forecast to increase a total of nearly 40 percent between current conditions and Year 2025 conditions, while at Hearst/Oxford, the increase is forecast to be 25 to 30 percent. Even so, these

changes in volumes would barely register in terms of perceptible increases in traffic noise, because it is normally necessary for traffic volumes to double to generate a barely perceptible increase in noise of 3 decibels. Therefore, increases in traffic noise would not be significant.

Mitigation: None required.

Project Variant. The project variant would result in substantially the same noise impacts as the 2006 LRDP. Thus, the traffic noise impact would be less than significant.

Future Projects/Illustrative Development Scenario. The Illustrative Development Scenario is a conceptual portrayal of potential development under the 2006 LRDP. Actual overall development that is approved and constructed pursuant to the 2006 LRDP would be less intense than portrayed in the scenario. The scenario was developed before the 2006 LRDP was reduced in scope in response to comments from the City of Berkeley, and thus the scenario includes an overall level of potential development that is greater than is being proposed in the 2006 LRDP. Each of the proposed buildings that is included in the scenario, however, might be constructed pursuant to the 2006 LRDP, and thus the scenario remains an appropriate and conservative basis for the evaluation of noise impacts. For the reasons stated above, potential individual projects under the LRDP such as those identified in the Illustrative Development Scenario would result in an incremental but likely imperceptible long-term increase in ambient noise levels and any increase in traffic noise would not be significant. Thus the resulting noise impact would be less than significant.

Impact NOISE-4: Continued operation of the LBNL hill site facility would result in a long-term increase in ambient noise levels. (Significant, Less than Significant with Mitigation)

New buildings and other facilities developed pursuant to the LRDP would introduce stationary sources of noise such as Heating, Ventilation and Air Conditioning (HVAC) equipment and, in certain cases, specialized research equipment. HVAC equipment involves fans and compressors that are designed by the manufacturer to operate quietly and unobtrusively. Because LBNL would install and operate HVAC equipment in compliance with manufacturers' standards, the noise impact to nearby residents and adjacent land uses would be less than significant. Also, in most instances, the nearest off-site sensitive receptors are several hundred feet away from potential development sites, further reducing the potential that HVAC system noise would be apparent to off-site receptors.

Some facilities would include additional new noise sources in the form of specialized equipment. Although it is not possible to accurately forecast the precise nature and type of equipment that might be used in future LBNL facilities, such equipment would generally be installed within purpose-built research buildings that would be designed to attenuate to the maximum extent feasible any unusual noise sources. As with HVAC equipment noise, the extensive setbacks between most portions of the LBNL site and nearby off-site receptors would serve to further minimize noise impacts. There is no reason to believe that appropriate noise engineering

techniques could not adequately reduce on-site noise levels such that they would be sufficiently reduced at off-site receptors to avoid disturbance of the surrounding environment. With implementation of the following design-related mitigation measure, the impact of operational noise on the ambient noise environment would be less than significant. Compliance with the local noise ordinance standards (discussed beginning on p. IV.I-4) would reduce the potential noise impact to a less-than-significant level.

Mitigation Measure NOISE-4: Mechanical equipment shall be selected and building designs prepared for all future development projects pursuant to the 2006 LRDP so that noise levels from future building and other facility operations would not exceed the Noise Ordinance limits of the cities of Berkeley or Oakland for commercial areas or residential zones as measured on any commercial or residential property in the area surrounding the future LRDP project. Controls that would typically be incorporated to attain adequate noise reduction would include selection of quiet equipment, sound attenuators on fans, sound attenuator packages for cooling towers and emergency generators, acoustical screen walls, and equipment enclosures.

Significance after Mitigation: Less than significant.

Project Variant. The project variant would result in substantially the same noise impacts as the 2006 LRDP and would also include Mitigation Measure NOISE-4. Thus, the impact would be mitigated to a less-than-significant level.

Future Projects/Illustrative Development Scenario. The Illustrative Development Scenario is a conceptual portrayal of potential development under the 2006 LRDP. Actual overall development that is approved and constructed pursuant to the 2006 LRDP would be less intense than portrayed in the scenario. The scenario was developed before the 2006 LRDP was reduced in scope in response to comments from the City of Berkeley, and thus the scenario includes an overall level of potential development that is greater than is being proposed in the 2006 LRDP. Each of the proposed buildings that is included in the scenario, however, might be constructed pursuant to the 2006 LRDP, and thus the scenario remains an appropriate and conservative basis for the evaluation of noise impacts. For the reasons stated above, potential individual projects under the LRDP such as those identified in the Illustrative Development Scenario would potentially result in significant long-term increases in ambient noise levels. With implementation of Mitigation Measure NOISE-4, however, the impact would be reduced to a less-than-significant level.

IV.I.3.5 Cumulative Impacts

This analysis considers cumulative growth as represented by the implementation of the Berkeley and Oakland general plans (and thus includes growth anticipated by the City of Berkeley General Plan EIR), and implementation of the UC Berkeley 2020 LRDP (including the Southeast Campus Integrated Projects) along with implementation of the proposed LBNL 2006 LRDP. Additional projects currently under way at UC Berkeley, described in Section VI.C of this EIR, are also accounted for in the cumulative analysis.

The geographic context for this cumulative analysis is limited to the immediate vicinity of the LBNL main hill site, because this is the only area where noise from LBNL construction or operation could interact with other noise sources. (As described in Impact NOISE-3, project-generated vehicle traffic associated with the proposed LRDP would result in an incremental, and likely imperceptible, long-term increase in ambient noise levels, and that increase would not be sufficient to result in a considerable contribution to any cumulative noise impacts.) This analysis evaluates whether the impacts of the proposed LRDP, together with the impacts of cumulative development, would result in a significant impact (based on the significance criteria on p. IV.I-9) and, if so, whether the contribution of the LRDP to this impact would be considerable. Both conditions must apply in order for the project's cumulative impacts to rise to the level of significance.

Impact NOISE-5: Development under the proposed LRDP would result in temporary contributions to cumulative noise impacts related to construction and demolition activities. (Significant and Unavoidable)

As noted under Impact NOISE-1, construction/demolition activities would occur intermittently at different sites on the LBNL hill site throughout the period of implementation of the proposed 2006 LRDP. Although temporary, construction noise impacts could adversely affect the ambient noise environment within the planning area. In most instances, it can reasonably be anticipated that construction noise impacts on off-site receptors would be reduced to a less-than-significant level through implementation of Mitigation Measures NOISE-1a and NOISE-1b, and the distance to sensitive receptors from most anticipated construction or demolition sites on the Lab property would attenuate potential noise impacts. Moreover, the distance from the Lab hill site to potential off-Lab construction sites that could be expected to generate substantial construction or demolition noise would limit the spatial and temporal overlap between Lab construction projects and those off the Lab site that could potentially result in cumulative construction noise impacts. Nevertheless, it cannot be stated with certainty that there would not be instances during the lifetime of the 2006 LRDP when construction noise emanating from a location on the Lab hill site would contribute to cumulative construction noise impacts. Therefore, for purposes of a conservative analysis, the cumulative impact of construction noise is considered to be significant and unavoidable.

Mitigation: Implementation of Mitigation Measures NOISE-1a and NOISE-1b would reduce the cumulative impact of construction noise to the maximum extent feasible. However, for purposes of a conservative analysis, the cumulative effect of construction noise is considered significant and unavoidable.

Project Variant. The project variant would result in construction noise impacts substantially similar to the noise impacts that would result from the 2006 LRDP development. The contribution of the project variant to cumulative construction noise impacts would therefore be significant and unavoidable, as described above.

Individual Future Project/Illustrative Development Scenario. The Illustrative Development Scenario is a conceptual portrayal of development under the LRDP. A future project under the LRDP such as conceptually portrayed in the Illustrative Development Scenario, when combined with other projects under the LRDP and other development as discussed above, would also, for the reasons stated above, potentially result in cumulatively considerable construction noise impacts that would be considered significant and unavoidable.

Impact NOISE-6: Development pursuant to the 2006 LRDP, together with anticipated future development at LBNL and in the surrounding area, including the UC Berkeley 2020 LRDP, would result in a cumulative increase in noise levels. (Less than Significant)

As noted under Impact NOISE-3, above, even with traffic growth due to implementation of the 2006 LRDP and that attributable to UC Berkeley's LRDP, traffic noise would not increase perceptibly. As indicated in Impact NOISE-4, above, building equipment noise could be mitigated to a less-than-significant level; given that no other development of substance is proposed or anticipated proximate to LBNL (i.e., the majority of the LBNL hill site and the UC Berkeley Hill Campus are currently in open space, as is the vast majority of Tilden Regional Park, and no development of consequence is proposed at any of these locations other than LBNL), no additional substantial noise sources would overlap with noise generated at LBNL. As noted under Impact NOISE-2, development pursuant to the LRDP would not result in significant vibration impacts at off-site receptors. Therefore, no cumulative significant impact is foreseen in the vicinity of the LBNL hill site and, to the extent that ambient noise in the larger area (e.g., downtown Berkeley, Oakland, and other communities) would increase, the 2006 LRDP would not make a considerable contribution to such increases by virtue of its relatively limited effect on overall traffic volumes.

The EIR for the UC Berkeley Southeast Campus Integrated Projects (SCIP) finds that, with mitigation, the SCIP would result in significant unavoidable noise impacts due to construction and demolition and due to the potential for additional events at the stadium (UC Berkeley, 2006). Moreover, the SCIP Draft EIR identified a cumulative significant noise impact due to potential intermittent overlap between LBNL's Building 51 demolition and the Integrated Projects analyzed in the SCIP DEIR, on sensitive receivers on campus (Bowles Hall) and residents of Panoramic Hill, and determined that this cumulative impact would be significant and unavoidable.

However, as described above under Impact NOISE-1, based on analysis in the Draft EIR for the demolition of Building 51 (LBNL, 2005), noise from demolition of Building 51 would be imperceptible to the nearest sensitive receptors in most instances and below Berkeley Noise Ordinance standards for all receptor locations evaluated. Moreover, new development on the UC Berkeley campus and in the city of Berkeley would be too distant and of insufficient noise energy to have a combined adverse effect on ambient noise at these sensitive receptor areas. Construction noise from the Integrated Projects analyzed in the SCIP Draft EIR would be generated in much closer proximity to sensitive receptors. Therefore, the contribution to

cumulative noise impacts of the LBNL 2006 LRDP would not be considerable, and the 2006 LRDP would result in a less-than-significant cumulative impact with regard to noise.

Mitigation: None required.

Project Variant. The project variant would result in noise impacts substantially similar to the noise impacts that would result from the 2006 LRDP development. The cumulative noise impacts of the project variant would therefore be less than significant as described above.

Individual Future Project/Illustrative Development Scenario. The Illustrative Development Scenario is a conceptual portrayal of development under the LRDP. A future project under the LRDP such as conceptually portrayed in the Illustrative Development Scenario, when combined with other projects under the LRDP and other development as discussed above, would also, for the reasons stated above, result in cumulative noise impacts that would be less than significant.

IV.1.4 References – Noise

LBNL (Lawrence Berkeley National Laboratory, *Demolition of Building 51 and the Bevatron Draft EIR*, October 21, 2005.

UC (University of California) Berkeley, *Southeast Campus Integrated Projects Tiered Focused Final Environmental Impact Report (SCH #2005112056)*; October 31, 2006. Available on the internet at: http://www.cp.berkeley.edu/SCIP/FEIR/SCIP_FEIR.html

UC Berkeley, *2020 Long Range Development Plan and Tien Center Draft EIR*, Prepared by Design, Community & Environment for UC Berkeley Facilities Services, April 15, 2004.

IV.J. Population and Housing

IV.J.1 Introduction

This chapter evaluates the potential population and housing impacts of the proposed 2006 LRDP. The chapter reviews estimates of current Lab population and future Lab population under the proposed LRDP; places of residence for Lab employees; current and future population and housing supply in the City of Berkeley and other locations in the region that house Lab employees; implications of increases in permanent employment at the Lab for population growth and housing demand in Berkeley and elsewhere in the region; potential growth at the Lab in conjunction with other growth expected in Berkeley, including population increases associated with the proposed University of California (UC) Berkeley *2020 Long Range Development Plan*; and the guest population at the Lab and the needs for temporary housing. The primary sources of information used in this chapter include employee place-of-residence summaries provided by the LBNL Facilities Department, Census data, estimates prepared by the State of California Department of Finance and the City of Berkeley, and city and regional projections prepared by the Association of Bay Area Governments (ABAG).

IV.J.2 Setting

IV.J.2.1 Existing LBNL Population

The population at LBNL consists of people whose permanent place of employment is the Berkeley Lab as well as guests who use the Lab's facilities occasionally or work there on a temporary basis collaborating with other scientists and engineers. Guests are not Lab employees; most are employed by other institutions, businesses, or government agencies.

In 2003, there were 3,800 people employed by Berkeley Lab.¹ Most of these employees (56 percent) were full-time employees in scientific and technical positions. Administrative support positions accounted for 16 percent of Lab employment. Faculty (seven percent of the total), and postdoctoral researchers (six percent of the total), as well as undergraduate and graduate students (combined representing 15 percent of the total) were also counted among the Lab's employees.

In 2003, over the course of the year, a total of about 2,500 people used Lab facilities as guests. Guests include industry and government researchers working at the Lab for short-term assignments, scientists visiting from other academic institutions, or people from other institutions such as UC Davis who use Lab facilities regularly over a period of weeks or months. On an average day, 40 percent of total annual guests use Lab facilities. In 2003, this represented about 1,000 people on any given day. The Lab estimates an adjusted total daily population of

¹ All employment figures in this section, unless otherwise noted, are on the basis of "head count," or actual persons employed, regardless of whether they work full-time. On a full-time equivalent (FTE) basis, the Berkeley Lab employee population numbered about 3,370 people in 2003 in all locations combined.

4,375 people for 2003, counting both employees and guests; of the total, 3,650 ADP are on the Laboratory's main site on any given day.²

IV.J.2.2 Places of Residence for LBNL Employees

Almost 90 percent of LBNL employees live in Alameda and Contra Costa counties. Thirty-three percent live in Berkeley, Albany, and Kensington, and 14 percent live in nearby Oakland, Emeryville, and Piedmont.³ Another 30 percent of Lab employees live in Contra Costa County, primarily in nearby El Cerrito, Richmond, and San Pablo, and east of the Lab along Highway 24. Four percent of Lab employees live in San Francisco. The rest are distributed throughout other Bay Area communities, and a few live outside the Bay Area. Table IV.J-1 shows the places of residence for Berkeley Lab employees.

**TABLE IV.J-1
PLACES OF RESIDENCE FOR LBNL EMPLOYEES**

Residential Location	Percent Distribution	Number of Employees^a
Berkeley, Albany, and Kensington ^b	33%	1,258
Emeryville, Oakland, and Piedmont ^c	14%	521
Other Alameda County	9%	335
El Cerrito, Richmond, and San Pablo	10%	376
Concord, Martinez, Pleasant Hill, and Walnut Creek	9%	327
Lafayette, Moraga, and Orinda	5%	173
Other Contra Costa County	7%	270
San Francisco	4%	167
Other Bay Area ^d	7%	258
Elsewhere in California ^e	3%	115
Total	100%	3,800

^a Estimated number of employees living in each location in 2003 based on 2003 headcount employment and distribution of employees by U.S. Postal Service zip code of residence, as reported in the employee database provided by the LBNL Facilities Department, April 14, 2004.

^b Berkeley, Albany, and Kensington cannot be separately identified in employee place of residence data provided by zip code.

^c Emeryville, Oakland, and Piedmont cannot be separately identified in employee place of residence data provided by zip code.

^d Employees live in all other Bay Area counties. No one community is home to more than one percent of LBNL employees.

^e Most of these people live in San Joaquin County and the Davis/Sacramento area.

SOURCE: Lawrence Berkeley National Laboratory and Hausrath Economics Group.

² The Lab's estimate of adjusted daily population (ADP) is defined to include FTE employment plus 40 percent of total annual guests.

³ Place-of-residence data for Lab employees is tabulated by U. S. Postal Service zip code. Some zip codes in Berkeley also cover Albany and Kensington, and some zip codes in Oakland also cover Emeryville and Piedmont.

