
IV. ENVIRONMENTAL IMPACT ANALYSIS

C. ARTIFICIAL LIGHT AND GLARE

This section describes the artificial light and glare setting of the Project and evaluates the potential for impacts to existing daytime and nighttime light and glare at the Project site and surrounding area due to the proposed Project. Nighttime illumination addresses the effects of a Project's lighting (artificial light) upon adjoining uses and receptors. Glare includes 1) the daytime reflection of the sun off reflective surfaces during the day (i.e., daytime glare); or 2) the reflection of artificial light sources (i.e., automobile headlights, special events lighting) off reflective surfaces at night (i.e., nighttime glare). Aesthetics and view issues are analyzed in Section IV.B, Visual Resources. Also related to the effects of artificial light and glare, Section IV.D, Transportation Safety, analyzes the potential for the proposed Project to result in driver, Air Traffic Control (ATC), or pilot distraction to occur to a degree that compromises transportation safety.

1. ENVIRONMENTAL SETTING

a. Introduction

Vision is perhaps the most complex of the senses and a very important mechanism we have for apprehending the world. Vision results from the interaction of the eye and brain from which perceptions are formed, and ultimately results in how we build our individual worlds. Many variables affect vision, such as age and physical limitations (such as color deficiencies like color blindness, or partial sight or complete blindness), as well as spatial frequency and brightness conditions.

i. Artificial Light

The term "artificial light" in this analysis refers to man-made nighttime light. Artificial light sources are generally of two types, including: 1) point sources of light which include unshielded light sources (e.g., lenses or lamp reflectors); and 2) illuminated surfaces which may include light reflected off of the ground, walls, or trees. According to the *L.A. CEQA Thresholds Guide*, nighttime spill-over of light onto adjacent properties has the potential to interfere with certain functions, including vision, sleep, privacy, and general enjoyment of the natural light. The significance of the impact depends on the type of use affected, proximity to the affected use, the intensity of the light source, and the existing ambient light environment. According to the *L.A. CEQA Thresholds Guide*, light-sensitive land uses may include, but are not limited to, residences, including board and care facilities, commercial or institutional uses that require minimal nighttime illumination for proper function, physical comfort, or commerce, and natural areas.

Brightness is the perceptual response to luminance. It is our response to a source of light, sources being categorized between bright and dim. Luminance is a photometric measure of the luminous intensity of a surface. The luminance indicates how much luminous power will be detected by an eye looking at the surface from a particular angle of view. It is an indicator of how bright the surface will appear. Luminance is measured in candelas per meters squared (cd/m^2). A light source emits luminous power which is measured in candlepower (cp). Illuminance is the amount of light coming from a light source that lands on a surface. The unit used to measure illumination is the footcandle (fc) which represents the illumination cast by a one-cp light source on an area of one square foot (sq ft), measured at a distance of one foot from the light source. For a point of reference, illumination associated with natural conditions ranges from 0.004 fc for a moonless night, 25.0 fc for dawn and

125.0 fc for a bright day. Footcandle measurements associated with a number of natural conditions are shown in Table IV.C-1, Range of Natural Variation of Illuminance. The analysis provided in this section is based on cd/m^2 , which is a better standard, as it is measurable regardless of distance, viewing angle, etc., and is easily measured with a luminance meter. In addition, cd/m^2 is typically what is used for LED signs as it is the impression made on the viewer of the signs and provides the most relevant measurement associated with views of pedestrians and motorists that would be viewing digital display signs including the amount of brightness they perceive.

Table IV.C-1

Range of Natural Variation of Illuminance

Condition	Illuminance (footcandles)
Moonless Night	0.004
Full Moon	0.030
Twilight	20.00
Dawn	25.00
Foggy Day	15.00
Overcast Day	54.00
Bright Day Light	125.00

Source: International Committee on Illumination, March 2000

ii. Glare

Glare is a lighting condition that causes an observer to experience adverse visual effects as a result of high brightness. Glare is common throughout the City of Los Angeles and urbanized areas in general and can be caused by either: (1) the reflection of the sun off reflective surfaces during the day (i.e., daytime glare); or (2) the reflection of artificial light sources (i.e., automobile headlights, special events lighting) off reflective surfaces at night (i.e., nighttime glare). Glare, both daytime reflection of sunlight off of large expanses of reflective surface, and unshielded nighttime lighting, can have adverse effects on glare-sensitive uses. For this Project, glare-sensitive uses are pedestrians and motorists within the Central Terminal Area (CTA) and airport operations area.

For the proposed Project, the generation of substantial amounts of daytime glare is dependent on the following factors: the presence of signs that provide the opportunity for the reflection of sunlight; and the location of signs within close proximity to a glare-sensitive use that has a direct and unobstructed line-of-sight of the glare source, provided the glare source is not located south of the glare-sensitive use.¹

Lighting may also result in nighttime glare. The generation of substantial amounts of nighttime glare depends on the same factors as the generation of daytime glare (in this case, signs that include reflective materials and the location of such uses in highly visible areas and in close proximity to glare-sensitive uses). No adopted City policies exist regarding the measurement of reflective glare impacts. Therefore, the determination of significance is generally subjective and relative to existing conditions.

¹ The sun does not shine on the north faces of buildings because of the latitude of the Project site.

b. Existing Conditions

i. Artificial Light

The Project site (the interior portion of the Los Angeles International Airport [LAX])/LAX and the surrounding environment generate light emissions common in highly urbanized areas. Illumination associated with the Project site (and LAX as a whole) provides for the safe and secure movement of pedestrians and vehicles, and does not interfere with the nighttime visibility of Airport Traffic Control Tower operators and incoming pilots, or interfere with lighting used to guide aircrafts such as approach lighting, runway/taxiway guidance lighting, runway end identifier lights, and ground lighting/markings. Of the lighting sources described below, those that are located in proximity to light-sensitive receptors are most pertinent for analysis. Sensitive receptors are primarily concentrated along the airport's northern and southern edges (e.g., residential uses). The closest residential areas to the Project site are approximately 0.4 mile northeast to 0.6 mile north (community of Westchester) and 0.5 mile south (City of El Segundo). Hotel uses are located along Century Boulevard as you approach the entrance to the Project site/LAX, with the closest hotel located approximately 125 feet east of the Project site.

Illumination sources at the Project site include the following.

(1) Landside Sub-Area

The illumination sources within the Landside Sub-Area (i.e., the CTA) include street lights, security lighting, signage lights, roof perimeter lights, parapet lights, parking structure interior and exterior lighting, and terminal entrance lights. Lighting associated with the upper roadway (departure area) and lower roadway (arrival area) is similar; however, the lighting on the upper level is more visible to the surrounding areas with fewer structures to shield the lighting (for example, the lower roadway is covered by the upper roadway). Conversely, lighting associated with the departure area is primarily confined to the CTA with minimal off-airport spill-over and contribute to ambient lighting levels in the vicinity. Illumination sources within the Landside Sub-Area also include interior lighting emitting from the terminals, sky bridges, and parking structures that have a large amount of non-opaque (i.e., glass doors and windows) or open (i.e., parking structures) surfaces. The roof perimeter and parapet lights, shielded and directed down, generally do not spill over more than 30 feet onto the surrounding areas. Interior light emitting from the terminals and parking structures does not generally spill over beyond these structures.

A lighting survey and study was conducted on June 25, 2012 and June 26, 2012 between 10:30 pm and 4:30 am to measure luminance of existing signage and lighting within the Project site (existing Park One Property and various CTA signage). All measurements were taken from ground level, which is the viewpoint of the pedestrian and automobile traffic, using a luminance meter that measures in cd/m^2 . Illuminance measurements were taken using a light meter, which measures in fc. Refer to Appendix B of this Draft EIR for the detailed survey. During the lighting survey, the following conditions associated with existing types of billboards/signage were found:

Typical Airport Downlighted Overhead Directional (Wayfinding) Signage: A typical airport sign bridging over traffic downlighted with metal halide floodlights measured between 2 to 517 cd/m^2 . The brightness of the sign depends on factors such as the color of the exact measurement point, the relative age of the lamp, maintenance and dirt depreciation (refer to Appendix B - 4.A.1 for additional data and images).

Typical Airport Uplighted Roadway-Adjacent Directional (Wayfinding) Signage: A typical airport sign located to the left-hand side of traffic to designate parking and terminals uplighted with surface mount accents measured between 6 to 18 cd/m^2 . The brightness of the sign depends on factors such as the color of the signage and the wattage and relative age of the lamps, maintenance, dirt depreciation, and lens quality in the roadway environment (refer to Appendix B - 4.A.2 for additional data and images).

Encounter Building Accent Lighting (Inside Airport): The Encounter restaurant facade is uplit with colored LEDs and measured between 1 to 8 cd/m². The brightness of the facade depends on the color of the floodlighting at any moment and the depreciation of the LEDs over time (refer to Appendix B - 4.F for additional data and images).

The Gateway LAX Full Size Illuminated Entry Pylons: The LAX Gateway pylons are internally illuminated using colored LEDs and measured between 9 to 15 cd/m². The brightness of the column facade depends on the color of the floodlighting at any moment and the depreciation of the LEDs over time. See Appendix B - 4.C for additional data and images.

Terminal 4 American Flag: The large scale American Flag at Terminal 4 facade measured between 17 to 62 cd/m². The brightness of the flag depends on the relative age of the lamp, maintenance, dirt depreciation in the roadway environment, colors in the flag, and light fixture lens quality (refer to Appendix B - 4.D for additional data).

(2) Airside Sub-Area

Within the Airside Sub-Area, the illumination sources include airport beacons, approach lighting, runway/taxiway guidance lighting, runway end identifier lights, apron/ramp floodlighting, and ground lighting/markings. Lighting associated with the airfield area is generally low to the ground and low in intensity. In general, runway/taxiway lights are directed towards the runway or taxiway and not off the pavement. Illumination sources within the Airside Sub-Area also include interior lighting emitting from the terminals, as well as from the hangar facilities immediately west of the CTA. Lighting associated with the hangars and terminal buildings also includes roof perimeter lights, and light emitting from the interiors of these structures. The roof perimeter and parapet lights, shielded and directed down, generally do not spill over more than 30 feet onto the surrounding areas. Interior light emitting from hangars and terminals does not generally spill over beyond the hangar doors and terminal aprons.

(3) Surrounding Areas

The existing lighting conditions within and along each of the boundary areas surrounding the airport property are described below. Figure IV.C-1 shows nighttime views of the airport from the communities of Westchester and El Segundo.

Northern Boundary

To the north of the Project site, Parking Lots C and D, located near Sepulveda Boulevard and Westchester Parkway, have 6-foot fences and walls, set within 15-foot landscaped buffers along the street frontages. The parking lot lights are similar in intensity to the adjacent street lights. Although located throughout the parking lot, these lights are not at the perimeters; they are shielded and directed downward in accordance with Los Angeles Municipal Code (LAMC) requirements, and do not spill over beyond the parking surfaces. The residential area north of LAX and east of Sepulveda Boulevard is adjacent to these existing airport parking facilities. The parking lot lighting is visible from this residential area, as is lighting from the adjacent commercial uses to the west and east and industrial uses to the southeast, but because the lighting is shielded and directed downward, light spill-over onto light-sensitive uses is limited.

The residential area north of LAX and west of Sepulveda Boulevard is separated by at least 1,000 feet from existing airport facilities by Westchester Parkway, a berm (or the Los Angeles/El Segundo Dunes in some areas near Pershing Drive), or the largely vacant LAX Northside area (part of the LAX property). Where direct views of LAX are available, they are distant and generally look across the dimly or unlit Dunes or the LAX Northside



View 1: View of LAX from Westchester - At the top of Ralph's parking structure near Sepulveda Blvd and Westchester Pkwy



View 2: View of LAX from Westchester - Along Lincoln Blvd.



View 3: View of LAX from El Segundo – Along Imperial Ave. west of Sheldon St.

Photo Source: Gensler, 2012; Location View Map Source: Stamen, 2012.

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area (except for the Westchester Golf Course which is not considered a light-sensitive use for purposes of this analysis). The Westchester Golf Course provides lighting for evening golf course use. This lighting is visible from surrounding off-airport areas.

Southern Boundary

The southern boundary of the Project site is approximately 0.5 mile from the City of El Segundo. The land uses to the south of LAX in the City of El Segundo, which consist of light-sensitive uses, are separated from the airport by a combination of Imperial Highway, Imperial Avenue, Interstate 105 (I-105), the Imperial Strip (a 7.35-acre landscaped open space corridor that parallels Imperial Highway), and partially opaque perimeter fencing and/or an earthen berm with a service road on top. While some of the adjacent sensitive receptor views of LAX are blocked by these intervening features, others have direct views of LAX. However, while LAX light sources are visible to certain residences between the trees of the Imperial Strip and from the upper floors of some of the apartments and hotels, the distances and intervening lighting (i.e., street lights) are such that the light-sensitive uses are not affected by light spill-over or high ambient lighting levels from LAX.

Eastern Boundary

The area east of the Project site consists of several sources of artificial light, such as the lit pylon display, various billboards, and lit building facades. On the eastern boundary of the Project site is a kinetic lighting display that is the landmark entry to LAX, Los Angeles, and to visitors from abroad, the United States. The lighting installation is comprised of a 1.5-mile lineup of 11 pylons six feet in diameter that increase in height from 25 to 60 feet. The 11 pylons are located within the median along Century Boulevard and culminate with a “Gateway Circle” of 15 100-foot tall columns 12 feet in diameter at the intersection of Century Boulevard and Sepulveda Boulevard. The “Gateway Circle” is approximately 560 feet in diameter. The pylons are lit daily from dusk to dawn and can feature varying programs of up to approximately 16.7 million colors synchronized by computer (LAWA, 2012). The program can last between 5 minutes to three hours and consist of lighting display, synchronous lighting activity, and color arrays. In addition to the pylons, at the entrance of the airport, there are 32-foot-high LAX letter forms. The pylons utilize low-level lighting that is emitted from within the columns and therefore does not spill over off-airport. The LAX letter forms are lit from the ground by spotlights at the base. During the lighting survey, the measured luminance range of the pylons was 9 to 15 cd/m² (Appendix B). Although the lighting does not spill off-airport, and the luminance range is low, the backlighting associated with this light installation is a source of illumination that is meant to be visible to pilots and airline passengers at 3,000 feet in the air.

In addition to the lighting display, light sources in the vicinity of Sepulveda Boulevard and Century Boulevard include light from billboards, hotels, commercial buildings, and street lights. As detailed in the lighting survey, there is an LED digital billboard along Sepulveda Boulevard near 96th Street (facing southbound traffic), which had a luminance range of 40 to 200 cd/m² depending on the image being presented (refer to Appendix B for additional data and images). In the vicinity of the intersection of Sepulveda and Century Boulevards is a billboard with floodlights, which had a measured luminance range of 2 to 40 cd/m². When all the lighting sources are considered, the luminance associated with the adjacent southern boundary uses is similar to the Landside Sub-Area of the airport. The hotel buildings along Century Boulevard are the only light-sensitive receptors within this area. While airport light sources are visible from hotel buildings within the Century Corridor, especially from the upper floors of the westerly-most hotel (i.e., Radisson which is located approximately 125 feet to the east of the Landside Sub-Area portion of the Project site and approximately 0.2 mile from the proposed signage at the east elevation of Terminal 1), there is no spill-over of lighting onto the hotel buildings from airport sources and airport lighting effects are generally less apparent than the hotels' own environmental lighting.