Lab employees living in Berkeley and Albany represented 1.0 percent of the combined population of those cities in 2003.⁴ Lab employees and their dependents represented 2.0 percent of the Berkeley and Albany population in 2003.⁵ In all other residential locations, Lab employees and their dependents accounted for less than one percent of the total population. The percentage of the residential population associated with LBNL employment was greatest in nearby communities—in 2003, Lab employees and their dependents represented 0.3 percent of the total population of Emeryville, Oakland and Piedmont; 0.6 percent of the total population of El Cerrito, Richmond, and San Pablo; and 0.7 percent of the total population of Lafayette, Moraga, and Orinda. For the Bay Area region as a whole, Lab employees and the other members of their households represented 0.1 percent of total regional population in 2003.

IV.J.2.3 Overnight Accommodations for LBNL Guests

Guests include out-of-town visitors who require temporary lodging, as well as people who live within a reasonable commute distance and use Lab facilities for the day, returning home in the evening. There is no permanent or temporary overnight accommodation at the LBNL site (although a User Guest House is identified as one of the projects in the LRDP's Illustrative Development Scenario; see Appendix D for a description of the User Guest House and see discussion under Impact J.1, below).

The Lab leases five apartments on Oxford Street in downtown Berkeley to provide short-term overnight accommodation for visiting researchers. The apartments are administered by the LBNL Advanced Light Source (ALS) but are available to visiting researchers from any area of the Laboratory. Each apartment has two bedrooms and can accommodate a maximum of four people. The Lab's lease costs are recovered in full by daily or monthly rates charged to the visitors using the apartments. On average, the apartments are 80 percent occupied over the course of the year. The typical length of stay is seven nights.⁶

⁴ The total population for the City of Berkeley in 2003 is estimated at 108,169 by City of Berkeley staff, after accounting for a documented Census 2000 undercount of group quarters population. This estimate is provided in a letter to the State of California Department of Finance (DOF). (See letter to Steve Peace, Director, California Department of Finance, from Weldon Rucker, City Manager, City of Berkeley, June 23, 2003, "Recommended increase to Berkeley's 2000 population baseline.") The DOF estimates a total population of 16,787 for the City of Albany in 2003. Kensington is part of unincorporated Contra Costa County, so the DOF does not provide a separate population estimate. Because the number of Lab employees living in Kensington cannot be separately identified in the zip code database, these comparisons overstate by a small amount the proportion of the Berkeley and Albany population represented by Lab employees and their dependents.

⁵ The dependents of Lab employees are estimated separately for student employees and non-student employees. The analysis assumes that each Lab employee represents one household. (This is a conservative estimate since it is known that there are households that contain more than one Lab employee.) For non-student employees, the additional population associated with Lab employees is estimated based on the average household size for households by place of residence. According to the 2000 Census, for the cities of Berkeley and Albany, the average household size is 2.18 persons per household; and for Oakland, Emeryville, and Piedmont combined, the average household size is 2.47 persons per household. For student employees, the number of dependents is estimated at 0.12 per student. This estimate is based on analysis of 1997 public access data available from the UC Berkeley Office of Student Research describing marital status and number of children for undergraduate and graduate students.

⁶ Barbara Phillips, ALS Housing Coordinator, personal communication, December 15, 2003.

Other overnight accommodation options for Lab guests include hotels, bed and breakfast accommodations, and motels in Berkeley, Emeryville, and Oakland and the homes of Lab employees. Other guests are researchers who use Lab facilities occasionally but live within a day's drive and therefore do not require overnight accommodation near the Lab.

IV.J.2.4 Recent Regional Population and Housing Trends

There were 6.8 million people living in the nine-county Bay Area region in 2000. The region's population grew at a compound rate of 1.2 percent per year from 1990 to 2000. The Bay Area also produced substantial increases in employment opportunities in the 1990s. The number of jobs increased at a compound rate of 1.6 percent per year, growing to a total of 3.8 million jobs in the nine-county region in 2000.

Throughout the state and the region, the rate of new housing production slowed substantially over the last two decades. Housing production has not kept pace with demand associated with employment growth, in-migration, and household formation. Between 1990 and 2000, about 187,000 housing units were added in the region (an eight-percent increase). During the same period, the number of employed residents increased by 456,000 (14 percent) and the number of jobs increased by 548,000 (17 percent). Housing price increases reflect this imbalance between supply and demand. In April 2003, market prices for single-family homes in the Bay Area were about double the price levels observed in 1990. In April 2003, the average single-family home price in the Bay Area was \$580,000. New home prices in the Bay Area are 50 to 70 percent higher than new home prices in neighboring San Joaquin and Stanislaus counties, and prices for existing homes in the Bay Area are more than double those in the neighboring counties.⁷

Population and employed population growth in the Bay Area have been accommodated through increases in the number of people and workers living in both existing and new units. There has also been a substantial increase in the number of people working in the Bay Area but living in surrounding counties where new housing is more plentiful and more affordable.

IV.J.2.5 Recent Population and Housing Trends in the City of Berkeley

Population and Housing Totals

It is important to understand conditions in the City of Berkeley because LBNL is one of the largest employers in the city; changes in Lab population have the most impact in the City of Berkeley. Table IV.J-2 shows population and housing trends for the City of Berkeley between 1970 and 2000. A total of about 106,000 people lived in the City of Berkeley in 2000. Berkeley's population peaked at 116,700 in 1970. After declining by 14,000 people (12 percent) from 1970 to 1990, the city's population increased by about 3,600 people between 1990 and 2000—a 3.5 percent increase. A larger increase in the number of people living in households (about 5,500 people) during this period was offset by a decline in the population living in group quarters

⁷ Real Estate Research Council of Northern California, *Northern California Real Estate Report*, First Quarter 2003.

**TABLE IV.J-2
POPULATION, HOUSEHOLDS, AND HOUSING IN THE CITY OF BERKELEY,
1970, 1980, 1990, AND 2000**

	1970	1980	1990	2000	Change 1970 – 1980		Change 1980 – 1990		Change 1990 – 2000	
					No.	%	No.	%	No.	%
Total Population ^a	116,716	103,328	102,724	106,354	(13,388)	-11%	(604)	-0.6%	3,630	3.5%
Household Population ^b	106,110	94,343	91,442	96,921	(11,767)	-11%	(2,901)	-3.1%	5,479	6.0%
Group Quarters ^c	10,606	8,985	11,282	9,433	(1,621)	-15%	2,297	25.6%	(1,849)	-16.4%
Housing Units	47,365	46,334	45,735	46,875	(1,031)	-2%	(599)	-1.3%	1,140	2.5%
Households ^d	45,655	44,704	43,453	44,955	(951)	-2%	(1,251)	-2.8%	1,502	3.5%
Persons per Household	2.32	2.11	2.10	2.16						

^a Total population consists of household population and population living in group quarters. The estimate for 2000 is adjusted from the published 2000 Census count, to correct for inadequate enumeration of group quarters populations in the city, particularly adjacent to the UC Berkeley campus. The adjustments are detailed in a June 23, 2003 letter from Weldon Rucker, City Manager, to Steve Peace, Director of Finance for the State of California, "Recommended increase to Berkeley's 2000 population baseline."

^b Household population consists of persons living in housing units such as a houses, apartments, mobile homes, or a single room where residents live and eat separately from others in the building.

^c Group quarters population consists of institutionalized persons and other persons living in group homes, rooming houses, dormitories, and emergency shelters. In Berkeley, most of the group quarters population consists of students living in college dormitories. The estimate for 2000 is adjusted from the published 2000 Census count, to correct for inadequate enumeration of group quarters populations in the city, particularly adjacent to the UC Berkeley campus. The adjustments are detailed in a June 23, 2003 letter from Weldon Rucker, City Manager, to Steve Peace, Director of Finance for the State of California, "Recommended increase to Berkeley's 2000 population baseline."

^d The number of households is equivalent to the number of occupied housing units.

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Census of Population and Housing: 1970, 1980, 1990, and Census 2000*; City of Berkeley.

(primarily students). The City of Berkeley population estimates for 2000 discussed here and presented in Table IV.J-2 reflect adjustments proposed by the City of Berkeley to account for enumeration errors by the Census Bureau, particularly with regard to group quarters populations.⁸

Through the two decades of declining overall population (1970–1990), group quarters population declined and then increased, so most of the overall decline was a consequence of changes in the occupants of existing households. Average household size declined to a low of 2.1 persons per household in 1990 from a high of 2.3 persons per household in 1970. Loss of housing stock and households in the City between 1970 and 1990 also contributed to population decline. The reasons for the decline in housing stock include demolition of some residential hotel rooms to make way for office or tourist use, removal of secondary (often illegal) units as those units were

⁸ The Census Bureau counted 11,282 people living in group quarters in the City of Berkeley in 1990 and only 5,822 people in group quarters in 2000. During this time period, the University of California had actually increased the capacity of its group quarters housing facilities. The City of Berkeley claims that Census Bureau enumeration efforts in 2000 were inadequate and documents Census Block and building level information in support of a revised group quarters population estimate for the City. This documentation is provided in a letter to the State of California Department of Finance (DOF), requesting revisions in future population estimates prepared by DOF. (See letter to Steve Peace, Director, California Department of Finance, from Weldon Rucker, City Manager, City of Berkeley, June 23, 2003, "Recommended increase to Berkeley's 2000 population baseline.") DOF's Official State Estimates for January 1, 2000—before updating to include the results of the 2000 Census—showed a total population for the city of 109,463.

reabsorbed into the primary unit, and use of multiple units by a single family.⁹ Most of the declines occurred during the decade of the 1970s.

Population growth in Berkeley between 1990 and 2000 has been accommodated in the existing housing stock and in new housing units. Average household size increased to 2.16 persons per household in 2000 from 2.10 persons per household in 1990, and there was a decline in the number of vacant housing units in the City, as vacant units became occupied. The most important reason for the population growth, however, after two decades of decline, was the increase in the housing stock. Following a net increase of over 1,100 housing units in the City of Berkeley between 1990 and 2000, the total housing stock numbered 46,875 units in 2000.

Characteristics of Housing Stock

Table IV.J-3 lists types of housing units in the City of Berkeley. More than half (54 percent) of the housing units in the city are in multi-unit buildings, and most of these are in buildings of five units or more. Forty-three percent of the housing stock is single-family detached housing, and the small balance (less than four percent) is single-family attached housing.

**TABLE IV.J-3
CHARACTERISTICS OF THE HOUSING STOCK, CITY OF BERKELEY, 2000**

	Number of Units	Percent of Total Units
Units in Structure		
1 unit, detached	20,097	43%
1 unit, attached	1,757	4%
2-4 units	9,298	20%
5-9 units	4,934	11%
10 or more units	10,730	23%
Mobile home, trailer, or other	59	0%
Total Housing Units	46,875	100%
Occupied Housing Units	44,955	100%
Owner-occupied units	19,214	43%
Renter-occupied units	25,741	57%
Vacant housing units	1,920	
Homeowner vacancy rate	0.7%	
Rental vacancy rate	2.8%	

SOURCE: U.S. Census Bureau, *Census 2000*.

Housing prices in Berkeley are among the highest in the region. Semi-annual price surveys indicate an average price of \$625,000 in Berkeley in April 2003, 115 percent greater than price levels observed in April 1990.¹⁰

⁹ City of Berkeley, *Conditions, Trends, and Issues Report*, 1993.

¹⁰ Real Estate Research Council of Northern California, *Northern California Real Estate Report*, First Quarter 2003.

In 2000, 43 percent of the City's housing stock was owner-occupied and 57 percent was renter-occupied. About 19,000 of the rental units are registered with the city's Rent Stabilization Board and another 1,500 rental units are rent-restricted affordable units.¹¹ Just under half of all rental housing in the city is located within a few blocks of the UC Berkeley campus.¹²

The housing supply in Berkeley continues to increase. In December 2003, the city's list of projects pending before either the Zoning Adjustments Board or the City Council included proposals representing a total of 681 dwelling units. Many of these projects are high density, mixed use, rental and condominium projects proposed by private and non-profit developers in downtown Berkeley and along transit corridors.¹³ In addition, the University of California recently completed the College Durant apartments, providing apartment-style housing for 120 students. Additional apartment-style and infill dormitory-style housing is currently under construction and will add another 1,120 beds south of the campus.¹⁴

IV.J.2.6 Housing Development Potential in Berkeley

The City of Berkeley has a very limited supply of vacant or underutilized land on which to develop substantial amounts of housing. After down-zoning in the 1970s, there is essentially no capacity to add to the housing supply within existing residential areas. Three-quarters of the City's 100-acre inventory of vacant and underutilized land is either in the Hills Overlay District, where steep slopes prohibit development, or near the Hayward fault. What land is available (parking lots and vacant parcels along major streets in the downtown area, central Berkeley, and south Berkeley) is expensive to build on and is also suited for non-residential uses that may generate higher returns.¹⁵

Furthermore, in addition to limited opportunity sites, there are other governmental constraints that discourage substantial private sector residential development in Berkeley. Berkeley's permit process is more rigorous than in most cities. The City requires discretionary review and a use permit for all residential construction, rather than having areas where specified densities are allowed as of right. This adds to the time and cost required for development.¹⁶

Nevertheless, the City's Land Use and Housing Element policies are designed to expand the housing supply in appropriate locations, particularly along major transit corridors and in the downtown, while maintaining the physical character of existing neighborhoods. In addition to encouraging high- and medium-density development through zoning, density bonuses (for affordable housing), and reduced parking requirements where appropriate, the Housing Element also identifies City-owned sites that have the potential for significant housing and/or mixed-use development.¹⁷ City staff have projected that these policies, in combination with a strong regional

¹¹ City of Berkeley, *General Plan Housing Element*, December 18, 2001, pages H-3 – H4.

¹² City of Berkeley, *General Plan Housing Element: Housing Element Appendix, 2001*, page 8.

¹³ City of Berkeley, "Pending Zoning Public Matters," as of December 12, 2003.

¹⁴ These recently completed and under construction UCB housing projects are all part of the Underhill Area Projects approved by the UC Regents in 2000.

¹⁵ City of Berkeley, *General Plan Housing Element: Housing Element Appendix*, pages 24-25.

¹⁶ City of Berkeley, *General Plan Housing Element: Housing Element Appendix*, pages 27-28.

¹⁷ City of Berkeley, *Planning Commission General Plan*, December 2001, page H-13.

economy, could result in substantial additions to the housing stock in Berkeley, assuming a pace of development over the long-term future consistent with recent trends.¹⁸

IV.J.2.7 Regional Population and Household Projections

Projections prepared by the ABAG in June 2003 reflecting a “smart growth forecast” for the Bay Area show regional population growth of almost 1.7 million and an increase of about 600,000 households for the 2001–2025 period (see Table IV.J-4). For the region as a whole, the projection is for growth of 25 percent over levels in 2000. In a departure from previous trend-based forecasts, this population and housing scenario reflects a “smart growth” vision: emphasizing infill development to revitalize central cities, support and enhance public transit, and preserve open space and agricultural land. The smart growth scenario assumes that local policies and regulations that currently limit this type of development are changed and that there is significant public investment on a regional and local level in infrastructure and in housing to achieve higher levels of housing production, and particularly high density housing near transit. The “smart growth” scenario illustrates a development pattern that, over the long term, assumes central Bay Area locations such as San Francisco, Berkeley, Oakland, Emeryville, Alameda, Fremont, Union City, Albany, El Cerrito, and Richmond absorb more housing production and population growth than would otherwise be the case. Regionally and locally, the scenario has implicit benefits in an improved balance of jobs and housing, less in-commuting, and more efficient development patterns that preserve open space and agricultural land.

Population and household growth for Berkeley and Albany represent about one percent of the total population and household growth forecast for the Bay Area region.¹⁹ Population growth is expected to continue in the City of Berkeley, building on the trends of the 1990s. The “smart growth forecast” shows an increase of over 13,000 people in the City of Berkeley between 2000 and 2025 (a 13-percent increase over 2000 levels) and an increase of almost 5,000 households in the city (an 11-percent increase over that same period). Using the adjusted 2000 population count for the City of Berkeley as a base, the total population living in the city could reach 119,700 by 2025. In Albany, population is forecast to increase by 14 percent to a total of 18,700 people in 2025. The forecast shows an additional 850 households in Albany between 2000 and 2025, an increase of 12 percent over the period.

The numerical and percentage increases in population and housing are expected to be greater in other parts of the Bay Area that house substantial numbers of Berkeley Lab employees. The expected increases in population and households are around 20 percent or more in Oakland, Emeryville, and Piedmont; in El Cerrito, Richmond, and San Pablo; and in central Contra Costa County communities.

¹⁸ City of Berkeley, *General Plan Housing Element: Housing Element Appendix A*, page 7.

¹⁹ Berkeley and Albany are combined because Lab employee place of residence database does not allow separate identification of these cities. In this analysis, Kensington, part of unincorporated Contra Costa County, is included in the “Rest of Contra Costa County.”