Western Boundary

To the west of the Project site, lighting in the Los Angeles/El Segundo Dunes and El Segundo Blue Butterfly Habitat Restoration Area (Habitat Restoration Area) west of Pershing Drive currently consists of navigational aids for LAX aircraft and security lighting for two small buildings. All of the security lights are on motion detection settings that turn off when the motion stopped. The lighting, while visible, is low in profile. Also, street lights on Pershing Drive emit amber light, and older low-profile street lights along Vista del Mar, adjacent to the Dunes, emit white light at low intensities. As airfield development in this area is currently limited, airport light sources in this area are less intense than those found on the remainder of the airport site and are primarily comprised of airfield lighting. The Dunes/Habitat Restoration Area is considered a light-sensitive use. Additionally, there are several intervening airport-related structures with existing lighting between the Project site and the Dunes that would obscure any lighting associated with the proposed Project from the Dunes.

ii. Glare

Vehicles are the primary source of glare within the Project site. The Park One Property, a surface parking lot visible from Sepulveda Boulevard, is a source of reflective light occurring from windshield glass and other reflective surfaces on parked automobiles during certain hours of the day. Other reflective surfaces include vehicles within both the Landside and Airside Sub-Areas, and aircraft within the Airside Sub-Area. Building windows within the Project site are tinted and coated to reduce potential for glare.

Sources of glare in the surrounding area include building windows, light-colored building surfaces, metal surfaces, and car windshields and other reflective surfaces. Sensitive receptors relative to daytime glare from reflected sunlight include motorists traveling within the Project site and on the adjacent roadways and pilots.

c. Existing Regulations

The following policies and guidelines are associated with artificial light and glare:

i. California Code of Regulations Title 24

Title 24 of the California Code of Regulations limits energy use for exterior signage in California. Table IV.C-2 presents Title-24 2008 limits on exterior, internally illuminated signs, and integral electronic displays to 12 watts/sq ft.

Table IV.C-2

Title 24 Wattage limits for Exterior, Internally Illuminated Signs, and Integral Electronic Displays

Time of Day	Watt/Sq Ft at Full White	Brightness at Full White (cd/m²)	Hours on Per Day	Total Watt-Hours Per Day Per Sq Ft of Sign
Daytime Usage (7 am to 7 pm)	12	3,500*	12	144
Nighttime Usage (7 pm to 2 am)	5	1,500	7	35
Total Watt-Hours Per Day Per Sq Ft of Sign				179

*Title 24 only restricts energy usage and does not restrict brightness
Source: LDA, 2012

ii. Los Angeles Municipal Code (LAMC)

The LAMC, Section 12.50, Airport Approach Zoning Regulations, establishes special airport zoning regulations for land uses within the approach zones of LAX (specifically within the areas mapped in the Airport Hazards Area Maps referenced in the LAMC) in order to prevent the creation or establishment of airports hazards. These zoning regulations are primarily directed toward height limits but also address light emissions to avoid potential hazards to aircraft resulting from illuminated signs and structures within airport hazard areas. These regulations are applicable to uses immediately east and west of the LAX north and south runways. Use restrictions within the airport hazard area include no illuminated or flashing advertising or business sign, and billboards that would make it difficult for pilots to distinguish between those lights and the aeronautical lights of the airport (includes glare that could impair or endanger the landing, taking off or maneuvering of aircraft). Although the proposed Project does not include placement of new off-site signage within the Airport Hazards Area, the intent of the Project is to be mindful of placement of the proposed signage related to hazards (obstruction and light emissions) in the airport.

The LAMC Building Code Section 93.0117 regulates light spill-over in residential areas. Specifically, Section 9.0117 prohibits the establishment of exterior stationary sources of lighting that illuminate windows, decks, or backyards at residential units by more than 2 fc of lighting intensity or cause direct glare. These regulations would apply to development along the north and south periphery of LAX.

The Sign Ordinance, Article 4.4, Sign Regulations, of the LAMC, provides regulations regarding the illumination of signs near residential zones. Section 14.4.4 (E) specifies that signs may not be arranged and illuminated in a manner that produces a light intensity greater than 3 fc above ambient lighting, as measured at the property line of the nearest residentially zoned property.

iii. Proposed Citywide Sign Ordinance

The City of Los Angeles is in the process of revising the existing Sign Ordinance. Following is a brief summary of the proposed ordinance revisions that pertain to illumination (refer to Section IV.A – Land Use and Planning, for a detailed description of the proposed ordinance revisions):

- It is proposed that no sign shall be arranged and illuminated in a manner that will produce a light intensity of greater than 0.3 fc above ambient lighting, as measured at the property line of the nearest residentially zoned property (Section 14.4.4, General Provisions).
- The proposed maximum brightness of any digital displays may not exceed 300 cd/m² during the nighttime and 4,500 cd/m² during the daytime. The transition from day to nighttime brightness would occur smoothly at a consistent rate beginning 45 minutes prior to sunset and concluding 45 minutes after sunset.
- It is proposed that digital displays would be equipped with a sensor or other device to automatically adjust the brightness of the display according to changes in ambient lighting to comply with the proposed 0.3 fc ambient lighting limit.

iv. LAX Plans and Policies

(1) The LAX Plan

The LAX Plan, an element of the City of Los Angeles General Plan, provides goals, objectives, policies, and programs that establish a framework for the development of facilities for movement and processing of passengers and cargo at LAX. It is intended to promote an arrangement of airport uses that encourages and contributes to the

modernization of the airport in an orderly and flexible manner within the context of the City and region. Applicable light-oriented regulations of the LAX Plan are listed below:

Land Use (Airport Airside)

- *Policy P4: Locate airport uses and activities with the potential to adversely affect nearby residential land uses through noise, light spill-over, odor, vibration, and other consequences of airport operations and development, as far from them as feasible.*

Land Use (Airport Landside)

- *Policy P6: Locate airport uses and activities with the potential to adversely affect nearby land uses through noise, light spill-over, odor, vibration, and other consequences of airport operations and development as far from, or oriented away from adjacent residential neighborhoods as feasible.*

(2) Los Angeles International Airport Street Frontage and Landscape Development Plan Update

The LAX Street Frontage and Landscape Development Plan Update (Landscape Development Plan) prepared in 2005 provides integrated and coordinated landscape design guidelines for new development along the perimeter of LAX. The Landscape Development Plan focuses on incorporating all necessary airport security guidelines and maximizing neighborhood compatibility between buffer areas along the north and south perimeters of LAX. The Landscape Development Plan calls for the preparation of a Neighborhood Compatibility Program (NCP), based on commitments made in the LAX Master Plan, which outlines interface treatments along the airport perimeter for the purpose of "ensuring that the airport complements surrounding properties and neighborhoods." The NCP, which is to address all issues relating to compatibility, including landscape buffers, noise, light spill-over, odor, and vibration, is to include the following measures to ensure that this policy is achieved:

- Locate airport uses and activities with the potential to adversely affect nearby residential land uses through noise, light spill-over, odor, vibration, and other consequences of airport operations and development as far from adjacent residential neighborhoods as feasible.
- Provide community outreach efforts to property owners and occupants when new development on airport property is in proximity to and could potentially affect nearby residential uses ..."

2. ENVIRONMENTAL IMPACTS

a. Thresholds of Significance

i. Artificial Light

The *L.A. CEQA Thresholds Guide* states that a determination of significance relative to nighttime illumination shall be made on a case-by-case basis, considering the following factors:

- The change in ambient illumination levels as a result of project sources; and
- The extent to which project lighting would spill off the project site and affect adjacent light-sensitive areas.

Based on these factors, similar types of projects, the thresholds used in the LAX Master Plan, and the proposed changes to the City's sign ordinance, the proposed Project would potentially result in a significant impact if:

- The Project results in substantial changes to existing artificial light conditions (i.e., going from a large, unlit, or dimly lit portion of the Project site to a highly lit condition);
- Project lighting interferes with the performance of an off-airport activity; or
- The Project results in an increase in lighting sources that generate light intensity of more than 0.3 fc above ambient lighting as measured at the property line of a residential property.
- The proposed maximum brightness of any digital displays may not exceed 300 cd/m² during the nighttime and 4,500 cd/m² during the daytime. The transition from day to nighttime brightness would occur smoothly at a consistent rate beginning 45 minutes prior to sunset and concluding 45 minutes after sunset.

ii. Glare

The *L.A. CEQA Thresholds Guide* does not expressly address the issue of daytime or nighttime glare. As noted previously, glare is a lighting condition that causes an observer to experience visual discomfort as a result of high brightness. This discomfort would be significant if the glare were experienced by an observer located at fixed point for an extended period of time. For the purposes of this EIR, the following thresholds based on the LAX Master Plan and similar types of projects have been utilized to determine if a significant glare (reflected light) impact would occur:

- Lighting or signage would make it difficult for pilots to distinguish between said lights and aeronautical lights, or result in glare in the eyes of pilots that would impair their ability to operate aircraft; or
- Future signage incorporates substantial amounts of reflective materials in close proximity to glare-sensitive uses, including on- or off-airport vehicle traffic, or if glare-sensitive uses are illuminated by high brightness lighting or special effects.

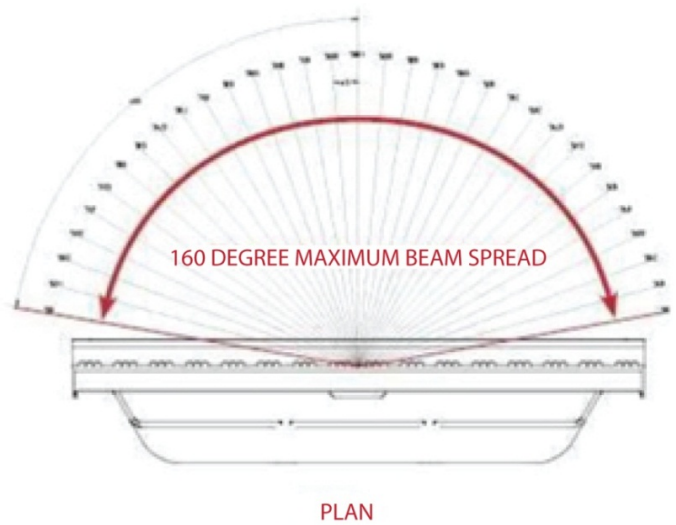
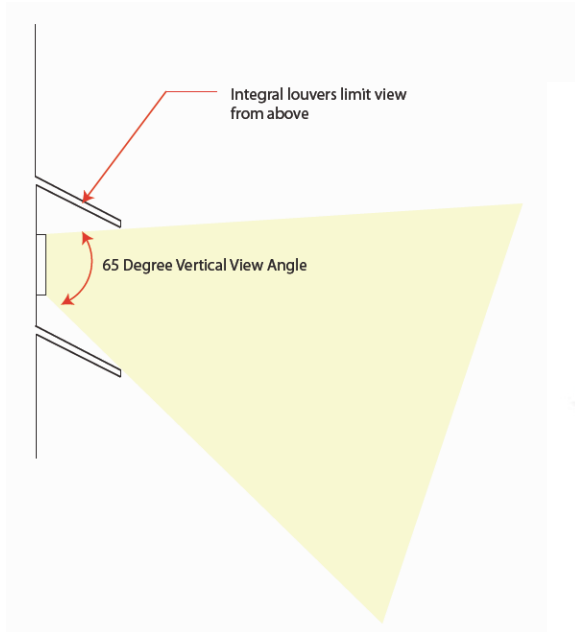
b. Project Design Features

Following is a list of all the Project Design Features and applicable LAX Master Plan (LAWA adopted) commitments that would be included with implementation of the proposed Project:

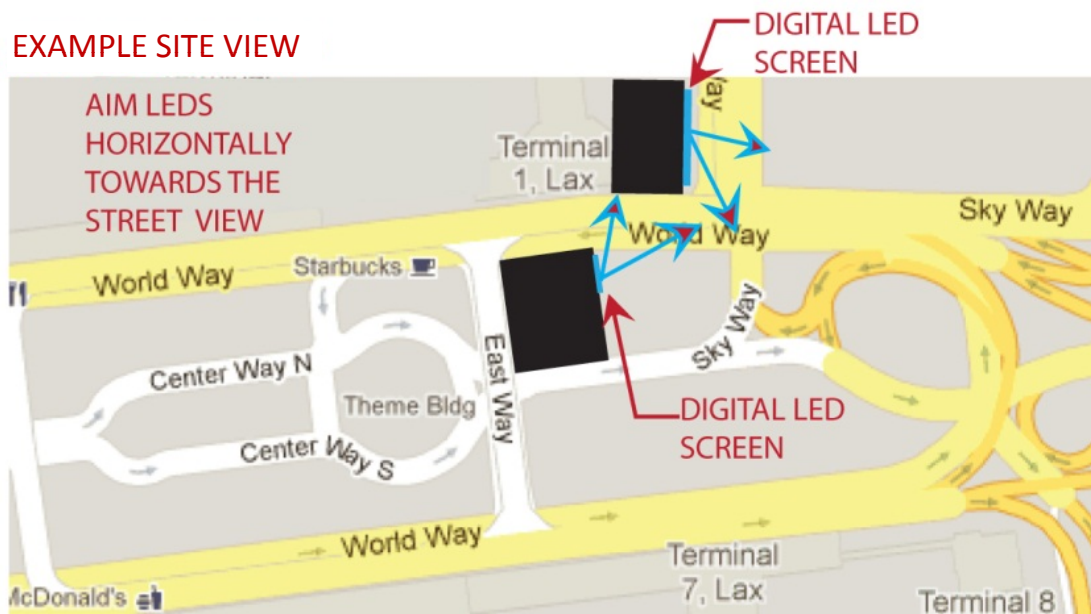
Project Design Features

- The allowable locations and sizes of signs have been designed to limit visibility from off-airport locations (i.e., surrounding communities) and to not visually or otherwise negatively affect airport operations or affect or alter historical buildings within LAX.
- No new off-site signage would be placed along the Project boundary, and no electronic or light enhanced signage would be visible from the adjacent residential areas (i.e., community of Westchester to the north and City of El Segundo to the south).
- No electronic or light enhanced signage would be installed within or be visible from the Airside Sub-Area.
- Off-site signs would not be permitted on a number of buildings within the Project site, including the Theme Building, the Airport Traffic Control Tower, and the Clifton A. Moore Administration Building (including the former Airport Traffic Control Tower [1961]).
- Limit illuminance contribution of signage to 0.3 fc at 350 feet from face of sign.