**TABLE IV.J-4
POPULATION AND HOUSEHOLD PROJECTIONS FOR THE
BAY AREA REGION, 2001 TO 2025**

Geographic Area	2000	2025	2000 – 2025 Change	2000 – 2025 Percent Change	2000 – 2025 Annual Rate
Total Population					
Berkeley and Albany ^a	122,800	138,400	15,600	13%	0.5%
Emeryville, Oakland, and Piedmont	417,300	510,400	93,100	22%	0.8%
Rest of Alameda County	907,200	1,150,600	243,400	27%	1.0%
El Cerrito, Richmond, and San Pablo	152,600	179,700	27,100	18%	0.7%
Concord, Martinez, Pleasant Hill, and Walnut Creek	254,800	300,000	45,200	18%	0.7%
Lafayette, Moraga, and Orinda	57,800	64,900	7,100	12%	0.5%
Rest of Contra Costa County	483,600	671,800	188,200	39%	1.3%
San Francisco	776,700	889,800	113,100	15%	0.5%
Rest of the Bay Area	3,614,500	4,555,800	941,300	26%	0.9%
Total Bay Area^b	6,787,400	8,461,400	1,674,000	25%	0.9%
Households					
Berkeley and Albany	52,000	57,800	5,800	11%	0.4%
Emeryville, Oakland, and Piedmont	158,600	193,900	35,300	22%	0.8%
Rest of Alameda County	312,800	390,600	77,800	25%	0.9%
El Cerrito, Richmond, and San Pablo	53,900	64,400	10,500	19%	0.7%
Concord, Martinez, Pleasant Hill, and Walnut Creek	102,400	122,200	19,800	19%	0.7%
Lafayette, Moraga, and Orinda	21,400	24,500	3,100	14%	0.5%
Rest of Contra Costa County	166,500	233,900	67,400	40%	1.4%
San Francisco	329,700	381,800	52,100	16%	0.6%
Rest of the Bay Area	1,268,800	1,596,500	327,700	26%	0.9%
Total Bay Area	2,466,000	3,065,400	599,400	24%	0.9%

Note: Numbers may not add to totals due to independent rounding.

^a Albany is combined with Berkeley in this table because place of residence data for Lab employees does not allow separate identification of these cities. In this table and the associated text discussion, Kensington, part of unincorporated Contra Costa County, is included in the "Rest of Contra Costa County." The numbers for Kensington are relatively small. In *Projections 2003*, ABAG uses the 2000 Census population counts for Berkeley, which the city contends are too low (see Table IV.J-2 and associated text). Therefore, the year 2000 population estimate for the City of Berkeley used in this table is the adjusted count prepared by the City. All other year 2000 estimates for geographic subareas are as published in *Projections 2003*. The adjustment for the estimated 2000 undercount is carried over to the 2025 projection. In *Projections 2003*, ABAG forecasts a population increase of over 13,000 for the City of Berkeley—primarily household population. That population growth—added to the adjusted year 2000 population—results in a total population estimate of 119,700 for the City of Berkeley in 2025. Accounting for the year 2000 adjustment for the group quarters undercount, this number is 3,600 greater than the 2025 population estimate for the City of Berkeley published in *Projections 2003*.

^b The regional population totals for 2000 and 2025 shown in this table do not precisely match the published ABAG regional totals because of the difference in the population estimate for the City of Berkeley (a difference of about 3,600 people). The adjustment for the estimated 2000 undercount is carried over to the 2025 projection, as explained in the note above.

SOURCE: ABAG, *Projections 2003*; City of Berkeley.

IV.J.2.8 Local Plans and Policies

LBNL is a federal facility operated by the University of California and conducting work within the University's mission on land that is owned by The Regents of the University of California. As such, LBNL is generally exempted under the federal and state constitutions from compliance with local land use regulations, including general plans and zoning. However, LBNL seeks to cooperate with local jurisdictions to reduce any physical consequences of potential land use conflicts to the extent feasible. The western part of the LBNL site is within the Berkeley city limits, and the eastern part is within the Oakland city limits. This section summarizes relevant policies contained in the Berkeley and Oakland general plans.

Berkeley General Plan

The City of Berkeley Draft General Plan was published in October 2000 and on December 18, 2001 the Berkeley City Council certified the General Plan EIR and approved the Housing, Land Use, and Transportation Elements. In spring 2002, the City Council approved the six remaining elements of the General Plan.

The Housing Element expresses a key local policy objective related to population and housing impacts.²⁰

The University of California and other institutions should take responsibility for housing demands they generate which create additional pressure on the private housing market in Berkeley. By doing so, they would help avoid causing or increasing housing problems for other Berkeley residents. The City will work with the University and other State institutions to create new housing and jointly address housing issues of mutual concern.

Specific policies and actions addressing this relationship with other institutions are as follows:²¹

Policy H-33 University of California: Urge the University of California to maximize the supply of appropriately located, affordable housing for its students, and also to expand housing opportunities for faculty and staff.

Policy H-34 Group Quarters: Support and encourage construction of group housing near the University for student housing.

Policy H-35 University Housing and Taxes: Support development of new housing for University-related households and other institutions that will not take additional land off tax rolls...

Policy H-35 University Housing and Displacement: Support University-related housing that avoids displacement of existing residents of a loss of existing rental housing resources available to other city residents.

²⁰ City of Berkeley, *General Plan Housing Element*, December 2001, page H-8.

²¹ City of Berkeley, *General Plan Housing Element*, December 2001, pages H-15 – H-16.

A related Land Use Element policy also addresses University housing:²²

Policy LU-37 University Housing: Encourage the University to maximize the supply of housing for students, faculty, and staff to minimize the impacts of the University on the citywide supply of housing.

Oakland General Plan

The Oakland General Plan Land Use and Transportation Element was approved in March 1998. Policy language is focused on economic development (Industry and Commerce policies), Transportation and Transit-Oriented Development, Downtown, the Waterfront, and the Neighborhoods, as well as Housing; there is limited discussion of institutional uses and employment:

Policy N2.3 Supporting Institutional Facilities: The City should support many uses occurring in institutional facilities where they are compatible with surrounding activities and where the facility site adequately supports the proposed uses.

Policy N2.5 Balancing City and Local Benefits of Institutions: When reviewing land use permit applications for the establishment or expansion of institutional uses, the decision-making body should take into account the institution's overall benefit to the entire Oakland community, as well as its effects upon the immediately surrounding area.

Policy N2.8 Long Range Development Planning: Require, where legally allowed, and encourage in all other situations, those institutions designated with the "Institutional" land use classification should be required to present Long Range Operation and Development Plans to the City Planning Commission. While these plans could be binding or non-binding, they should present realistic information regarding the continued operation and/or expansion of the facilities. The City suggests that substantial public input be built into the process of developing the plans. The plans could be required as a part of the development applications, or on a periodic basis.

IV.J.3 Impacts and Mitigation Measures

IV.J.3.1 Significance Criteria

In accordance with Appendix G of the state CEQA Guidelines and the UC CEQA Handbook, the impact of the proposed LRDP on population and housing would be considered significant if it would exceed the following Standards of Significance:

- Induce substantial population growth or concentration of population in an area, either directly (for example, by proposing new housing and/or businesses), or indirectly (for example, through extension of roads or other infrastructure);
- Displace substantial numbers of existing housing necessitating the construction of replacement housing elsewhere; or

²² City of Berkeley, *General Plan Land Use Element*, December 2001, pages LU-20 – LU-21.

- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

This EIR provides no additional analysis of the second and third bulleted impact criteria above since, as stated in the Initial Study, the proposed 2006 LRDP would not displace existing housing and would not displace people. Therefore, no impact would occur, and no additional analysis is required.

IV.J.3.2 Impact Assessment Methodology

The assessment of population and housing impacts in the EIR is based on information obtained from the following sources:

- Lawrence Berkeley National Lab, including staff responses to data requests, and the *Long Range Development Plan 2005, March 31, 2004 Working Draft*.
- University of California data and information describing students, faculty, and staff, and their characteristics.
- City of Berkeley documents and correspondence related to population adjustments.
- State of California and U.S. Department of Commerce Census Bureau estimates of current population and housing.
- *ABAG Projections 2003*.

The population and housing impact analysis assesses the impact of employee population associated with the 2006 LBNL LRDP in the context of other population growth and increases in the housing supply expected in the City of Berkeley and the rest of the Bay Area region. As is common practice, the analysis conservatively assumes that all new permanent Lab employees under the proposed 2006 LRDP would move to the Bay Area region from elsewhere when, in fact, some may already live in the region and therefore would not add to regional population or housing demand. The analysis also conservatively assumes one Lab employee per household.

The impact analysis also accounts for the “dependent” population residing in the households of Lab employees. There are different factors for student and non-student employees. Estimates of household dependents for student employees are based on UC Berkeley survey data describing students by marital status and number of children. Household population factors for non-student employees are sensitive to place of residence of Lab employees; these non-student employee households are assumed to be similar to the average household in the communities in which they live.

The employee database summarizing current places of residence by zip code is the basis for assumptions about the likely residential choice of Lab employees in the future. As noted above, the zip code database does not allow separate identification of some places of residence. Among communities near the Lab, Berkeley, Albany, and Kensington share zip codes, as do Emeryville, Oakland, and Piedmont. In the subsequent impact analysis, the proportions of Lab employees in

Berkeley and Albany may be overstated by a small amount to the extent that the place of residence percentages used to develop the estimates also count employees living in Kensington. Any distortion is small and does not affect the conclusions of the analysis.

The population and housing impact analysis also evaluates the increase in guest population associated with the LBNL 2006 LRDP. This analysis considers the User Guest House conceptually portrayed in the Illustrative Development Scenario to provide visiting researchers with short-term accommodations on the LBNL hill campus.

In addition to providing the environmental impact analysis for the LRDP, the analysis in this EIR will be used in connection with later approvals of specific activities pursuant to the LRDP. The Lab will evaluate the impacts on population and housing of any later activity implemented pursuant to the LRDP and compare those impacts with the evaluation in this program EIR to determine the appropriate level of any further CEQA review that may be required before approval of the later activity. If specific project differences from the presentation of the Illustrative Development Scenario and the 2006 LRDP EIR are such that the project is not within the scope of the LRDP EIR or the specific impact statements and mitigation measures do not cover the individual project pursuant to CEQA Guidelines Sections 15168(c)(2) and 15168(c)(5), then appropriate, project-specific CEQA analysis will be tiered from this 2006 LRDP EIR in accordance with CEQA Guidelines Section 15168(d)(1-3). This determination will be subject to the further restrictions on use of this document imposed in response to comments from the City of Berkeley, as described in Chapter I.

IV.J.3.3 Impacts and Mitigation Measures

Impact POP-1: The proposed LRDP would produce an increase in the number of people working at LBNL but would not induce substantial population growth in the City of Berkeley or elsewhere in the region, either directly or indirectly. (Less than Significant)

Under the proposed 2006 LRDP, the population of people working at LBNL would increase. For the originally proposed 2006 LRDP, the Lab estimated that the total adjusted daily population (or ADP – consisting of both permanent employees and guests) would increase from 4,375 in 2003 to 5,525 in 2025, an increase of 1,150 people or 26 percent. Based on the current ratio of permanent employees (measured by head count) to ADP, permanent employment at the Lab under the originally proposed 2006 LRDP would increase from 3,800 in 2003 to about 4,800 in 2025, an increase of about 1,000 employees or 26 percent. The originally proposed 2006 LRDP would also result in an increase in the number of guests using LBNL facilities for short-term research and other temporary assignments. The number of guests expected on an annual basis would increase from 2,500 in 2003 to 3,200 in 2025 – an increase of 700 or 28 percent. Assuming 40 percent of total annual guests use Lab facilities on any given day (as has generally been the case), in 2025 there would be about 1,280 guests at LBNL on any given day.

Compared to the originally proposed 2006 LRDP, the currently proposed 2006 LRDP would produce slightly less employment growth at LBNL. The total ADP would increase from 4,375 in 2003 to 5,375 in 2025, an increase of 1,000 people or 23 percent. Permanent employment at the

Lab would increase from 3,800 in 2003 to about 4,700 in 2025, an increase of about 900 employees or 24 percent. The annual number of guests would increase from 2,500 in 2003 to 3,100 in 2025 – an increase of 600 or 24 percent. Assuming 40 percent of total annual guests use Lab facilities on any given day, in 2025 there would be 1,240 guests at LBNL on any given day.

The impact analysis below regarding population growth is based on the more conservative employment projections associated with the original 2006 LRDP proposal of 2.56 million gsf of potential development. This more conservative analysis will ensure that the Lab has thoroughly evaluated potential impacts associated with employment growth.

The increase in permanent employees would add to the residential population in Berkeley, other nearby communities, and the rest of the region and would add to the demand for permanent housing. The increase in guests would add to demand for temporary accommodations. This impact assessment addresses both sets of concerns.

Impacts of Lab Permanent Employee Population

The increase in permanent employment at LBNL associated with the proposed 2006 LRDP would result in an increase in the residential population in nearby communities and elsewhere in the region. The distribution of employees by classification is not expected to change substantially. Students would continue to account for 15 percent of Lab permanent employment. Table IV.J-5 shows the distribution of Lab permanent employment by classification for 2003 and projected for 2025.

**TABLE IV.J-5
LBNL PERMANENT EMPLOYMENT BY CLASSIFICATION, 2003 AND 2025**

Employee Classification	Number of Employees ^a		Percent Distribution	
	2003	2025 ^b	2003	2025
Scientific and Technical Staff	2,150	2,760	56%	58%
Faculty	250	325	7%	7%
Postdoctoral Researchers	230	295	6%	6%
Administrative Support	610	695	16%	14%
Students	560	725	15%	15%
Total Employment	3,800	4,800	100%	100%

^a Only permanent employees on the Lab payroll are counted in this table. Lab visitors and guests are excluded. Employees are measured in terms of head count, consistent with Lab estimates of adjusted daily population.
^b Estimated number of employees under originally proposed 2006 LRDP. Number of employees under currently proposed 2006 LRDP would be less (approximately 4,700).

SOURCE: Lawrence Berkeley National Laboratory.

Assuming that future Lab employees make the same residential location decisions as current Lab employees, most would choose to live in Berkeley, in Albany, and in other communities near their place of employment. There would also be additional household population living in those Lab employee households. Table IV.J-6 presents estimates of the Lab employee population and associated household population by place of residence in the Bay Area under the proposed LRDP.

**TABLE IV.J-6
ESTIMATED LBNL EMPLOYEE AND ASSOCIATED HOUSEHOLD POPULATION BY PLACE OF
RESIDENCE UNDER PROPOSED LRDP IN 2025**

Place of Residence^a	Non-Student Employees	Other Population in Non-Student Employee Households^b	Student Employees	Other Population in Student Employee Households^c	Total Population	Percent of Total Population in 2025
Berkeley and Albany ^d	1,350	1,594	240	29	3,213	2.32%
Emeryville, Oakland, and Piedmont	559	824	99	12	1,494	0.29%
Other Alameda County	359	720	64	8	1,151	0.10%
El Cerrito, Richmond, and San Pablo	403	722	72	9	1,206	0.67%
Concord, Martinez, Pleasant Hill, and Walnut Creek	351	508	62	8	929	0.31%
Lafayette, Moraga, and Orinda	185	299	33	4	521	0.80%
Other Contra Costa County	290	547	52	6	895	0.13%
San Francisco	179	232	32	4	447	0.05%
Other Bay Area ^e	400	712	71	9	1,192	0.03%
Total	4,076	6,158	725	89	11,048	0.13%

Note: Population estimates are based on originally proposed 2006 LRDP. Population under currently proposed 2006 LRDP would be less. See text.

- ^a The distribution of employees by place of residence is based on the characteristics of the Lab population described in Table IV.J-1.
- ^b Each employee is assumed to represent one household. The household size for Lab non-student employee households is assumed to be the same as the average for all other households in that place of residence. The average household size estimates by place of residence are derived from the 2000 Census.
- ^c Each employee is assumed to represent one household. The dependent household population for Lab student employee households is calculated separately for undergraduate and graduate student employees. Counting spouses and children, the additional household population associated with undergraduate students is 0.07 per student and the additional household population associated with graduate students is 0.16 per student. The weighted average for Lab student employees is 0.12 per student. These estimates of additional dependent household population are based on 1997 public access student housing and transportation data from the University of California Berkeley Office of Student Research.
- ^d The analysis may overstate by a small amount the increase of Lab-related population living in Berkeley and Albany because the estimate is based on place of residence data by zip code that also includes any employees who might live in Kensington in unincorporated Contra Costa County.
- ^e For purposes of comparison to Bay Area population totals, this analysis conservatively combines the three percent of Lab employees living outside the Bay Area with the seven percent living in communities outside of Alameda, Contra Costa, and San Francisco counties.