- The proposed signage locations and their placement would be in a manner that would prevent automobile headlight-related glare. For example, signage would be placed at a higher level than the roadway or perpendicular to headlights (i.e., signage placed on sky bridges).
- The proposed Project would include a plan to remove a number of billboards in LAWA's control and comply with other applicable requirements from the Department of City Planning.
- Digital displays signs would display static images only (i.e., restriction for any type of sign that contains images, text, parts, or illumination which flash, change, move, blink, or otherwise refresh in whole or in part).
- The digital displays would have the light emitting diodes (LEDs) aimed horizontally towards the street view using a cubic louvering system to help to limit light trespass, direct the visual impact of the display to the appropriate audience, and direct light away from flight paths and highly focused driving tasks. Refer to Figure IV.C-2 for a typical light emitting diode beam spread and plan view of the layout for the directionality of the LEDs associated with the digital display signs.
- The proposed location of the two types of digital display signs - Controlled Refresh (CR) I and CR III - have been chosen being mindful of driver, pedestrian, ATC personnel and pilot safety.
- Digital display signs shall be limited in their refresh events. CR I images would refresh (change) no more than one event every eight seconds (with the exception being Parking Structure 1 which would refresh every 14 seconds). CR III images would refresh no more than one event every 12 hours. In addition, the CR III images on the sky bridges would refresh simultaneously no more than one event every 12 hours.
- Digital signage would be subject to limits on brightness levels (i.e., 4,500 cd/m² during the daytime and 300 cd/m² during the nighttime) and equipped with sensors that modify the brightness of the sign in response to ambient lighting conditions.
- Dim lights of digital displays slowly at dusk over a 45 minute fade rate, controlled by an astronomical time clock. The transition from day to nighttime brightness would be required to occur gradually, to prevent a sudden change in perceptible brightness levels by pedestrians and motorists.
- Digital displays would not include large areas of reflective elements and have a contrast ratio of less than 30:1 to eliminate glare.
- Supergraphic signage over 20-feet tall at parking structure locations would be illuminated with LED or metal halide floodlights consisting of adjustable floodlight fixtures mounted at the top of the signage element with a locking knuckle precisely aimed at the signage to eliminate any chance of throwing light into the flight path. Cantilever arms, louvers, barn doors and/or glare shields would be used to allow the fixture to be aimed towards the supergraphic to illuminate the signage element exclusively.
- Supergraphic signage over 20-feet tall on terminal facades above canopy locations would be illuminated with LED or metal halide floodlights mounted to the adjacent canopy. Adjustable floodlight fixtures would be mounted above the canopy with a locking knuckle to precisely aim at the signage and eliminate any chance of throwing light into the flight path. Cantilever arms, louvers, barn doors, and/or glare shields would be used to allow the fixture to be aimed towards the supergraphic to illuminate the signage element exclusively.



EXAMPLE SITE VIEW



Source: Lighting Design Alliance, Inc., LAX - Sign Use District Sign Lighting Survey, July 5, 2012.

- Maximum vertical luminance of illuminated supergraphic signage would be 5 to 7 fc during nighttime.
- Supergraphics/wall signs/column wraps would have matte finishes, which would prevent glare from the light fixtures.

Applicable LAX Master Plan Commitments

LU-4. Neighborhood Compatibility Program. Ongoing coordination and planning will be undertaken by LAWA to ensure that the airport is as compatible as possible with surrounding properties and neighborhoods. Measures to enforce this policy will include: 1) Along the northerly and southerly boundary areas of the airport, LAWA will provide and maintain landscaped buffer areas that will include setbacks, landscaping, screening or other appropriate view-sensitive uses with the goal of avoiding land use conflicts, shielding lighting, enhancing privacy and better screening views of airport facilities from adjacent residential uses. Use of existing facilities in buffer areas may continue as required until LAWA can develop alternative facilities. 2) Locate airport uses and activities with the potential to adversely affect nearby residential land uses through noise, light spill-over, odor, vibration and other consequences of airport operations and development as far from adjacent residential neighborhoods as feasible. 3) Provide community outreach efforts to property owners and occupants when new development on airport property is in proximity to and could potentially affect nearby residential uses.

DA-1. Provide and Maintain Airport Buffer Areas. Along the northerly and southerly boundary areas of the airport, LAWA will provide and maintain landscaped buffer areas that will include setbacks, landscaping, screening or other appropriate view-sensitive improvements with the goals of avoiding land use conflicts, shielding lighting, enhancing privacy and better screening views of airport facilities from adjacent residential uses. Use of existing facilities in buffer areas may continue as required until LAWA can develop alternative facilities.

LI-2. Use of Non-Glare Generating Building Materials. Prior to approval of final plans, LAWA will ensure that proposed LAX facilities will be constructed to maximize use of non-reflective materials and minimize use of undifferentiated expanses of glass.

LI-3. Lighting Controls. Prior to final approval of plans for new lighting, LAWA will conduct reviews of lighting type and placement to ensure that lighting will not interfere with aeronautical lights or otherwise impair Airport Traffic Control Tower or pilot operations. Plan reviews will also ensure, where feasible, that lighting is shielded and focused to avoid glare or unnecessary light spill-over. In addition, LAWA or its designee will undertake consultation in selection of appropriate lighting type and placement, where feasible, to ensure that new lights or changes in lighting will not have an adverse effect on the natural behavior of sensitive flora and fauna within the Habitat Restoration Area.

c. Project Impacts

i. Project Activities

The proposed Project entails the implementation of a Sign District at LAX to permit new off-site signs, which would result in establishment of new sources of light. New lighted off-site signs that would be allowed under the proposed Sign District include digital displays and externally lit supergraphics installed on parking structures and terminal buildings in the Landside Sub-Area. The lighting associated with the proposed signage that is the brightest and most prominent is associated with the digital displays. The proposed Project includes Project Design Features that have been incorporated into the Project that are specifically intended to reduce or avoid potential impacts related to artificial light and glare. Such Project Design Features for digital displays include directing inward and/or downward the lighting to minimize light spill-over, and requiring brightness limitations not exceed 4,500 cd/m² during the daytime and 300 cd/m² during the nighttime (which will be specified in the

Sign District sign ordinance). Another Project Design Feature that would avoid artificial light and glare impacts is that signage within the Airside Sub-Area would not include lighting.

Construction-related activities associated with the proposed Project would be relatively minor and involve securing framework for digital displays, welding of signage supports (i.e., hooks and/or railing systems), and sign installation. This would primarily occur during daytime hours so no lighting would be required. However, if nighttime construction occurs, additional lighting could be required. Nighttime construction lighting would likely consist of floodlights, which would be directed on the work area limiting spill-over.

ii. Potential Impacts

(1) Construction

Construction of the proposed Project would be minimal (mostly comprised of the one-time installation of hooks, railings, or frameworks that would take six hours to one week for sign installation, depending on the type of sign) and it is expected that a majority of the construction associated with the proposed Project would occur during daytime hours. Therefore, the construction of the proposed Project is not expected to change existing artificial light and glare within the Project site or surrounding area. To limit traffic disruptions, nighttime construction could occur as part of the Project. If nighttime construction occurs, additional lighting such as floodlights could be required. If floodlights are required for nighttime construction, the lights would be directed on the work area to limit spill-over. Additionally, the Project site is in an area with a high ambient lighting level associated with lighted airport facilities, street lighting, traffic, and the surrounding urban development. The use of floodlights would be similar to existing lighting and would not create a substantial increase in the intensity of light that could affect light-sensitive uses.

Artificial Light

Most construction activities would occur within the interior of the CTA and thus off-airport visibility would be limited. Only the installation of proposed digital display sign on Terminal 1 would be directly visible from the eastern Project boundary. The closest sensitive receptor to the eastern Project boundary is the Radisson Hotel located approximately 125 feet to the east of the Landside Sub-Area portion of the Project site and approximately 0.2 mile east of Terminal 1. It should be noted, that the Radisson Hotel has north and south facing hotel room windows and no hotel room windows face west toward the Project site. The next closest residence (sensitive receptor) is 0.4 mile northeast in the community of Westchester.

Additionally, as described previously, construction is likely to take place during the day. However, even if floodlights are used to install the signage on the east elevation of Terminal 1 or on any of the Airside Sub-Area structures or equipment at the nearest terminal (Terminal 1) to these receptors, Project construction lighting would not result in high-brightness illuminated surfaces that are directly visible from affected light-sensitive uses, including in the direct view of the Airport Traffic Control Tower that would affect ATC personnel or that would make it difficult for pilots to distinguish between the construction zone (such as an instance if floodlights are necessary) and aeronautical lights. Further, construction lighting would not result in substantial changes to existing artificial light conditions; nor would the lighting interfere with the performance of an off-airport activity; and any increase in lighting would not generate light intensity of more than 0.3 fc above ambient lighting as measured at the property line of a residential property. Therefore, impacts related to construction would be less than significant.

Glare

Construction of the proposed Project would occur in conjunction with safety procedures and policies associated with the safe operation of the airport. Therefore, construction of lighting or signage would be performed in a

manner that would not make it difficult for pilots to distinguish between the construction zone (such as an instance if floodlights are necessary) and aeronautical lights, or result in glare in the eyes of pilots that would impair their ability to operate aircraft, or result in glare in the eyes of ATC personnel in the tower. In addition, neither daytime nor nighttime glare impacts would be significant because neither construction equipment nor the proposed signage would incorporate substantial amounts of reflective materials in close proximity to glare-sensitive uses, including vehicle traffic, on- or off-airport, nor would the proposed signage be illuminated by high brightness lighting or special effects. Therefore, impacts related to construction would be less than significant.

(2) Operation

The proposed Project would be located within the interior area of LAX. The Project site has been subdivided into two sub-areas – the Landside and Airside. The viewers of the proposed signage within the Landside Sub-Area would be people within vehicles (private automobiles and public or private transportation) and pedestrians either entering or leaving the airport terminal areas, as well as employees (including ATC personnel in the Airport Traffic Control Tower) that work at LAX. Within the Airside Sub-Area, observers of the proposed signage include passengers traveling into or out of LAX with views from the terminal gate windows and from within aircraft, as well as pilots and employees associated with airport operations occurring on the Airside Sub-Area. As potential sensitive receptors (such as residences and hotel guests) are located in the areas surrounding the Project site, the following analysis addresses views and potential impacts associated with the two Project sub-areas from the surrounding areas relative to artificial light and glare.

(a) On-Site Views

Landside Sub-Area

The proposed Project would include a sign ordinance which would govern the type and size of allowable off-site signs and their placement throughout the Project site. The sign ordinance associated with the proposed Project would contain provisions that establish regulations such as sign types, number of signs, sign dimensions, sign placement, sign illumination/brightness levels, sign motion/animation, sign content, etc. The regulations of the proposed Sign District would supersede the regulations set forth in the LAMC.

In addition, the proposed Project includes several Project Design Features (refer to Section 2(b), above for the complete list) that have been incorporated into the Project that are specifically intended to reduce or avoid potential impacts related to artificial light and glare, such as the proposed locations of the two types of digital display signs - CR I and CR III - have been chosen being mindful of driver, pedestrian, ATC personnel, and pilot safety. For example, in areas within the Landside Sub-Area (i.e., CTA) where traffic is moving, CR III digital display signs are proposed because they would have no more than one refresh event every 12 hours. In contrast, areas within the CTA not directly in the line-of-sight of moving traffic (such as on the surfaces of parking structures parallel to the roadway) are proposed locations for CR I digital display signs, which have a controlled refresh of no more than one refresh event every eight seconds. The exception is the proposed location of the CR I digital display sign on the east elevation of Parking Structure 1 which would refresh every 14 seconds (refer to Figures II-5 to II-12 and II-14 in Chapter II, Project Description). This location is at the southwestern area of a traffic signal (a three-way stop associated with westbound traffic on World Way and northbound and southbound traffic on Sky Way/96th Street at the entrance to the CTA). In addition, in order to be mindful of pilot and surrounding neighborhood views, the proposed Project includes a Project Design Feature that no digital display signs are proposed in direct view of the Airside Sub-Area. All Landside Sub-Area signage, including digital displays, would be located at a lower elevation from the Airport Traffic Control Tower and thus none would be in direct line-of-sight from the tower.

Artificial Light

The existing illumination sources within the Landside Sub-Area (i.e., the CTA) includes street lights, security lighting, signage lights, roof perimeter lights, parapet lights, parking structure interior and exterior lighting, and terminal entrance lights. Lighting associated with the upper roadway (departure area) and lower roadway (arrival area) is similar; however, the lighting on the upper level is more open with fewer structures to shield the lighting. Illumination sources within the Landside Sub-Area also include interior lighting emitting from the terminals and parking structures. The roof perimeter and parapet lights, shielded and directed down, generally do not spill over more than 30 feet onto the surrounding areas. Interior light emitting from the terminals and parking structures does not generally spill over beyond these structures.

Proposed signage within the Landside Sub-Area includes lighting associated with the digital display signs and supergraphics, which would be an additional source of light. Although the CTA does not contain traditional light-sensitive receptors, operators of vehicles could perceive additional artificial light associated with the proposed Project signs. However, the Project area is already characterized by high ambient light levels. The proposed Project includes the several Project Design Features that are specifically intended to reduce or avoid potential impacts related to artificial light: diodes associated with the digital displays would be pointed down and towards the airport roadways and would have dimming capacity, that would ensure compliance with limitations on brightness levels specified in the Sign District sign ordinance (i.e., brightness levels would not exceed 4,500 cd/m² during the daytime and 300 cd/m² during the nighttime); accent lighting of supergraphics would use adjustable fixtures to aim the signage and eliminate any chance of throwing light into the flight path or create skyglow; and, the use of louvers, barn doors, and glare shields would allow the fixture to be aimed towards the supergraphic to illuminate the signage element exclusively. These Project Design Features would comply with the applicable LAX Master Plan Commitments LU-4 and DA-1 (i.e., no light spill-over and shielding of lighting).

With implementation of the Project Design Features, Project lighting would not spill off the Project site to affect any adjacent light-sensitive areas due to the location of the digital displays within the Project site, orientation parallel to the terminals, and directional LEDs with louvers. In addition, the closest residence (sensitive receptor) to the nearest proposed digital display (on eastern elevation of Terminal 1) is 0.4 mile northeast in the community of Westchester. The Project Design Feature of dimming LED digital display signs at night would allow tuning of the emitted light from the signage to be below the designated threshold of 0.3 fc above ambient as measured at 350 feet from the face of the sign. Therefore, lighting associated with proposed signage would not be a substantial new source of new artificial light that could substantial increase or change the existing ambient light levels of the CTA (refer to Figure IV.C-3 through Figure IV.C-6). In addition, by limiting brightness and illumination to the area at and immediately adjacent to the signage, the proposed Project would not make it difficult for pilots to distinguish between existing lights and aeronautical lights or otherwise impair their ability to operate aircraft. In addition, there would be no new lighting that would be in the direct view of the Airport Traffic Control Tower. The proposed Project would comply with LAX Master Plan Commitment LI-3, which would ensure that type and placement of lighting would not interfere with aeronautical lights or otherwise impair their ability to operate or guide aircraft. Therefore, impacts would be less than significant.

The possible addition of lighting associated with supergraphics on the terminal walls would contribute to the perception of higher light levels, safety, and vertical brightness, although measured footcandle levels may not increase substantially. With implementation of Project Design Features associated with supergraphics (i.e., accent lighting would use adjustable fixtures, as well as use of louvers, barn doors, and glare shields), artificial light associated with the proposed supergraphics would be limited in brightness, illumination, and to the area at and immediately adjacent to the signage. As with digital display signs, lighting associated with supergraphics would not spill off the Project site to affect any adjacent light-sensitive areas due to the location of the signage within the Project site, orientation parallel to the terminals, and Project Design Features (i.e., directional and adjustable lighting fixtures and shielding) and applicable LAX Master Plan Commitments LU-4 and DA-1 (i.e., no light



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Source: Gensler, 2012.