SOURCE: Lawrence Berkeley National Laboratory; *Census 2000*; UC Berkeley Office of Student Research; ABAG, *Projections 2003*; and Hausrath Economics Group.

In total, there would be a household population of about 11,000 people associated with Lab permanent employment in 2025. In addition to about 4,100 non-student employees, another 6,200 people would be living in the households of those employees. In addition to about 700 student employees, about 90 dependents would be living in those student employee households.

Assuming all employees lived in the nine-county Bay Area region, the total household population associated with LBNL employees under the proposed LRDP (11,000) would represent 0.13 percent of total regional population in 2025.

Most Lab employees would live in Berkeley and other nearby cities. About 3,200 people living in Berkeley and Albany in 2025 would be associated with Lab permanent employment under the proposed LRDP. This population would represent about two percent of the total number of people projected to be living in the Berkeley and Albany in 2025. In all other places of residence, Lab employees and their associated household population would represent less than one percent of total projected population in 2025. The next largest number of people associated with LBNL employees would live in nearby Emeryville, Oakland, and Piedmont—almost 1,500 people, accounting for less than one-half of one percent of the total population projected for those cities in 2025. Lab employees and household members would represent larger shares of the total population projected for subareas of Contra Costa County: El Cerrito, Richmond, and San Pablo; Concord, Martinez, Pleasant Hill, and Walnut Creek; and Lafayette, Moraga, and Orinda.

The increase in Lab permanent employment associated with the proposed LRDP would result in demand for permanent housing. Assuming one employee per household and assuming all new employees would be new to the Bay Area region, employment growth at the Lab would result in demand for 1,000 housing units in the region between 2003 and 2025. Between 2000 and 2025, ABAG projects an increase of almost 600,000 households in the Bay Area, assuming successful implementation of smart growth policies and development patterns throughout the region. Almost half of that household and housing growth (45 percent of the regional total) is projected for Alameda, Contra Costa, and San Francisco counties, where most Lab employees would be likely to choose to live.

Generally, the housing demand associated with permanent employment growth under the proposed LRDP would be satisfied by the housing that could be added in Berkeley and other nearby communities. Table IV.J-7 compares the housing demand associated with Lab employment growth to household projections. In most communities where LBNL employees live, housing demand associated with increases in LBNL employment under the LRDP would account for less than one percent of the total increase in households projected for those communities. In Berkeley and Albany, Lab employee households would represent 5.7 percent of the increase expected between 2000 and 2025. In Lafayette, Moraga, and Orinda, Lab employee households would represent about 1.6 percent of the expected household increase.

The regional smart growth forecast projects the addition of almost 5,000 households in the City of Berkeley, between 2000 and 2025, and another 850 households in Albany. Assuming 33 percent of the new Lab employees would choose to live in Berkeley or Albany, that number of households (330) would represent about six percent of the total additional households projected for those cities between 2000 and 2025 if the smart growth forecast were realized.²³ That potential addition to housing demand in Berkeley and Albany represented by the increase in employee population associated with the proposed 2006 LRDP would represent a relatively large share of the local housing market.

²³ This number and percentage would be lower if students were assumed to be accommodated in the group quarters housing stock and not in households. However, many UC Berkeley students do not live in group quarters housing; those with jobs at places such as Berkeley Lab are most likely to look for housing in the private housing market in Berkeley.

**TABLE IV.J-7
INCREASE IN LBNL EMPLOYEE HOUSEHOLDS COMPARED TO
TOTAL HOUSEHOLD GROWTH BY PLACE OF RESIDENCE**

Place of Residence	Total Household Growth 2000 – 2025^a	Households Associated with Increase in Lab Employment^b	Lab Household Increase as Percent of Total Household Growth
Berkeley and Albany ^c	5,800	330	5.7%
Emeryville, Oakland, and Piedmont	35,300	140	0.4%
Other Alameda County	77,800	90	0.1%
El Cerrito, Richmond, and San Pablo	10,500	100	1.0%
Concord, Martinez, Pleasant Hill, and Walnut Creek	19,800	90	0.5%
Lafayette, Moraga, and Orinda	3,100	50	1.6%
Other Contra Costa County	67,400	70	0.1%
San Francisco	52,100	40	0.1%
Other Bay Area ^d	327,700	90	0.0%
Total	599,500	1,000	0.2%

Note: Household estimates are based on originally proposed 2006 LRDP. Number of households under currently proposed 2006 LRDP would be less. See text.

^a Change in the number of households by place as projected by the ABAG in *Projections 2003*.

^b The distribution of employees by place of residence is based on the characteristics of the Lab population described in Table IV.J-1.

^c The analysis may overstate by a small amount the increase of Lab employee households in Berkeley and Albany because the estimate is based on place of residence data by zip code that also includes any employees who might live in Kensington in unincorporated Contra Costa County.

^d For purposes of comparison to Bay Area household totals, this analysis conservatively combines the three percent of Lab employees living outside the Bay Area with the seven percent living in communities outside of Alameda, Contra Costa, and San Francisco counties.

SOURCE: Lawrence Berkeley National Laboratory; ABAG, *Projections 2003*; and Hausrath Economics Group.

The employee population growth under the proposed LRDP, in conjunction with housing supply constraints, are elements of an overall mismatch between housing supply and demand in Berkeley. That mismatch (or imbalance) contributes to housing market conditions characterized by low vacancies, high prices and rents relative to household incomes, and substantial competition for both existing housing and new units that come on the market. Those conditions have existed for some time in the City of Berkeley. While they are projected to continue under current land use policies, the new “smart growth” regional projections assume a loosening of constraints and implementation of local and regional policies and government financing incentives to encourage private investment that, over the longer term, would improve the balance of housing supply and demand in Berkeley and other central cities in the region. A mismatch between housing supply and demand in the city also means that people working in Berkeley who would like to live there, too, instead must seek housing elsewhere in the Bay Area or beyond the nine-county region. These choices would be more likely to the extent that the levels of housing production envisioned for Berkeley in the “smart growth” forecast were not realized. As described above, however, population growth and housing demand associated with the proposed 2006 LRDP would be dispersed over a number of communities in the region, based on place-of-residence trends among existing Lab employees. If housing options in Berkeley were constrained, the growth associated with the 2006 LRDP would not be concentrated in any particular area and therefore would not amount to a significant impact in any one community.

Impacts of Lab Guest Population

The number of guests using Lab facilities would increase under the proposed 2006 LRDP. There would be more guests on an annual basis and, potentially, more guests on any given day. The increase in guests would not induce growth in the permanent residential population and would not add to demand for permanent housing.

The proposed 2006 LRDP would increase the supply of overnight accommodations to serve the short-term needs of guests visiting from out of town. The Lab's proposed "User Guest House"²⁴ would consist of 120 beds providing short-term over-night accommodations. After development of the User Guest House, the Lab would discontinue the leases on the five apartments in downtown Berkeley that have capacity to house 20 visiting researchers at any one time. Because the proposed User Guest House would not provide housing for permanent residents, it would not add to the City's housing supply or induce population growth in the City of Berkeley. The availability of the five downtown apartments after the Lab discontinues the leases would not induce substantial population growth.

Under the proposed 2006 LRDP, the number of Lab guests requiring overnight accommodations in nearby hotels and motels or the homes of Lab employees would increase, because the total number of guest researchers is expected to increase. However, development of the User Guest House would allow a higher percentage of guest researchers to take advantage of overnight accommodations provided by the Lab, thereby lessening this impact. At the same time, the apartments formerly leased by the Lab would be returned to the private housing market.

Mitigation: None required.

Project Variant. While the project variant would result in an increase in ADP on the Lab's main hill site, compared to the project as proposed, the variant would not change total Lab employment. Therefore, effects would be the same as those of the project as proposed.

Individual Future Projects/Illustrative Development Scenario. The Illustrative Development Scenario is a conceptual portrayal of potential development under the 2006 LRDP. Actual overall development that is approved and constructed pursuant to the 2006 LRDP would be less intense than portrayed in the scenario. The scenario was developed before the 2006 LRDP was reduced in scope in response to comments from the City of Berkeley, and thus the scenario includes an overall level of potential development that is greater than is being proposed in the 2006 LRDP. Each of the proposed buildings that is included in the scenario, however, might be constructed pursuant to the 2006 LRDP, and thus the scenario remains an appropriate and conservative basis for the evaluation of impacts to population and housing. For the reasons stated above, individual projects identified in the scenario would increase the Lab's permanent employment and Lab guest population, but would not induce substantial population growth in the City of Berkeley or

²⁴ The User Guest House is a proposed three-story, approximately 25,000-gross-square-foot building that would hold up to 120 beds for visiting researchers and other guests of LBNL. An Initial Study/Negative Declaration is expected to be prepared and circulated in 2007.

elsewhere in the region, either directly or indirectly. For the reasons stated above with regard to full implementation of the LRDP, this impact would be less than significant.

IV.J.3.4 Cumulative Impacts

This analysis considers cumulative growth as represented by the implementation of the Berkeley and Oakland general plans (and thus includes growth anticipated by the City of Berkeley General Plan EIR) and Bay Area population growth as forecast by ABAG, and implementation of the UC Berkeley 2020 LRDP (including the Southeast Campus Integrated Projects), along with implementation of the proposed LBNL 2006 LRDP. Projects currently under way at UC Berkeley, described in Section VI.C of this EIR, are accounted for in the cumulative analysis.

The geographic context for this cumulative analysis includes the San Francisco Bay Area. This analysis evaluates whether the impacts of the proposed LRDP, together with the impacts of cumulative development, would result in a significant impact (based on the significance criteria on p. IV.J-11) and, if so, whether the contribution of the LRDP to this impact would be considerable. Both conditions must apply in order for the project's cumulative impacts to rise to the level of significance.

Impact POP-2: The proposed LRDP, in conjunction with the proposed UC Berkeley 2020 LRDP and other projects that could be developed in Berkeley, would induce population growth in the City of Berkeley and the Bay Area, but the contribution of the 2006 LRDP to this impact would not be cumulatively considerable. (Less than Significant)

As noted in the Setting, LBNL is one of the largest employers in Berkeley, and by far the greatest number of Lab employees live in Berkeley or the immediate vicinity. Accordingly, growth in Berkeley (including at UC Berkeley) is the focus of the cumulative analysis.

In addition to the population growth associated with the proposed LBNL LRDP, other future growth would contribute to existing population and housing totals. This future growth could be accommodated through both new development and through changes in the occupancy and use of existing housing and other building space. The City of Berkeley and ABAG have prepared estimates of existing population, jobs, and housing, as well as projections of expected future increases in population, jobs, and housing.

As part of the environmental review for its General Plan Update in 2001, the City of Berkeley prepared estimates for 2000 and projections of growth through 2020 in the city under the new General Plan policies. City staff projected an increase of about 3,200 households in the city between 2000 and 2020 and a total population of about 116,000 in 2020 – about the same number of people that lived in Berkeley in 1970.

ABAG has prepared two sets of projections (*Projections 2002* and *Projections 2003*) that rely on the updated General Plan for overall citywide planning parameters.²⁵ Both of these ABAG scenarios for the City of Berkeley show more housing and population growth in the city than do the projections prepared by Berkeley staff for use in the 2001 General Plan EIR. As noted above, *Projections 2003* presents a longer-term scenario for enhanced housing production in Berkeley and other cities central to the region based on assumptions of supportive local and regional development and investment policies and substantial public financial investments to encourage housing production. The City of Berkeley has indicated that ABAG's "Smart Growth" *Projections 2003* (adjusted for 2000 Census group quarters enumeration errors) represent an appropriate baseline projection for Berkeley, reflecting the adoption of the new General Plan.²⁶

The originally proposed 2006 LBNL LRDP projects an increase of about 1,000 jobs. (As noted earlier, the currently proposed LRDP would result in a smaller increase – about 900 jobs. The impact analysis regarding population growth is based on the more conservative employment projections associated with the original proposal.) The UC Berkeley 2020 LRDP could result in an increase of 2,870 faculty and staff working in the Campus Park and adjacent blocks and an increase in 1,650 students (UC Berkeley, 2004, Table 4.10-2).^{27,28} In addition, an important objective of the UC Berkeley 2020 LRDP is increasing the housing supply near campus for students, faculty, and staff. Under the UC Berkeley 2020 LRDP, there could be an additional 2,600 beds of housing added within one mile of the center of campus. It is likely that most of this housing would be developed in the city of Berkeley (UC Berkeley, 2004: Table 3.1-3).

Many students, faculty, and staff prefer to live in Berkeley close to the campus. Therefore, the employment and enrollment growth associated with the two LRDPs, in conjunction with other projected population growth, would represent substantial cumulative population growth and a concentration of population in the City of Berkeley. The employee population growth associated with the proposed 2006 LBNL LRDP would contribute to this cumulative impact; however, as discussed further under Impact J.1, increases in population growth associated with the implementation of the LRDP would represent about two percent of the total number of people projected to be living in the Berkeley and Albany in 2025, and less than one percent of total projected population in 2025 in all other places of residence. Housing demand associated with implementation of the LRDP could account for less than one percent of the total increase in households projected for most communities where LBNL employees live. In Berkeley and Albany, Lab employee households could represent 5.7 percent of the increase expected between 2000 and 2025, and in Lafayette, Moraga, and Orinda, Lab employee households would represent about 1.6 percent of the expected increase in households. These increases under the LRDP

²⁵ The ABAG projections of population and employment for Berkeley do not explicitly account for either the proposed 2005 LBNL LRDP or the proposed UC Berkeley 2020 Long Range Development Plan (LRDP). Neither is an adopted plan that would be reflected in ABAG's local development policy database, and only preliminary information was available at the time ABAG prepared these projections. (Brian Kirking, Senior Regional Analyst, ABAG, personal communication, November 3, 2003.)

²⁶ City of Berkeley letter to Jennifer Lawrence, Environmental and Long Range Programs Manager, UC Berkeley, July 10, 2003.

²⁷ All population and employment estimates are expressed in terms of headcount.

²⁸ The EIR for the UC Berkeley Southeast Campus Integrated Projects (SCIP) found that those projects would not result in any adverse impacts related to population, and thus the SCIP would not contribute to any cumulative impacts (UC Berkeley, 2006).

represent a less-than-significant impact under existing conditions, and therefore would not be considered a cumulatively considerable contribution to potential population and housing impacts.

The City of Berkeley General Plan EIR analyzed roughly comparable levels of employment and population growth in the city and policies that encourage housing production and population growth. The EIR concluded that resultant improvements to the city's jobs-housing balance would not result in adverse physical environmental impacts but would instead have a beneficial effect on housing conditions in the city.²⁹

The housing market effects of increased demand due to population and employment growth relative to housing supply would be mitigated to some extent if the higher levels of housing production envisioned in the *Projections 2003* smart growth scenario were actually realized. The university-related housing production anticipated in the UC Berkeley 2020 LRDP could be part of this citywide scenario of increased housing supply. At the same time, more housing production would lead to greater concentration of population in the city. As noted above, the City of Berkeley General Plan EIR found that such a concentration of population in Berkeley would result in a net benefit both to the city and to the region as a whole.³⁰

In light of the above, the 2006 LBNL LRDP would not contribute to cumulative adverse effects with regard to population or housing.

Mitigation: None required.

Project Variant. As already noted, the project variant would result in impacts substantially similar to the population and housing impacts that would result from the 2006 LRDP development. The cumulative population and housing impacts of the project variant would therefore be less than significant as described above.

Individual Future Project/Illustrative Development Scenario. For the reasons stated above regarding full implementation of the 2006 LRDP, future projects under the LRDP such as conceptually portrayed in the Illustrative Development Scenario, including the User Guest House, could induce population growth in Berkeley and the Bay Area when considered in conjunction with the proposed UC Berkeley 2020 LRDP and other projects that could be developed in Berkeley, but would not contribute considerably to cumulative adverse effects on population or housing.

²⁹ City of Berkeley, *Berkeley Draft General Plan EIR*, February 2001, page 66.

³⁰ City of Berkeley, *Berkeley Draft General Plan EIR*, February 2001, page 308.