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spill-over and shielding of lighting). In addition, the closest residence (sensitive receptor) to the nearest proposed digital display (on eastern elevation of Terminal 1) is 0.4 mile northeast in the community of Westchester. In addition, based on the location of signage (within the CTA) and that any additional artificial light would be limited to, or immediately adjacent to, the sign, the proposed Project would not be in the direct view of ATC personnel or pilots and the make it difficult for pilots or ATC personnel to distinguish between existing lights and aeronautical lights or otherwise impair their ability to operate or guide aircraft. In addition, there would be no new lighting that would be in the direct view of the Airport Traffic Control Tower. The proposed Project would comply with LAX Master Plan Commitment LI-3, which would ensure that type and placement of lighting would not interfere with aeronautical lights or otherwise impair their ability to operate or guide aircraft. Therefore, impacts would be less than significant.

In summary, as described in the analysis above, lighting associated with the proposed Project would not generate light intensity of more than 0.3 fc above ambient lighting as measured at the property line of a residential property, or exceed 4,500 cd/m² during the daytime and 300 cd/m² during the nighttime. With implementation of Project Design Features, lighting associated with proposed Project would not be a substantial new source of new artificial light that could substantially increase or change the existing ambient light levels of the CTA, lighting would not spill off the Project site to affect any adjacent light-sensitive areas, and the proposed Project would not make it difficult for pilots or ATC personnel to distinguish between existing lights and aeronautical lights or otherwise impair their ability to operate or guide aircraft. In addition, there would be no new lighting that would be in the direct view of the Airport Traffic Control Tower. Therefore, impacts would be less than significant.

Glare

As shown in Figure IV.C-2, a Project Design Feature for digital displays would be implemented that would consist of having the diodes aimed horizontally towards the internal airport roadways and use a cubic louvering system to aim the light downward, thereby limiting any undesirable glare. Lighting or signage within the Landside Sub-Area would not extend above the heights of structures within the CTA (i.e., signs may be affixed to, but would not extend above, parking structures and terminal buildings), and would not be in the direct view of pilots or the Airport Traffic Control Tower. Therefore, the proposed signage would not result in glare in the eyes of pilots or ATC personnel that would impair their ability to operate or guide aircraft.

During the day, the proposed displays would not cause glare because the intensity of the sign will not contrast with the brightness of the sun. Typical daylight levels are between 6,000 fc to 8,000 fc, depending on cloud coverage. The additional 0.3 fc that the sign would generate would not be noticeable during the day. At night, however, light levels vary from 0.1 fc to 58.5 fc along the path of traffic. An additional 0.3 fc would be more important at nighttime light levels (as discussed under artificial light, above).

In addition, by design, signage does not include large areas of reflective elements, because they would detract from the visibility of the signage. The proposed Project includes as a Project Design Feature the compliance with applicable LAX-related plans and LAX Master Plan Commitment LI-2 regarding use of non-reflective building materials. Further, other Project Design Features, such as locating signage that include framework or structures that have the potential to produce glare (such as digital displays) to locations above the headlight levels of oncoming vehicles, would be implemented to reduce or avoid potential impacts related to glare. Therefore, neither daytime nor nighttime glare impacts would be significant because the proposed signage would not incorporate substantial amounts of reflective materials in close proximity to glare-sensitive uses, including vehicle traffic, on- or off-airport, nor would the proposed signage be illuminated by high brightness lighting or special effects.

*Airside Sub-Area**Artificial Light*

Within the Airside Sub-Area, the existing illumination sources include airport beacons, approach lighting, runway/taxiway guidance lighting, runway end identifier lights, apron/ramp floodlighting, and ground lighting/markings. Lighting associated with the airfield area is generally low to the ground and low in intensity. Illumination sources within the Airside Sub-Area also include interior lighting emitting from the terminals, as well as from the hangar facilities immediately west of the CTA. The proposed Project includes a Project Design Feature that prohibits electronic or light enhanced signage within the Airside Sub-Area. Therefore, the proposed Airside Sub-Area signage would not change existing artificial light conditions, and no impact is anticipated.

Glare

The proposed Project includes a Project Design Feature that prohibits electronic or light enhanced signage in the Airside Sub-Area. In addition, the signage proposed on the passenger boarding bridges would not involve highly reflective surfaces as signage, by design, does not include large areas of reflective elements, because they would detract from the visibility of the signage. Proposed signage would not incorporate reflective building materials that could be a source of glare and the Project would comply with applicable LAX-related plans and LAX Master Plan Commitment LI-2 regarding use of non-reflective building materials. In addition, the location of airside signage (i.e., on passenger boarding bridges) is such that the new off-site signs would not make it difficult for pilots to distinguish between existing lights and aeronautical lights, or result in glare in the eyes of pilots that would impair their ability to operate aircraft. Therefore, impacts would be less than significant.

(b) Off-Airport Views

Northern Boundary

As indicated above, the closest sensitive receptors to the northern Project boundary are residential uses located approximately 0.4 mile northeast to 0.6 mile north in the community of Westchester. An earthen berm and opaque perimeter fence are located between most of the LAX boundary and the community, thus blocking direct views of the Project site from Westchester Parkway. Farther east, the Westchester Golf Course and a 12-foot-high sound wall atop an 8-foot-high berm buffer views of the airport from residential uses north and immediately east of the golf course. The proposed signs at Terminals 1 through 3 and the TBIT Terminal of the Airside Sub-Area (i.e., off-site signs on passenger boarding bridges from those terminals) would be the closest proposed signage to the community along the LAX northern boundary. However, the proposed Project includes a Project Design Feature that would prohibit electronic or light enhanced signage within the Airside Sub-Area. Therefore, lighting associated with the proposed signs on the Landside Sub-Area would be the only signs that could potentially add to the ambient glow of the Project site and immediate surrounding area. However, a majority of the Project light sources within the Landside Sub-Area are interior to LAX and would not be visible from the residential uses located to the north and northeast due to distance (closest residences would be 0.4 mile northeast to 0.6 mile north of the Project site), as well as the presence of intervening airport-related structures. The only lighted signage within the Landside Sub-Area that is not interior to the CTA is the proposed digital display on Terminal 1. This proposed digital display is located on the eastern facade of the terminal and would not be visible from the residential communities to the north. Therefore, based on location of the signage, distance and intervening structures, no substantial change in lighting is anticipated. Given the distance, limited visibility, and use of non-reflective materials, the signs would not be a source of glare for the communities to the north. In addition, to limit potential impacts on surrounding off-airport views, the proposed Project includes a Project Design Feature that prohibits new off-site signage along the Project boundary.

Artificial Light

Given that the Project area is already characterized by high ambient light levels, as shown in Figure IV.C-1, a change in brightness and light trespass would not occur, and proposed Project contributions to increased ambient glow would not be perceptible from the residential uses located approximately 0.4 mile northeast and 0.6 mile north. Therefore, the proposed Project would not result in substantial changes to existing artificial light conditions, nor would the lighting interfere with the performance of an off-airport activity. Any increase in lighting would not generate light intensity of more than 0.3 fc above ambient lighting as measured at the property line of a residential property. In addition, the Project would comply with applicable LAX-related plans and LAX Master Plan Commitments LU-4, DA-1 and LI-3 described under Section 2(b) above, and implement Project Design Features regarding restrictions on light spill-over and limiting maximum brightness levels (i.e., brightness levels would not exceed 4,500 cd/m² during the daytime and 300 cd/m² during the nighttime). The proposed Project includes a Project Design Feature that would prohibit electronic or light enhanced signage within the Airside Sub-Area, and given the distance of the proposed signs on the Landside Sub-Area to the closest sensitive receptors and the presence of intervening structures, no light spill-over onto adjacent properties would occur. Therefore, impacts would be less than significant.