IV.J.4 References – Population and Housing

- Association of Bay Area Governments (ABAG), *Projections 2002*, December 2001.
- Association of Bay Area Governments (ABAG), *Projections 2003*, June 2003.
- City of Berkeley, *Conditions, Trends, and Issues Report*, 1993.
- City of Berkeley, “Cumulative analysis projections for UC Berkeley 2020 LRDP EIR,” letter to Jennifer Lawrence, Environmental and Long Range Programs Manager, University of California, Berkeley, July 10, 2003.
- City of Berkeley, *Draft General Plan Environmental Impact Report*, February 2001.
- City of Berkeley, *Draft General Plan Final Environmental Impact Report: Responses to Comments*, June 2001.
- City of Berkeley, *Draft Southside Plan*, October 2003.
<http://www.ci.berkeley.ca.us/planning/landuse/plans/southside/Southside2003.html>
- City of Berkeley, *General Plan Housing Element Appendix*, 2001.
- City of Berkeley, “Pending Zoning Public Matters” as of December 12, 2003.
<http://www.ci.berkeley.ca.us/planning/tent-sch.pdf>
- City of Berkeley, *Planning Commission General Plan*, December 2001 and April 2002.
- City of Berkeley, “Recommended increase to Berkeley’s 2000 population baseline,” letter to Steve Peace, Director, California Department of Finance, June 23, 2003.
- Lawrence Berkeley National Laboratory, List of LBNL Employee Zip Codes, provided by the LBNL Facilities Department, April 14, 2004.
- Lawrence Berkeley National Laboratory, *2001 Economic Impact*, September 2001.
- Real Estate Research Council of Northern California, *Northern California Real Estate Report*, First Quarter 2003.
- State of California, Department of Finance, *City/County Population and Housing Estimates, 1991-2000, with 1990 Census Counts*, May 2000.
- State of California, Department of Finance, *E-5 City/County Population and Housing Estimates, 2003, Revised 2002 and Revised 2001, with 2000 DRU Benchmark*, May 2003.
- UC (University of California) Berkeley, *Southeast Campus Integrated Projects Tiered Focused Final Environmental Impact Report (SCH #2005112056)*; October 31, 2006. Available on the internet at: http://www.cp.berkeley.edu/SCIP/FEIR/SCIP_FEIR.html
- UC Berkeley, Final Environmental Impact Report, UC Berkeley, *2020 Long Range Development Plan & Chang-Lin Tien Center for East Asian Studies*. Available on the web at http://www.cp.berkeley.edu/LRDP_2020final.htm.
- U.S. Department of Commerce, Bureau of the Census, *Census of Population and Housing: 1970, 1980, 1990, and Census 2000*.

IV.K. Public Services and Recreation

IV.K.1 Introduction

This section addresses the impact of the proposed 2006 LRDP on the provision of public services, including fire protection, police protection, public schools, and parks. This section focuses on the effects the proposed 2006 LRDP may have on the ability of public service providers to effectively deliver these services to the project site and vicinity, and whether an increase in demand for these services would require additional facilities that themselves would have an adverse environmental impact.

IV.K.2 Setting

IV.K.2.1 Fire Protection Services

Alameda County Fire Department Services

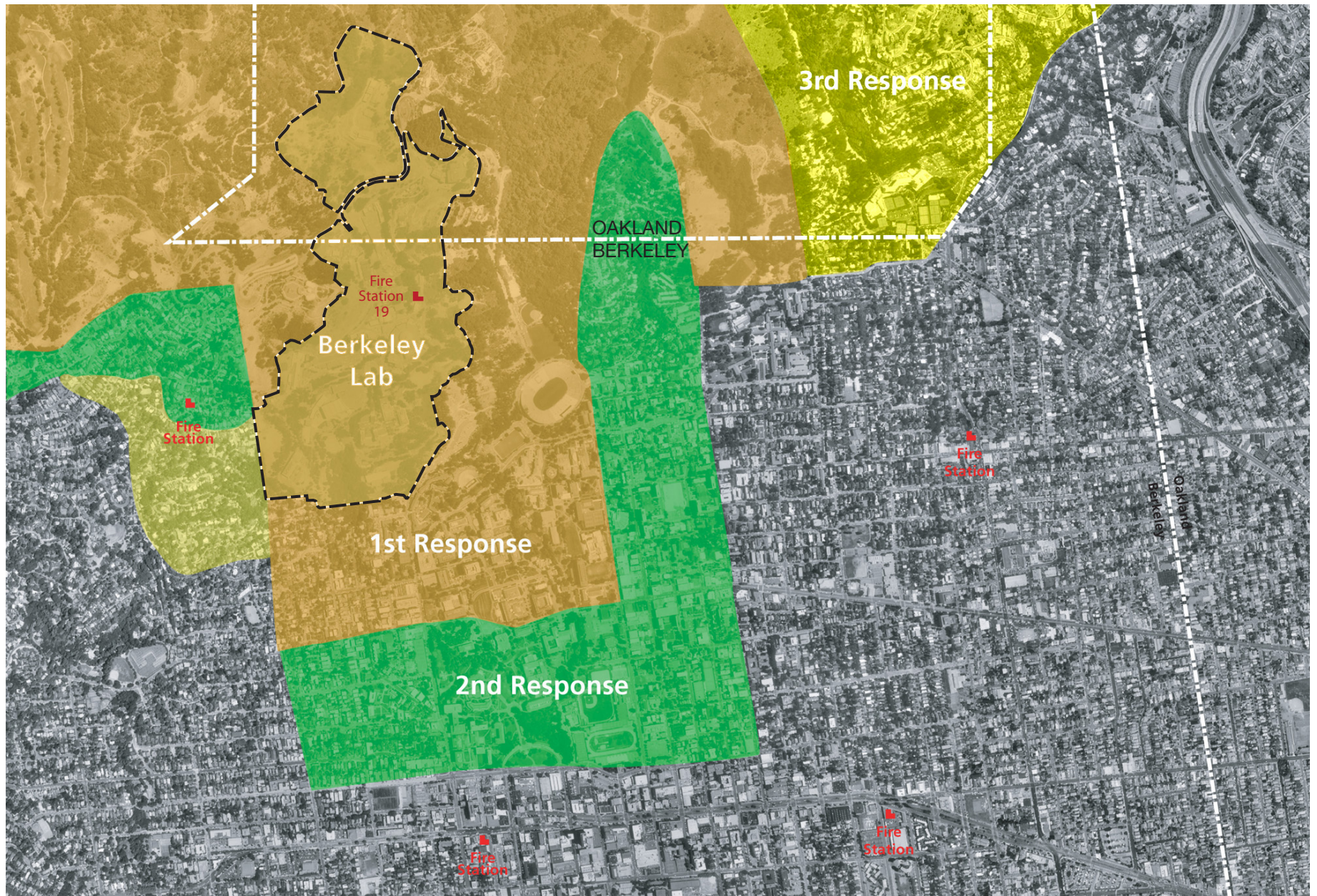
LBNL is provided with firefighting services through contract services with the Alameda County Fire Department, which staffs a fire station located on the LBNL grounds. This station, which is Alameda County Station 19, is located at LBNL Building 48 and staffed 24 hours per day.

Equipment at Station 19 includes one fire engine, one reserve fire engine, a hazardous materials vehicle, and a light-duty four-wheel drive “brush patrol unit” that can be used for wildland fires.

Station 19 provides first response at the Berkeley Lab for both fire alarms and medical emergencies. All station personnel are trained as Emergency Medical Technicians and at least one of the staff is a trained paramedic. In addition, there is one trained paramedic on the fire staff at all times.

LBNL and the City of Berkeley have worked collaboratively and developed an Automatic Aid Agreement, under which the Lab’s fire department is the first responder for a portion of north Berkeley, including portions of the UC campus. The Berkeley Fire Department provides paramedic transport for LBNL; therefore, if a patient in a medical emergency requires transport to a hospital, a City of Berkeley ambulance responds at Berkeley Lab.

Station 19’s service area extends outside the Berkeley Lab boundary to encompass the eastern portion of the UC Berkeley campus and areas in north Berkeley following the automatic aid agreement with the City of Berkeley (see Figure IV.K-1). Under this agreement, Station 19 responds to all fire and medical emergency calls within its service area, whether on or off the Berkeley Lab site. If the fire engine from Station 19 has been dispatched to a call and another alarm is received in Station 19’s service area, the Berkeley Fire Department responds to the second call. The Alameda County Fire Department has mutual aid agreements with other communities, including the City of Oakland and the East Bay Regional Park District (EBRPD), which can be activated in the event of a major emergency. Mutual aid agreements allow Station 19 to respond to emergency calls in other jurisdictions if requested, if Station 19 is not already responding to another call. LBNL’s telephone switch transfers all 911 (7911 from LBNL phones)



— LBNL 2006 Long Range Development Plan . 201074

SOURCE: Lawrence Berkeley National Laboratory (2003)

Figure IV.K-1
Fire Station 19 Automatic Aid District

calls from the main LBNL site to the Alameda County Regional Emergency Communications Center in Livermore. 911 calls from all LBNL off-site locations are sent to the corresponding “Public Safety Answering Points.” The installation of “Enhanced 911” software has been completed; this allows emergency responders to accurately pinpoint the location of a caller, including building, floor, and telephone site.

The response time standard for Station 19 for LBNL calls is five minutes; most responses are made within four minutes. Approximately 25 percent of responses from Station 19 are to locations at the Berkeley Lab, about 40 percent of the calls are to the UC Berkeley campus, and the remaining calls are to locations within the City of Berkeley outside either LBNL or the Berkeley campus (LBNL, 2003c).¹ Between August 2002 and July 2003, there were approximately 129 calls to Fire Station 19 from LBNL, with approximately 21 percent of the calls for medical services, nine percent for hazardous materials-related incidents, two percent for fire services, and 40 percent for “other” incidents, while 28 percent were false alarms² (LBNL, 2003a).

Overall, the Alameda County Fire Department has 16 fire stations, with approximately 260 authorized firefighting personnel. However, all other Alameda County fire stations are well south (San Leandro, San Lorenzo, Castro Valley) or east (Dublin, Pleasanton, Livermore, Sunol) of the Berkeley Lab. In addition to firefighting, the department has specialized response teams for hazardous materials, urban search and rescue, and water rescue. The department also has an active reserve (volunteer) unit (Alameda County Fire Department, 2003).

City of Berkeley Fire Department Services

The City of Berkeley Fire Department has seven fire stations with seven engines, two ladder trucks, three ambulances, and specialized equipment including a hazardous materials vehicle. Each engine and truck is staffed with three firefighters, and each ambulance is staffed with two paramedics. The department has a total of approximately 140 employees, of whom about 130 are firefighters and paramedics. The department responds to some 12,000 calls over the course of the year, more than half of which are for medical emergencies and fewer than three percent of which are for fires, with the remainder being calls about hazardous materials, water problems, and false alarms (City of Berkeley, 2005). In 2000 there were 21 instances and, in 2001, 18 instances in which LBNL received automatic aid assistance from the Berkeley Fire Department (LBNL, 2003a).

The nearest City of Berkeley fire station to LBNL is located in downtown Berkeley about one block north of the intersection of Shattuck and University Avenues, two blocks west of the UC Berkeley campus, about one mile distant from LBNL. The City of Berkeley recently

¹ While this analysis represents 2003 baseline data, more recent data are available: In 2005, with 578 total calls, Station 19 responded to 162 (28%) Berkeley Lab calls, 130 (23%) UC Berkeley campus calls, and 286 (49%) City of Berkeley calls.

² “False Alarms” is considered a subjective term and is used in this analysis only to distinguish very generally between types of calls.

completed a new Hills Fire Station, the “Shasta” Berkeley Hills Fire Station, located at 3000 Shasta Road to replace an older station on Shasta Road that is a comparable distance from LBNL as the downtown Berkeley fire station (Lamphier-Gregory, 2002). The Hills Fire Station is designed to serve urban/wildland interface areas and meet the City’s established response time goal of four minutes. The new station houses three emergency response vehicles with space for reserve or auxiliary vehicles and sufficient accommodations for a regular three-person crew (or four persons, during periods of high fire danger) and a reserve crew of three firefighters.

City of Oakland Fire Department Services

The City of Oakland Fire Department operates 26 fire stations. The department currently includes 26 engine and seven ladder truck companies, with a minimum staffing of four personnel assigned to each engine and truck company. There are a total of approximately 500 firefighting personnel, including officers and investigators (Williams, 2003). Approximately 110 of Oakland’s firefighters are also trained as paramedics. The department is organized into four divisions and three battalions. While the divisions focus on department functions, the battalions, which are organized by geographical districts, provide requested fire and emergency medical services. Each battalion consists of seven to ten stations. Battalion 2 serves West Oakland and the North Oakland areas, including the part of the city that contains the far eastern and southeastern extent of LBNL. The closest City of Oakland fire station to the Berkeley Lab is located on Miles Avenue between College Avenue and Broadway, a distance of approximately three miles from LBNL.

Fire and medical emergency calls in City of Oakland are received by the public communications center at the police department. Calls are routed through a computer-aided dispatch system and announced over speakers in the fire station nearest the source of the call; directions are printed within 30 to 60 seconds. The department responded to a total of about 54,085 calls in 2002, ranging from structural fires (about 10 percent of the total calls) to medical emergencies (about 70 percent of total calls). The current citywide response time to fire and medical emergency calls is six minutes, 40 seconds. The department’s response goal is to respond to 90 percent of all calls in seven minutes or less (Williams, 2003). Structural fires are normally responded to with three engines, one fire truck carrying a 100-foot ladder, and 17 firefighters, including a battalion chief.

In addition to firefighting and emergency medical response capabilities, the fire department also has a hazardous materials unit that operates from Station 3, which is located at 1445 14th Street and responds to emergencies involving hazardous materials.

HAZMAT Emergency Response

The Lab has a contract with the Alameda County Fire Department that provides LBNL an “around-the-clock” engine company staffed by four Hazardous Materials Emergency Response (HAZMAT) certified firefighters. HAZMAT automatic aid is available through the Berkeley Fire Department or the Alameda County Fire Department. Depending on the magnitude of an incident, additional HAZMAT response support is available through the formal Fire Mutual Aid Plan, which the Alameda County Fire Department coordinates. An annual HAZMAT exercise is

conducted with the appropriate Lab staff and the Alameda County Fire Department. Additionally, the Lab has an “around-the-clock” contract with a private vendor for HAZMAT clean-up.

Emergency Program

The Lab’s Master Emergency Program Plan (MEPP) establishes policies, procedures, and an organizational structure for responding to and recovering from a major disaster at LBNL. The LBNL MEPP (December 2005) uses the Standardized Emergency Management System (SEMS), as described by California Government Code 8607(a), for managing response to multi-agency and multi-jurisdiction emergencies in California. SEMS, adopted by California in 1995, incorporates the use of the Incident Command System (ICS), the Master Mutual Aid agreement, existing mutual aid systems, the County operational area concept, and inter-agency coordination. This system, by promoting the use of common terminology and command structure, facilitates better flow of information and coordination between responding agencies.

This plan also uses the National Incident Management System (NIMS), as prescribed by Homeland Security Presidential Directive-5 – Management of Domestic Incidents. NIMS is a nationwide, standardized approach to incident management and response that establishes a single, comprehensive system for incident management and cooperation among departments and agencies at all levels of government, from federal to local. Training is key to the success of this plan. Required training is tailored to meet the credible emergencies and focuses on skills required to execute this plan. All personnel assigned to the Emergency Response Organization will receive training appropriate to their level of participation – including SEMS/NIMS. This training includes an annual orientation to the Emergency Operations Center (EOC) and annual participation in exercises and drills. The program includes both individual and collective training, including classroom work, drills, and exercises, and may be conducted on- and off-site. Drills and exercises are an integral part of the LBNL emergency management program. They are conducted to provide emergency response training and to evaluate the Laboratory’s capability to respond effectively to an emergency. Analysis of the results from a drill or exercise provides the necessary information for improvement.

In an emergency, depending on the circumstances, employees could be advised to evacuate specific buildings or the entire site, or they could be advised to shelter-in-place. Situations could include a prolonged power outage, the threat of a wildland fire, release of a hazardous material, or a workplace violence incident. Responsibility for ordering a site-wide evacuation resides with any member of the LBNL Executive Team. Individual evacuation or shelter-in-place orders can be made by the EOC manager or a field incident commander. Instructions for routes to be used for a safe evacuation are given depending on the circumstances. Instructions for sheltering-in-place are distributed to all employees during the initial orientation.

Detailed information regarding LBNL’s emergency management and preparedness planning is available under the Lab’s Master Emergency Program Plan (LBNL/PUB-533 [2005]).

Vegetation Management Plan

During the late summer and early autumn, periodic strong off-shore winds moving from the Sierra Nevada Mountains are channeled up the Highway 24 corridor and sweep across the LBNL site and the immediate general area. These “Diablo” winds³ desiccate vegetation, are characterized by low humidity, and can reach 60 miles per hour. The winds are particularly strong at the LBNL site and immediate area.

Diablo wind conditions are conducive to wildland fire ignition and the spread of ember-like fire-brands up to one mile in advance of a fire, resulting in frequent fast-moving wildland fires, including fires that destroy multiple buildings in the immediate general area of the Laboratory on average every ten years. After considering the inability of the traditional “defensible space” standard to protect Laboratory assets and examining options for increasing fire suppression staffing to taskforce levels, installing mechanical suppression units, and “hardening” buildings (all of which were determined to be not cost-effective and incapable of providing the necessary level of asset protection), the Laboratory adopted a program to manage vegetation to prevent wildland fire temperature and intensity (as the fire approaches and passes buildings) from becoming so severe that the fire can ignite the buildings.

Under the Laboratory’s program, the intensity and flame height of an approaching firestorm is tempered as it enters the Laboratory’s management area. Within the management area, ground fuels are managed annually so that they ignite and burn at low intensities (and do not permit fire to move into the crowns of trees), and buildings will not be threatened by ignition as low-intensity fire burns across the Laboratory site; the Laboratory site will be burned through, but it is anticipated that no assets will be lost under this program. Moreover, the lower flame heights produced by the managed fuels allow any available fire suppression personnel to work safely from the ground to extinguish the fire before it moves into the higher-fuel developed areas to the west of the Laboratory.

As described in Section IV.C, Biological Resources, LBNL actively manages vegetation over the entire site to minimize fire damage in the event of a major wildland fire. The Lab’s vegetation management program integrates aesthetic, view, horticultural, and fire safety factors. Site-wide, vegetation, or wildland fire fuel, is managed to protect the Lab’s buildings and workspaces during a worst-case Diablo wind-driven fire (winds similar to the 1991 Oakland Hills Fire) and any lesser wildland fire.

LBNL is a founding member of the Hills Emergency Forum and participates in multi-agency drills and roadside fuel-management exercises.

³ Diablo winds are hot, dry offshore winds—flowing from land to shore, the opposite of the Bay Area’s typical winds—that occur below canyons in the East Bay hills (Diablo range) due to high pressure over Nevada and lower pressure along the central California coast.

IV.K.2.2 Police Services

Police services at LBNL are provided through a contract with the UC Berkeley Police Department (UCPD), as well as with a private security provider responsible for outside security needs including Laboratory access, property protection and traffic control. The UCPD handles all patrol, investigation, and related law enforcement duties for UC Berkeley, LBNL, and other University-owned properties. UCPD operates 24 hours a day, seven days a week, coordinating closely with the City of Berkeley Police Department.

UCPD and the Oakland Police Department are members of the California Law Enforcement Master Mutual Aid Plan; all law enforcement agencies in the state belong to this plan to provide each other information and resources when needed. The Alameda County Sheriff's Office is the Region II Law Enforcement Mutual Aid Coordinator. Additionally, the Lab has an annual renewable contract with UCPD that provides, when requested, law enforcement emergency response, limited patrols, criminal investigations, and VIP protection. UCPD and the Berkeley Police Department have an agreement regarding jurisdiction over off-site locations occupied by UC staff and Lab staff; this agreement is reviewed and updated annually. UCPD Community Services Officers are not assigned to the Lab. The Lab has no contract, memorandum of understanding (MOU), or similar agreement with Oakland Police Department.

UC Berkeley Police Department Staffing

The UCPD includes 77 police officers, 45 full-time non-sworn personnel, and 60 student employees. UCPD, located at 1 Sproul Hall on the UC Berkeley campus, has primary law enforcement jurisdiction on the campus of the University of California and associated University properties, including LBNL. UCPD is organized into four divisions: Administration, Community Outreach and Emergency Services, Investigative and Support Services, and Patrol. The department is empowered as a full-service state law enforcement agency pursuant to Section 830.2(b) of the California Penal Code and fully subscribes to the standards of the California Commission on Peace Officer Standards and Training. Officers receive the same basic training as city and county peace officers throughout the state, plus additional training to meet the unique needs of a campus environment.

There is no service ratio goal at the Lab; when services are requested or required, UCPD sends the appropriate resources to the Lab to address the situation and/or incident.

On-Site Security Staffing

The total on-site security staff at LBNL is approximately 34 personnel, who are divided into three to ten personnel per shift. Staffing and resources consist of an on-site portfolio manager, two to three roving patrols 24 hours per day and gate access at the Blackberry Canyon Gate 24 hours per day. The LBNL on-site security can respond to any accessible area of LBNL in less than five minutes. UCPD responds to LBNL as needed under the existing contract. The response time for UCPD is also less than five minutes (LBNL, 2003a). Generally, there are fewer than 25 calls annually from LBNL that require UCPD response and most of the calls are for routine events.

LBNL provides crime statistics in accordance with the “Cleary Act.” Statistics for homicide, rape, assault, and robbery are zero for each category.

The LBNL personnel security strategy is to provide a two-tiered approach, which includes the services of contract, non-sworn protective personnel (private security company) and sworn police officers provided by the UCPD and, for off-site locations, the Berkeley Police Department, Oakland Police Department, and Walnut Creek Police Department. The LBNL physical security strategy uses a variety of intrusion-alarm devices in its various areas. Output signals from these devices are sent directly to the Blackberry Canyon Gate dispatch center for response by a security officer.

Site Access Controls

LBNL has a perimeter fence with three vehicle entrance points. Access is controlled at the Laboratory gates by protective personnel who visually inspect entering vehicles, checking for proper access authorization for the vehicle and occupant(s). One gate is always open. Two other gates are open at high-demand times during the normal work week. Vehicles may be searched randomly. Access control for areas within the Laboratory perimeter is done by hardware lock-and-key sets at critical doors and by an electronic system pre-coded to permit entry only to authorized card holders to those areas protected by the system.

IV.K.2.3 Schools, Parks, and Recreation

As further described in Section IV.J, Population and Housing, places of residence for Berkeley Lab employees are distributed throughout Bay Area communities, with a substantial number of employees (90 percent) living in Alameda and Contra Costa counties. Approximately 35 percent of Lab employees live in the cities of Berkeley, Albany, and Kensington and a combined 14 percent of Lab employees live in Oakland, Piedmont, and Emeryville. Another 30 percent of Lab employees live in Contra Costa County, primarily in nearby El Cerrito, Richmond, and San Pablo, and east of the Lab along Highway 24. Public schools, parks, and recreation are discussed specifically for the City of Berkeley because of the considerable percentage of Lab employees who live in the city. To be conservative, these public services are also evaluated for the City of Oakland, assuming the entire 14 percent of LBNL employees in Oakland, Piedmont, and Emeryville actually live in Oakland. Public schools, parks and recreation are not discussed for other cities and towns in the Bay Area and elsewhere, because the percent and number of Lab employees living in these areas is relatively small, and thus the associated effects on public services would be negligible.

Public Schools

Berkeley Unified School District

The Berkeley Unified School District (BUSD) operates 20 schools throughout the City of Berkeley: four early childhood education locations, 11 elementary schools (kindergarten-grade 5), three middle schools (grades 6-8), one high school (grades 9-12), and one adult school (BUSD, 2004a). Total enrollment for elementary and secondary schools for the 2003-2004 academic year was

8,843 students, consisting of 3,842 elementary school students, 1,893 middle school students, and 3,108 high school and continuation school students. Enrollment for the 2003-2004 academic year was less than the total enrollment in the BUSD for the 2002-2003 and 2001-2002 academic years, which were 9,060 and 9,427 students, respectively (California Department of Education, 2005a).

The BUSD conducted a facilities study to provide information regarding physical capacity for its schools. The study evaluated enrollment for the 2001-2002 academic year and found that elementary schools were operating at 86 percent of capacity, middle schools at about 61 percent of capacity, and the high school at about 67 percent of capacity. Since a peak in student enrollment in the 1999-2000 academic year, overall student enrollment has been declining for all grades, kindergarten through high school. Projections through the 2006-2007 academic year estimate a continued decline in student enrollment in BUSD schools (BUSD, 2004b).

Oakland Unified School District

The Oakland Unified School District (OUSD) operates the public school system within the Oakland city limits. The OUSD administers 64 elementary schools, 14 middle schools, and six high schools. It is also responsible for 16 charter schools (all grade ranges), five adult education centers, 20 alternative schools, four special education schools, eight “autonomous small schools,” and 39 child care centers. Total school enrollment for elementary and secondary students for the 2003-2004 academic year was 50,437, showing a decline in enrollment from 52,501 students in 2002-2003 and 53,545 students in 2001-2002 (California Department of Education, 2005a).

Private Schools

On a statewide basis, an estimated 11 percent of all kindergarten through grade 12 students attend private school. During the 2003-2004 academic year, more than 29,000 kindergarten through grade 12 students in Alameda County attended private schools, approximately 13 percent of the school population. There are 17 private elementary and secondary schools and a number of private colleges and institutions in the City of Berkeley. For the 2003-2004 academic year, the number of elementary and secondary school students in private school in Berkeley was 2,659. In the City of Oakland, there are 55 private elementary and secondary schools, attended by more than 9,000 students located throughout Oakland (California Department of Education, 2005b). These students do not necessarily live within the city of the private school. In addition, students living within Berkeley or Oakland can attend private schools in other cities. Private schools within Berkeley and Oakland provide a wide range of options that include Montessori schools, schools sponsored by religious institutions, and college preparatory schools.

Student Generation Rates

The California State Department of Education has developed student generation rates that are routinely used by school districts that have not developed their own rates. The state’s student generation rates are a result of statewide sampling and include areas that vary demographically. The State Department of Education estimates that one dwelling unit would generate an average of 0.7 student per unit: 0.5 elementary or middle-school student and 0.2 high school student (Yeager, 2004).

The BUSD does not have an adopted student generation rate to estimate the number of school-age children that could be generated by new residential development (City of Berkeley, 2002 and Copeland, 2004). The OUSD employs the student generation rates developed by the California State Department of Education.⁴ Thus, the analysis of potential effects on public schools within the BUSD and the OUSD relies on the state student generation rate.

Parks and Recreation

Regional Open Space

The East Bay Regional Park District (EBRPD) manages over 95,000 acres within Alameda and Contra Costa counties, including 65 regional parks, recreation areas, wilderness, shorelines, preserves, and land bank areas. EBRPD regional park properties within the vicinity of the Lab hill site include Tilden Park and the Claremont Canyon Preserve that border the eastern Berkeley city limits. These regional parks are used extensively by Berkeley residents and provide open space and recreation facilities, including picnic areas, bicycle trails, swim areas, and environmental education centers. The EBRPD also has purchased a 170-acre area along Berkeley's waterfront that has become part of the East Bay Shoreline Park. Within Oakland's city limits, EBRPD provides open space and recreational facilities, including the 271-acre Leona Canyon Regional Open Space Preserve, the 1,220-acre Martin Luther King, Jr. Regional Shoreline Park, the 660-acre Robert Sibley Volcanic Regional Preserve, and the 100-acre Roberts Regional Recreational Area.

City of Berkeley

The City of Berkeley's Parks, Recreation and Waterfront Department manages the city's parks and open space. The city has 243 acres of City-owned and/or maintained parks and open space throughout Berkeley, excluding the 99-acre Aquatic Park. There are 52 parks providing traditional activities such as athletic fields, swimming pools, and tennis and basketball courts, as well as numerous tot and school-age play areas, community gardens, rock climbing, and a variety of water sports at the Berkeley Marina. The City of Berkeley maintains the parks-to-population ratio of 2.0 acres of parkland per 1,000 persons that was established in the 1977 City of Berkeley Master Plan (City of Berkeley, 2002).

Other UC Property

UC Berkeley manages parks and athletic and recreational facilities that serve the university and the wider community. The University also owns the 2.3-acre People's Park located south of the UC Berkeley campus. Athletic and recreational facilities are located within the central campus and also within the Strawberry Canyon Recreation Area. Additional resources include the Ecological Study Area.

⁴ The OUSD uses the statewide average student yield factors as defined in Section 1859.2 of the State Allocation Board Regulations.

City of Oakland

The City of Oakland's Office of Parks, Recreation and Cultural Affairs manages the city's parks and recreation centers. According to the Open Space, Conservation and Recreation (OSCAR) Element of the Oakland General Plan, an estimated 3,073 acres of total parklands are available within Oakland's city limits, providing about 8.26 acres of parkland per 1,000 residents; local-serving parks provide an estimated 1.33 acres per 1,000 residents. Oakland's per capita standards for parks identified in the OSCAR Element are based on National Recreation and Park Association guidelines, "with modifications made to reflect the fact that Oakland is a mature, relatively dense city with a limited supply of vacant land." The City of Oakland does not have a standard for parks associated with employment growth. For residential land use, the OSCAR Element uses a level of service standard of 10 acres of parkland and 4 acres of local-serving parks per 1,000 residents to determine where there are unmet needs and to set priorities for future capital investments (City of Oakland, 1995).

Oakland's parks are categorized by size and intended service area. The park categories include region-serving parks that are 25 acres or larger, community parks, and neighborhood parks. Oakland also has several classifications of miniparks, which are generally less than one acre in size. There are about 16 active miniparks, located primarily in the West Oakland, Fruitvale, and Elmhurst Planning Areas.

IV.K.2.4 Local Plans and Policies

LBNL is a federal facility operated by the University of California and conducting work within the University's mission on land that is owned or controlled by The Regents of the University of California. As such, LBNL is generally exempted by the federal and state constitutions from compliance with local land use regulations, including general plans and zoning. However, LBNL seeks to cooperate with local jurisdictions to reduce any physical consequences of potential land use conflicts to the extent feasible. The western part of the LBNL site is within the Berkeley city limits, and the eastern part is within the Oakland city limits. This section summarizes relevant policies contained in the Berkeley and Oakland General Plans.

Berkeley General Plan

Berkeley General Plan policies relevant to the proposed 2006 LRDP with regard to public services include the following:

Policy LU-15. Ensure that neighborhoods are well served by basic goods, a diverse supply of community care, services and facilities, including park, school, child care, and church facilities; fire, police, and refuse collection services; and by existing neighborhood commercial areas.

Fire Protection Services

Berkeley General Plan policies pertaining to fire protection include:

Policy S-21 Fire Preventive Design Standards. Develop and enforce construction and design standards that ensure that new structures incorporate appropriate fire prevention features and meet current fire safety standards.

Actions:

- A) Develop proposals to make developed areas more accessible to emergency vehicles and reliable for evacuation. Consider restricting on-street parking, increasing parking fines in hazardous areas, and/or undergrounding overhead utilities. Require that all private access roads be maintained by a responsible party to ensure safe and expedient passage by the Fire Department at any time, and require approval of all locking devices by the Fire Department. Ensure that all public pathways are maintained to provide safe and accessible pedestrian evacuation routes from the hill areas.
- B) Evaluate existing access to water supplies for fire suppression. Identify, prioritize, and implement capital improvements and acquire equipment to improve the supply and reliability of water for fire suppression. Continue to improve the water supply for fire fighting to assure peak load water supply capabilities. Continue to work with EBMUD to coordinate water supply improvements. Develop aboveground (transportable) water delivery systems.
- C) Provide properly staffed and equipped fire stations and engine companies. Monitor response time from initial call to arrival and pursue a response time goal of four minutes from the nearest station to all parts of the city. Construct a new hill area fire station that has wildland fire fighting equipment and ability.

Policy S-22 Fire Fighting Infrastructure. Reduce fire hazard risks in existing developed areas.

Policy S-23 Property Maintenance. Reduce fire hazard risks in existing developed areas by ensuring that private property is maintained to minimize vulnerability to fire hazards

Policy S-24 Mutual Aid. Continue to fulfill legal obligations and support mutual aid efforts to coordinate fire suppression within Alameda and Contra Costa Counties, Oakland, the East Bay Regional Park District and the State of California to prevent and suppress major wild land and urban fire destruction.

Policy EM-31 Landscaping. Encourage drought-resistant, rodent-resistant, and fire-resistant plants to reduce water use, prevent erosion of soils, improve habitat, lessen fire danger, and minimize degradation of resources.

Police Services

The Berkeley General Plan does not identify policies regarding police services.

Schools, Parks, and Recreation

Berkeley General Plan policies related to schools, parks, and recreation include:

Policy LU-40. Continue to support maximum opportunities for citizen use of libraries and recreational facilities, the maintenance of the hill lands as open space and the adoption of campus development standards and policies to conserve and enhance present open space resources.

Policy OS-4 Working with Other Agencies. Work with the Berkeley Unified School District, the University of California, the East Bay Municipal Utility District, and the East Bay Regional Park District to improve, preserve, maintain, and renovate their open space and recreation facilities.

Oakland General Plan

The Oakland General Plan Land Use and Transportation Element (LUTE) was approved in March 1998, and the Open Space, Conservation and Recreation (OSCAR) Element was approved in 1995 (City of Oakland, 1998a and 1995). In addition to policies included in the Oakland General Plan, and listed below, the EIR for the LUTE included mitigation measures to reduce potential impacts on public services to a less-than-significant level. The mitigation directs the City to consider the availability of public services (police and fire protection services, park and recreation services, and schools) in the affected areas as well as the project's impact on current service levels (City of Oakland, 1998b). General Plan policies relating to public services include the following.

Fire Protection Services

Oakland General Plan policies pertaining to fire protection include:

LU Policy N13.1. The development of public facilities and staffing of safety related services, such as fire stations, should be sequenced and timed to provide a balance between land use and population growth and public services at all times. (LUTE)

Policy CO-10.2. As determined necessary by the City, require individual property owners and developers in high hazard areas to reduce fire hazards on their properties through a range of preventative measures. Landscaping and site planning in these high hazard areas should minimize future wildfire hazards. (OSCAR Element)

Police Services

Oakland General Plan policy regarding police services includes LU Policy N13.1 (see above).

Schools, Parks, and Recreation

The Oakland General Plan does not contain policies regarding schools. General Plan OSCAR Element policies related to parks and recreation include:

Policy REC-3.1. Use level of service standards of 10 acres of total parkland and 4 acres of local-serving parkland per 1,000 residents as a means of determining where unmet needs exist and prioritizing future capital investments.

Policy REC-3.2. Follow a systematic process in allocating park and recreation funds. In general, allocate the greatest expenditures to those areas with the greatest unmet needs and place a priority on projects that maximize reductions in deficiency for the amount of money spent. However, maintain the flexibility to consider such factors as site opportunities, the availability of grants or matching funds, and linkages to other kinds of projects.

Policy REC-3.3. Consider a range of factors when locating new parks or recreational facilities, including local recreational needs, projected operating and maintenance costs, budgetary constraints, surrounding land uses, citizen wishes, accessibility, the need to protect or enhance a historic resource, and site visibility.

Policy REC-4.1. Provide for ongoing, systematic maintenance of parks and recreational facilities to prevent deterioration, ensure public safety, and permit continued public use and enjoyment.

Policy REC-6.1. Promote joint use agreements and similar arrangements between the City, the Oakland Unified School District, and other public agencies to maximize the use of school and other non-park recreational facilities during non-school hours.

Policy REC-6.2. Encourage public-private partnerships as a means of providing new recreational facilities on privately-owned sites. Promote joint use partnerships with local churches, private recreational service providers, and local non-profits.

Policy REC-6.3. In areas where park deficiencies exist, pursue recreational use of open space at surplus schools, military bases, utility and watershed properties, and transmission and transportation corridors. Recreational uses in such locations should not conflict with the functional use of the property and should be compatible with prevailing environmental conditions.

Policy REC 7-1. Provide diverse recreational activities for all ages, with a progression of programs from youth to adulthood. Equitably distribute programs throughout all Oakland neighborhoods.

Policy REC-10.1. Continue to provide General Fund support for park and recreational services, acknowledging the importance of these services to the quality of life in Oakland.

Policy REC-10.2. To the extent permitted by law, require recreational needs created by future growth to be offset by resources contributed by that growth. In other words, require mandatory land dedication for large scale residential development and establish a park impact fee for smaller-scale residential development, including individual new dwelling units. Calculate the dedication or fee requirement based on a standard of four acres of local-serving parkland per 1,000 residents.

Policy OS-2.5. Increase the amount of urban parkland in the seven flatland planning areas, placing a priority on land in areas with limited public open space, land adjacent to existing parks, land with the potential to provide creek or shoreline access, land with historical or visual significance, land that can be acquired at no cost or reduced cost, land in areas with dense concentrations of people or workers, and land that is highly visible from major streets or adjacent to public buildings.

IV.K.3 Impacts and Mitigation Measures

IV.K.3.1 Significance Criteria

The impact of the 2006 LRDP on public services and recreation would be considered significant if it would exceed the following Standards of Significance, in accordance with Appendix G of the CEQA Guidelines and the UC CEQA Handbook:

- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or result in the need for new or physically altered governmental facilities, the construction⁵ of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response time or other performance objectives for any of the following public services:
 - Fire protection;
 - Police protection;
 - Schools;
 - Parks; or
 - Other public services.
- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

IV.K.3.2 Impact Assessment Methodology

The environmental impact analysis for public services in this EIR involves an assessment of existing public service standards and capacity. As necessary, respective public service providers were contacted for information on existing conditions as well as for their assessment of potential project impacts. The public service demands were then calculated and compared to existing service capacity, and the additional resources that would be required to maintain or meet existing service standards identified.

In addition to providing the environmental impact analysis for the LRDP, the analysis in this EIR will be used in connection with later approvals of specific activities pursuant to the LRDP. The Lab will evaluate the public service and recreation impacts of any later activity implemented pursuant to the LRDP and compare those impacts with the evaluation in this program EIR to determine the appropriate level of any further CEQA review that may be required before approval of the later activity. If specific project differences from the presentation of the Illustrative Development Scenario and the 2006 LRDP EIR are such that the project is not within the scope of the LRDP EIR or the specific impact statements and mitigation measures do not cover the individual project pursuant to CEQA Guidelines Sections 15168(c)(2) and 15168(c)(5), then appropriate, project-specific CEQA analysis will be tiered from this 2006 LRDP EIR in accordance with CEQA Guidelines Section 15168(d)(1-3).

⁵ For the purposes of this EIR, the term “construction,” unless specifically indicated otherwise, includes activities that involve construction of new facilities, major rehabilitation or modification of existing facilities, and demolition of existing facilities.

IV.K.3.3 2006 LRDP Principles, Strategies, and LBNL Design Guidelines

2006 LRDP Principles and Strategies

The 2006 LRDP proposes four fundamental principles that form the basis for the development strategies provided for each element of the LRDP. The principle most applicable to the public services and recreational aspect of new development is to “Build a safe, efficient, cost effective scientific infrastructure capable of long-term support of evolving scientific missions.”

Development strategies provided by the 2006 LRDP are intended to minimize potential environmental impacts that could result from implementation of the 2006 LRDP (see Chapter III, Project Description for further discussion, and see Appendix B for a full listing of principles, strategies and design guidelines). Development strategies set forth in the 2006 LRDP that are applicable to public services and recreation include the following:

- Configure and consolidate uses to improve operational efficiencies, adjacencies and ease of access;
- Increase development densities within the most developed areas of the site to preserve open space, enhance operational efficiencies and access;
- Improve efficiency and security of Laboratory access through improvements to existing gates and the creation of new gates; and
- Develop all new landscape improvements in accordance with the Laboratory’s vegetation management program to minimize the threat of wildland fire damage to facilities and personnel.

LBNL Design Guidelines

The LBNL Design Guidelines were developed in parallel with the LRDP and are proposed to be adopted by the Lab following The Regents’ consideration of the 2006 LRDP. The LBNL Design Guidelines provide specific guidelines for site planning, landscape and building design as a means to implement the LRDP’s development principles as each new project is developed. Specific design guidelines are organized by a set of design objectives that essentially correspond to the strategies provided in the LRDP. The document provides the following specific planning and design guidance relevant to the public services and recreational aspects of new development:

- Provide appropriate Site Lighting for safety and security; and
- Design all new streets to accommodate two-way traffic flow and pedestrian access.

IV.K.3.4 Impacts and Mitigation Measures

Impact PUB-1: The proposed project would result in an increase in demand for fire protection services. However, this increased demand would not result in the need for additional facilities for fire protection services. (Less than Significant)

The Lab's fire protection services are provided on a contract basis. During the span of the 2006 LRDP, LBNL would continue its contract to ensure equipment, materials and training are sufficient to maintain fire protection service levels at the Lab. The Alameda County Fire Department's Fire Station 19, located in Building 48 at the Lab's hill site, responds to calls at the Lab, UC Berkeley and other off-site locations, generally within the City of Berkeley. Currently, most of the Fire Station 19 responses are to locations outside of the Lab including UC Berkeley and other off-site locations, while the Berkeley Fire Department responds to the LBNL hill site less than twice a month. The proposed 2006 LRDP would increase the Adjusted Daily Population (ADP) at the LBNL hill site by approximately 27 percent (23-percent overall increase in ADP) to approximately 4,650 ADP, and increase the on-site building square footage by slightly more than 37 percent. Based on current patterns of demand for fire protection services at LBNL, implementation of the 2006 LRDP would result in about three to five additional calls per month, of which one or fewer would require response by the Berkeley Fire Department. Additionally, all new structures built on the hill site would comply with applicable building and fire code requirements, and DOE standards, which would include, for example, the installation of automatic fire-sprinkler systems. Subsequent development projects resulting from implementation of the proposed LRDP would occur within the Lab boundary and would not extend into the adjacent wildland areas, meaning that the project would not be anticipated to increase the number or intensity of potential wildfires. While implementation of the 2006 LRDP would result in the development of new structures in an area prone to wildfires, the applicable building standards for new projects and ongoing fuel management at LBNL would result in a less-than-significant impact on demand for fire services.

Based on the current and expected demand for fire protection services and discussion with the Alameda County Fire Department, it is not anticipated that implementation of the 2006 LRDP would result in the need for new facilities, staff or equipment to provide adequate fire protection (Piermattei, 2006). The number of calls handled by Station 19 at LBNL is relatively light in comparison with typical Alameda County and Berkeley fire stations. The Alameda County Fire Department handles about 21,000 calls per year with 17 stations and Berkeley handles about 12,000 calls per year with seven stations. An average Alameda County station handles about 100 calls per month and an average Berkeley station handles about 140 calls per month. Station 19 at LBNL handles about 50 to 60 calls per month, which is only about 40 percent to 60 percent of the Berkeley and Alameda County averages, respectively. With the implementation of the 2006 LRDP, the Alameda County Fire Department expects that the additional staff and buildings would result in about an additional three to five more calls per month. This small increase in the number of calls related to the implementation of the 2006 LRDP could be accommodated without additional staff or facilities. Therefore the impact would be less than significant.

Mitigation: None required.

Project Variant. The project variant would result in an increase in ADP of an additional 350 persons at the hill site, approximately 30 percent more than the proposed increase under the proposed LRDP. The additional LBNL staff would be consolidated from off-site locations and accommodated within the 2.42 million gsf (660,000 gsf new) of occupiable (research and support) building space on the hill site proposed under the 2006 LRDP.

The increase in the on-site population could increase calls for fire protection services. Based on current patterns of demand for fire protection services at LBNL, the project variant could result in about four to six additional calls per month, compared to existing conditions, or about one additional call per month above the anticipated demand under the 2006 LRDP. The project variant would not affect building compliance with applicable building and fire code requirements or the placement of new buildings.

This incremental increase in demand for fire protection services is not anticipated to result in the need for new facilities, staff, or equipment to provide adequate fire protection. Therefore, the impact would be less than significant.

Individual Future Projects/Illustrative Development Scenario. The Illustrative Development Scenario is a conceptual portrayal of potential development under the 2006 LRDP. Actual overall development that is approved and constructed pursuant to the 2006 LRDP would be less intense than portrayed in the scenario. The scenario was developed before the 2006 LRDP was reduced in scope in response to comments from the City of Berkeley, and thus the scenario includes an overall level of potential development that is greater than is being proposed in the 2006 LRDP. Each of the proposed buildings that is conceptually portrayed in the scenario, however, might be constructed pursuant to the 2006 LRDP, and thus the scenario remains an appropriate and conservative basis for the evaluation of impacts to public services and recreation. Potential individual projects pursuant to the LRDP such as those identified in the Illustrative Development Scenario would not result in the need for additional fire protection facilities or services, for the reasons noted above. Therefore, the impact of such projects on fire protection services would be less than significant.

Impact PUB-2: The proposed project would result in an increase in calls for police services. However, this increased demand would not result in the need for additional facilities for police protection services. (Less than Significant)

The Lab's police services are provided through the UC Police Department (UCPD) and a private on-site security firm on a contract basis. The private security firm is responsible for on-site security needs including Laboratory access, property protection, and traffic control, and can respond to any accessible area of LBNL in less than five minutes. The UCPD responds to LBNL as needed under the existing contract, and the response time for UCPD is also less than five minutes (LBNL, 2003a). In the last 12 months, UCPD has responded to LBNL only once and generally there are fewer than 10 instances per year at LBNL that require response from UCPD.

Additionally, the “Cleary Act” statistics for homicide, rape, assault, and robbery are zero for each category at LBNL.

Implementation of the 2006 LRDP would increase the LBNL hill site ADP by approximately 27 percent (23-percent overall increase) and increase the on-site building square footage by slightly more than 37 percent. Assuming a conservative estimate, the number of responses from UCPD would increase from the historical average of 10 calls per year to, at most, 15 calls for year at buildout of the 2006 LRDP. The on-site security demand would also increase, and would be addressed in the contract for services to ensure adequate protection. Based on the estimated demand for police services and discussion with LBNL, it is not anticipated that implementation of the 2006 LRDP would result in the need for new facilities, staff, or equipment to provide adequate police services. Therefore the impact would be less than significant.

There is no memorandum of understanding/automatic aid agreement between LBNL and the City of Berkeley or City of Oakland police departments; each agency responds to the respective political sub-divisions for which they have jurisdiction. The Lab’s law enforcement “calls for service” requiring a UCPD response are sufficiently low (approximately 15 to 25 per year) that the implementation of the LRDP is not expected to affect UCPD’s or the private security company’s ability to provide service under the respective contracts; no new facilities would be required (Lunsford, 2006).

Mitigation: None required.

Project Variant. The project variant would result in an increase in ADP of an additional 350 persons at the hill site, or 30 percent above the projected increase under the project description. The additional staff would be LBNL staff who would be consolidated from off-site locations and accommodated within the 2.42 million gsf of occupiable building space on the hill site proposed under the 2006 LRDP.

The increase in on-site population that would result from implementation of the project variant could increase calls for police services. Based on the historic average number of calls (approximately 10 calls per year), the project variant could increase the number of calls for police services by about five additional calls per year above the 15 calls estimated under buildout of 2006 LRDP. There would also be increased demand for on-site security, which would be addressed in the contract for services between LBNL and the private security provider, to ensure adequate protection for the on-site population.

This incremental increase in demand for police services is not anticipated to result in the need for new facilities, staff, or equipment to provide adequate police services. Therefore the impact would be less than significant.

Individual Future Projects/Illustrative Development Scenario. The Illustrative Development Scenario is a conceptual portrayal of potential development under the 2006 LRDP. Actual overall development that is approved and constructed pursuant to the 2006 LRDP would be less intense than portrayed in the scenario. The scenario was developed before the 2006 LRDP was reduced in

scope in response to comments from the City of Berkeley, and thus the scenario includes an overall level of potential development that is greater than is being proposed in the 2006 LRDP. Each of the potential buildings that is conceptually portrayed in the scenario, however, might be constructed pursuant to the 2006 LRDP, and thus the scenario remains an appropriate and conservative basis for the evaluation of impacts to public services and recreation. Potential individual projects under the LRDP such as those identified in the Illustrative Development Scenario would not result in the need for additional facilities for police protection services and therefore the impact of such projects on police services would be less than significant, for the reasons noted above.

Impact PUB-3: Implementation of the 2006 LRDP would not result in the need for new or physically altered public school facilities. (Less than Significant)

The proposed project would not develop residential uses and therefore would not directly generate new student enrollment in the BUSD or OUSD (or other school districts). However, it is possible that people would relocate to the cities of Berkeley and Oakland as a result of new employment generated by implementation of the 2006 LRDP and their children would attend BUSD or OUSD schools. As further discussed in Section IV.J, Population and Housing, the existing residential distribution for LBNL employees is 35 percent of employees residing in Berkeley, Albany, and Kensington, and a conservatively estimated 14 percent residing in Oakland Piedmont and Emeryville. The proposed 2006 LRDP is anticipated to increase the overall LBNL ADP by 27 percent. Assuming the existing residential distribution would apply to the increased ADP resulting from the 2006 LRDP, the project would result in an increase of approximately 350 households in Berkeley and 140 households in Oakland. This assumes an estimated one employee per household.

Using student generation rates of 0.7 student per household from the State Department of Education, the proposed LRDP is anticipated to generate approximately 175 elementary or middle school children and 70 high-school-age students in Berkeley. This represents less than two percent of current enrollment. Based on the existing capacity in the BUSD schools, the elementary, middle, and high schools could accommodate the 245 new students that could indirectly result from implementation of the LRDP. In Oakland, the proposed LRDP could generate up to 70 elementary or middle school children and 28 high school-age students. This represents less than one quarter of a percent of the existing student enrollment in Oakland. It is likely that these new students introduced to the OUSD could be accommodated in existing school facilities and would not require the construction of new school sites.

Furthermore, the proposed LRDP would guide development at LBNL over a 20-year period. Increases in ADP, and also indirect contributions to student enrollment, would occur incrementally over this 20-year planning horizon, as new buildings are constructed to provide additional space on the hill site. School enrollment is affected by economic conditions and development, and it is currently unknown whether overcrowding in BUSD and OUSD would

occur in the next 20 years. Overall student enrollment in elementary and secondary schools over the past three years in both the BUSD and OUSD has been declining.

The proposed project would not, by itself, induce a substantial or immediate population increase or result in a substantial increase in the demand for housing that would result in the need for new or physically altered public school facilities. The project would therefore have a less than significant impact.

Mitigation: None required.

Project Variant. The project variant would result in effects similar to those discussed above. The project variant would increase the ADP at the hill site above projections in the 2006 LRDP by the consolidation of existing LBNL staff from off-site locations. Because the project variant would not result in the generation of new employment opportunities above those analyzed as part of the 2006 LRDP, the project variant would not result in any new impacts related to public schools.

Individual Future Projects/Illustrative Development Scenario. The Illustrative Development Scenario is a conceptual portrayal of potential development under the 2006 LRDP. Actual overall development that is approved and constructed pursuant to the 2006 LRDP would be less intense than portrayed in the scenario. The scenario was developed before the 2006 LRDP was reduced in scope in response to comments from the City of Berkeley, and thus the scenario includes an overall level of potential development that is greater than is being proposed in the 2006 LRDP. Each of the potential buildings that is included in the scenario, however, might be constructed pursuant to the 2006 LRDP, and thus the scenario remains an appropriate and conservative basis for the evaluation of impacts to public services and recreation. Potential individual projects under the LRDP such as those identified in the Illustrative Development Scenario would not result in the need for new or physically altered public school facilities and thus would not result in any significant impacts related to public schools, for the reasons noted above.

Impact PUB-4: Implementation of the proposed 2006 LRDP would not significantly adversely affect the provision of parks and recreation. (Less than Significant)

The City of Berkeley has a criterion for residential land use of 2.0 acres of parks per 1,000 persons established in the 1977 City of Berkeley Master Plan (City of Berkeley, 2002). The Oakland General Plan does not have a standard for parks associated with employment growth, although the City does have a level of service standard for residential land use of 10 acres of total parkland and 4 acres of local-serving parkland per 1,000 residents to determine where unmet needs exist and to set priorities for future capital investments. Currently, Oakland has a parkland ratio of 8.26 acres per 1,000 residents and a local-serving park ratio of 1.33 acres per 1,000 residents (City of Oakland, 1998b).

The proposed 2006 LRDP is anticipated to increase the overall LBNL ADP by 27 percent. Assuming that current residential trends for LBNL employees continue, approximately 35 percent

(350) of new LBNL employees would reside in Berkeley, resulting in an additional demand for 0.7 acre of parkland. Assuming that approximately 14 percent (140) of the new LBNL employees would be Oakland residents, the project could generate a demand for an additional 1.4 acres of parkland and an increase of 0.6 acres of local-serving parkland. The additional demand for park and recreation would be relatively small, compared to Berkeley's 243 acres of existing parkland and Oakland's 3,703 acres of parkland.

Implementation of the LRDP would not result in housing development, and thus the effect of the proposed LRDP on parks and recreation would be indirect, resulting from an increase in residential population to accommodate an increase in ADP at LBNL. Construction of new housing is anticipated in Berkeley, Oakland, and elsewhere in the next 20 years, based on current projections by the Association of Bay Area Governments, which are relied upon in the preparation of city and county general plans. Under the City of Berkeley and the City of Oakland planning process, planned residential uses in each city would be subject to the City's zoning ordinance and general plan policies. For residential development, levels of service for parks and recreation for each city are discussed in the paragraph above.

While significant environmental impacts from the development of parkland in urban areas are generally not anticipated, the environmental review processes of the cities of Berkeley and Oakland, and other jurisdictions, would ensure that environmental impacts associated with the development of residential projects and their demand for recreational facilities, as well as the development of recreational facilities themselves, are mitigated to the maximum extent feasible. It would be speculative to assume that there would be significant and unavoidable impacts from the development of parks or recreation facilities in the region. In summary, the effects on parks and recreation resources from the proposed project would be less than significant.

Mitigation: None required.

Project Variant. The project variant would result in effects similar to those discussed above. The project variant would increase the ADP at the hill site above projections in the 2006 LRDP by the consolidation of existing LBNL staff from off-site locations. Because the project variant would not result in the generation of new employment opportunities above those analyzed as part of the 2006 LRDP, the project variant would not result in any new impacts related to parks and recreation.

Individual Future Projects/Illustrative Development Scenario. The Illustrative Development Scenario is a conceptual portrayal of potential development under the 2006 LRDP. Actual overall development that is approved and constructed pursuant to the 2006 LRDP would be less intense than portrayed in the scenario. The scenario was developed before the 2006 LRDP was reduced in scope in response to comments from the City of Berkeley, and thus the scenario includes an overall level of potential development that is greater than is being proposed in the 2006 LRDP. Each of the potential buildings that is conceptually portrayed in the scenario, however, might be constructed pursuant to the 2006 LRDP, and thus the scenario remains an appropriate and conservative basis for the evaluation of impacts on demand for parks and recreation. Potential individual projects under the LRDP such as those identified in the Illustrative Development

Scenario would not adversely affect the provision of parks and recreation, for the reasons noted above; therefore the impact of such an individual project would be less than significant.

IV.K.3.5 Cumulative Impacts

This analysis considers cumulative growth as represented by the implementation of the Berkeley and Oakland general plans (and thus includes growth anticipated by the City of Berkeley General Plan EIR), and implementation of the UC Berkeley 2020 LRDP (including the Southeast Campus Integrated Projects [SCIP]) along with implementation of the proposed LBNL 2006 LRDP. (Demolition of the Building 51 complex – housing the Bevatron accelerator – is analyzed as part of the 2006 LRDP because the buildings were in place when the EIR analyses were undertaken.) Certification of the Building 51 (Bevatron) EIR and approval of the demolition project are anticipated to be considered in early 2007. Additional projects currently underway at UC Berkeley, described in Section VI.C, Cumulative Impacts, of this EIR, are also accounted for in the cumulative analysis.

The geographic context for this cumulative analysis includes Berkeley Lab and areas proximate to the Lab within the cities of Berkeley and Oakland that rely on the same service providers as LBNL. This analysis evaluates whether the impacts of the proposed LRDP, together with the impacts of cumulative development, would result in a significant impact (based on the significance criteria on p. IV.K-15) and, if so, whether the contribution of the LRDP to this impact would be considerable. Both conditions must apply in order for the project's cumulative impacts to rise to the level of significance.

Impact PUB-5: Under cumulative conditions, implementation of the 2006 LRDP would contribute to an increase in demand for fire protection services and police services. However, this increased demand would not result in the need for new or physically altered facilities, the construction of which could cause significant environmental impacts. (Less than Significant)

As described in Impact PUB-1 above, Fire Station 19 at Berkeley Lab has a relatively low call volume compared to Berkeley or other Alameda County fire stations. Station 19 serves a fixed geographic response area that is relatively fully developed. While foreseeable development may cause that call volume to increase slightly, such incremental increases in demand for fire protection services can be accommodated without additional staffing or facilities. The call volume at Station 19 would have to more than double to approach the average call volume for a City of Berkeley fire station (Piermattei, 2006).

Reasonably foreseeable development in the East Bay could result in the increased need for new or altered fire protection or police facilities in the region. The City of Berkeley General Plan indicates the need for additional fire protection facilities and the City of Oakland General Plan indicates the need for expanded facilities or the seismic retrofit of existing facilities. However, as noted in Impacts PUB-1 and PUB-2, implementation of the 2006 LRDP would not result in the

need for new facilities, staff, or equipment to provide adequate fire protection or police services. Therefore, the project's contribution to cumulative demand would not be cumulatively considerable. Furthermore, planned residential development in local jurisdictions where Berkeley Lab employees might live, such as the cities of Berkeley or Oakland, would be subject to the local agency's zoning ordinance and general plan policies, which would require that environmental impacts associated with new residential development are mitigated to the maximum extent feasible.

The EIR for the UC Berkeley SCIP identifies no significant impacts related to public services as a result of implementation of the Integrated Projects (UC Berkeley, 2006). The SCIP EIR concludes that neither emergency response and evacuation plans nor emergency access would be adversely impaired due to the Integrated Projects. In particular, "[t]he Integrated Projects, including expanded capacity use of [Memorial Stadium], would not result in inadequate emergency access to the Panoramic Hill neighborhood" (UC Berkeley, 2006; p. 4.7-14). Similarly, implementation of the LBNL 2006 LRDP would not result in any adverse effects on emergency access attributed to increases in traffic (see Section IV.L, Transportation). Therefore, implementation of the LRDP, alone or in combination with other past, present, and reasonably foreseeable future projects, would not result in a significant cumulative impact with regard to emergency access.

Mitigation: None required.

Project Variant. The project variant would result in public services and recreation impacts substantially similar to the public services and recreation impacts that would result from the 2006 LRDP development. The project variant's contribution to cumulative demand on fire and police protection services would not be considerable, nor would the project variant, either alone or in combination with other past, present, and reasonably foreseeable future projects, result in a significant cumulative impact with regard to emergency access, for the reasons noted above.

Individual Future Project Variant/Illustrative Development Scenario. The Illustrative Development Scenario is a conceptual portrayal of development under the LRDP. The contribution of a future project under the LRDP such as identified in the scenario to cumulative demand on fire and police protection services would not be considerable, nor would such a future project, alone or in combination with past, present, and reasonably foreseeable future projects, result in a significant cumulative impact on emergency access, for the reasons stated regarding implementation of the LRDP.

Impact PUB-6: Under cumulative conditions, implementation of the proposed 2006 LRDP would not result in the need for new or physically altered public school facilities. (Less than Significant)

As discussed under Impact PUB-3, the 2006 LRDP would include no housing component, and therefore the effect of implementing the LRDP would be indirect; that is, any increased demand

for school facilities would derive from residential development to accommodate increased ADP at the Lab. Because the 2006 LRDP would result in no direct impact on school facilities, and because the indirect effect would be minimal, implementation of the 2006 LRDP would not result in a considerable contribution to any cumulative increase in the demand for school facilities. Compared to existing student enrollment, the project would increase enrollment by less than three percent in the BUSD and less than one quarter of a percent in the OUSD. Under cumulative conditions, these percentages would decrease since both the Berkeley General Plan and Oakland General Plan provide for future residential and employment growth. Therefore, the proposed project would not result in a considerable contribution to the demand for school facilities that would result in the need for new or physically altered facilities under cumulative conditions. Furthermore, planned residential development in local jurisdictions where new Berkeley Lab employees might live, such as the cities of Berkeley or Oakland, would be subject to the local agency's zoning ordinance and general plan policies. Planned development may also be required to pay school impact fees that, under CEQA, are deemed as full and complete mitigation for effects on schools. Therefore, the project's cumulative effect on public school facilities would be less than significant.

Mitigation: None required.

Project Variant. The project variant would result in public services and recreation impacts substantially similar to the public services and recreation impacts that would result from the 2006 LRDP development. The project variant would not result in a considerable contribution to any cumulative increase in the demand for school facilities, for the reasons stated above, and therefore the impact would be less than significant.

Individual Future Project Variant/Illustrative Development Scenario. The Illustrative Development Scenario is a conceptual portrayal of development under the LRDP. A future project under the LRDP such as conceptually portrayed in the scenario, when combined with other projects under the LRDP and other development, would also, for the reasons stated above, result in cumulative public school facilities impacts that would be less than significant.

Impact PUB-7: Under cumulative conditions, implementation of the proposed 2006 LRDP would not substantially affect the provision of parks and recreation facilities. (Less than Significant)

Implementation of the 2006 LRDP along with cumulative development could result in an increased demand for parks and recreation facilities in Berkeley and Oakland. As discussed under Impact PUB-4, however, the 2006 LRDP does not include any housing component, and therefore the effect of implementing the LRDP would be indirect; that is, any increased demand for park and recreation facilities would derive from new residential development to accommodate increased ADP at the Lab. As noted under Impact PUB-4, planned residential uses in each city (as well as in other local jurisdictions where Berkeley Lab employees might reside) would be subject

to the local agency's zoning ordinance and general plan policies, which would require that environmental impacts associated with the development of parks and recreation facilities are mitigated to the maximum extent feasible. Because the 2006 LRDP would result in no direct impact on park and recreation facilities, and because any indirect effect would be minimal, implementation of the 2006 LRDP would not result in a considerable contribution to any cumulative increase in the demand for park and recreation facilities. Therefore, the cumulative impact would be less than significant.

Mitigation: None required.

Project Variant. The project variant would result in public services and recreation impacts substantially similar to the public services and recreation impacts that would result from development under the 2006 LRDP. The cumulative park and recreation facilities impacts of the project variant would therefore be less than significant as described above.

Individual Future Project Variant/Illustrative Development Scenario. The Illustrative Development Scenario is a conceptual portrayal of development under the LRDP. A future project under the LRDP such as conceptually portrayed in the scenario, when combined with other projects under the LRDP and other development, would also, for the reasons stated above, result in cumulative park and recreation facilities impacts that would be less than significant.

IV.K.4 References – Public Services and Recreation

Alameda County Fire Department. www.co.alameda.ca.us/fire/index.htm, viewed October 29, 2003.

Berkeley Unified School District (BUSD). <http://www.berkeley.k12.ca.us/index.html>, viewed February 25, 2004a.

Berkeley Unified School District (BUSD). Multi-School Capacity, 2003. http://www.berkeleypublicschools.org/SB/reports/toc_facilities_study.html, viewed March 4, 2004b.

California Department of Education. Education Data Partnership, <http://www.ed-data.k12.ca.us>, viewed March 20, 2005a.

California Department of Education, California Private Schools, 2003-2004 Data File Structure, <http://www.cde.ca.gov/ds/si/ps/>, viewed March 20, 2005b.

City of Berkeley Fire Department website (<http://www.ci.berkeley.ca.us/fire>), viewed March 20, 2005.

City of Berkeley, General Plan, 2002.

City of Oakland, General Plan Land Use and Transportation Element, 1998a.

- City of Oakland, General Plan Land Use and Transportation Element EIR, February, 1998b.
- City of Oakland, General Plan Open Space, Conservation and Recreation Element, 1995.
- Copeland, Mark, Berkeley Unified School District (BUSD) Public Information Office. personal communication, February 26, 2004.
- Kondazi, Hamid, City of Berkeley Public Works Department, personal communication, March 17, 2006.
- Lamphier-Gregory, Hills Fire Station Final Environmental Impact Report, City of Berkeley January, 2002.
- Lawrence Berkeley National Laboratory (LBNL), Don Bell. personal communication, December 15, 2003a.
- Lawrence Berkeley National Laboratory (LBNL), Rich McClure, Memorandum on Landscape Fire Safety at Berkeley Lab, December 9, 2003b.
- Lawrence Berkeley National Laboratory (LBNL), Paul Franke, personal communication, November 5, 2003c.
- Lunsford, Dan, LBNL Security and Emergency Operations, personal communication, September 7, 2006.
- Piermattei, Gary, Alameda County Fire Department, Station 19, personal communication, September 6, 2006.
- UC (University of California) Berkeley, *Southeast Campus Integrated Projects Tiered Focused Final Environmental Impact Report (SCH #2005112056)*; October 31, 2006. Available on the internet at http://www.cp.berkeley.edu/SCIP/FEIR/SCIP_FEIR.html
- University of California Police Department. <http://public-safety.berkeley.edu/police/>, viewed October 31, 2003.
- Williams, James, Battalion Chief, Oakland Fire Department, personal communication, June 10, 2003.
- Yeager, Fred, Assistant Director, School Facilities Planning Division California Department of Education. personal communication, March 17, 2004.