Glare

By design, signage does not include large areas of reflective elements, because they would detract from the visibility of the signage. Similar to artificial light, with implementation of Project Design Features that would limit the location of the signage and illumination, brightness or special effects associated with lighting, as well as distance and intervening structures, neither daytime nor nighttime glare impacts would be significant because the proposed signage would not incorporate substantial amounts of reflective materials in close proximity to glare-sensitive uses, including off-airport vehicle traffic and residential communities. In addition, the proposed Project includes a Project Design Feature that would prohibit electronic or light enhanced signage within the Airside Sub-Area. Therefore, the proposed Airside Sub-Area signage would not have lighting or highly reflective surfaces in compliance with applicable LAX-related plans and LAX Master Plan Commitment LI-2 regarding use of non-reflective building materials. Therefore, impacts would be less than significant.

Southern Boundary

As indicated previously, the nearest sensitive receptors to the southern Project boundary are residential uses located approximately 0.5 mile south in the City of El Segundo. The proposed signage at Terminals 4 through 8 and the TBIT Terminal associated with the Airside Sub-Area would be the closest proposed signs to the southern boundary. However, the proposed Project includes a Project Design Feature that would prohibit electronic or light enhanced signage within the Airside Sub-Area. Therefore, lighting associated with the proposed signs on the Landside Sub-Area would be the only signs that could add to the ambient glow of the Project site and the surrounding area. Although the proposed Project signage within the Landside Sub-Area would potentially be an additional light source, the signage within the Landside Sub-Area would not be above the building facades and would be directed inward toward the CTA area. No Landside Sub-Area signage would be visible from the residential uses located to the south. Given the distance, limited visibility, and use of non-reflective materials, the signs would not be a source of glare for the communities to the south, and no impact is anticipated. In addition, to limit potential impacts on surrounding off-airport views, the proposed Project includes a Project Design Feature that prohibits new off-site signage along the Project boundary.

Artificial Light

Given that the Project area is already characterized by high ambient light levels, as shown in Figure IV.C-1, a change in brightness and light trespass would not occur, and Project contributions to increased ambient glow

would not be perceptible from the residential uses located approximately 0.5 mile to the south. Therefore, the Project would not result in substantial changes to existing artificial light conditions; nor would the lighting interfere with the performance of an off-airport activity; and any increase in lighting would not generate light intensity of more than 0.3 fc above ambient lighting as measured at the property line of a residential property. In addition, the Project would comply with applicable LAX-related plans and LAX Master Plan Commitments LU-4, DA-1 and LI-3 described under Section 2(b) above, and implement Project Design Features regarding restrictions on light spill-over and limiting maximum brightness levels (i.e., brightness levels would not exceed 4,500 cd/m² during the daytime and 300 cd/m² during the nighttime). The proposed Project includes a Project Design Feature that would prohibit electronic or light enhanced signage within the Airside Sub-Area, and given the distance of the proposed signs on the Landside Sub-Area to the closest sensitive receptors, the presence of intervening structures, and the implementation of Project Design Features, no light spill-over onto adjacent properties would occur. Therefore, impacts would be less than significant.

Glare

By design, signage does not include large areas of reflective elements, because they would detract from the visibility of the signage. Similar to artificial light, with implementation of Project Design Features that would limit the location of the signage and illumination, brightness or special effects associated with lighting, as well as distance and intervening structures, neither daytime nor nighttime glare impacts would be significant because the proposed signage would not incorporate substantial amounts of reflective materials in close proximity to glare-sensitive uses, including off-airport vehicle traffic and residential communities. In addition, the proposed Project includes a Project Design Feature that would prohibit electronic or light enhanced signage within the Airside Sub-Area. Therefore, the proposed Airside Sub-Area signage would not have lighting or highly reflective surfaces in compliance with applicable LAX-related plans and LAX Master Plan Commitment LI-2 regarding use of non-reflective building materials. Therefore, impacts would be less than significant.

Eastern Boundary

The eastern boundary of the Project site is located approximately 125 feet from the nearest sensitive receptor, hotel guests associated with the Radisson Hotel. Digital display signs that are proposed on the east elevations of Terminal 1, first CTA sky bridge, and Parking Structure 1 would be the closest proposed signs to the Radisson Hotel (approximately 0.2 mile). While the proposed signage on the sky bridge and east elevation on Terminal 1 would be potentially visible from the hotel, due to intervening structures (including a LAWA office building and the elevated airport roadway for departures) and vegetation, the proposed digital display on Parking Structure 1 is not expected to be visible. The Radisson Hotel has no hotel room windows facing west toward the Project site. Therefore, the Radisson Hotel does not have direct views of the Project site. The digital displays proposed on the sky bridge and Terminal 1 would be CR III, which has an image refresh rate of no more than once every 12 hours. Figure IV.C-7 shows a view of the Project site with and without the digital display sign proposed on Terminal 1 from the east side of Sepulveda Boulevard at Century Boulevard. Parking Structure 1 is approximately 0.2 mile and the first sky bridge is approximately 0.2 from Sepulveda Boulevard, and thus would only be seen from a distance. Figure IV.C-6 shows a view of Parking Structure 1 and the first sky bridge from the eastern end of the parking lot associated with the Clifton A. Moore Administration Building. Further, as indicated above, Project Design Features have been made part of the proposed Project to avoid or reduce potential impacts, and include: aiming the diodes associated with the digital display signs downward and to the side towards the internal airport roadways in order to minimize uplight; and, a cubic louvering system would also be used to aim the light downward and minimize the instance of glare. Given that the Project site is already characterized by high ambient light levels, as shown in Figure IV.C-7 and Figure IV.C-8, a change in brightness and light trespass would not occur. In addition, to limit potential impacts on surrounding off-airport views, the proposed Project includes a Project Design Feature that prohibits new off-site signage along the Project boundary.



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Source: Gensler, 2012.



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Source: Gensler, 2012.

Artificial Light

The Project area is already characterized by high ambient light levels, as shown in Figure IV.C-7 and Figure IV.C-8. In addition, the diodes associated with the digital displays would be pointed down and towards the airport roadways, and lighting associated with proposed signage would not add to the ambient glow of the area that would represent a substantial change in brightness levels as seen from adjacent sensitive uses and a change in brightness and light trespass would not occur. The proposed Project's contribution to increased ambient glow would not likely be perceptible from the nearest sensitive receptor (Radisson Hotel) located approximately 125 feet to the east of the Landside Sub-Area portion of the Project site. Therefore, the proposed Project would not result in substantial changes to existing artificial light conditions; nor would the lighting interfere with the performance of an off-airport activity; and any increase in lighting would not generate light intensity of more than 0.3 fc above ambient lighting as measured at the property line of a residential property. In addition, the Project would comply with applicable LAX-related plans and LAX Master Plan Commitments LU-4, DA-1 and LI-3 described under Section 2(b) above, and implement Project Design Features regarding restrictions on light spill-over and limiting maximum brightness levels (i.e., brightness levels would not exceed 4,500 cd/m² during the daytime and 300 cd/m² during the nighttime). The proposed Project includes a Project Design Feature that would prohibit electronic or light enhanced signage within the Airside Sub-Area, and given the distance of the proposed signs on the Landside Sub-Area to the closest sensitive receptors, and the implementation of Project Design Features, no light spill-over onto adjacent properties would occur. Therefore, impacts would be less than significant.

Depending on weather conditions, airplanes typically land at LAX from an easterly direction. As such, signage on the eastern elevations of the terminals, sky bridges, and parking structures could potentially be visible to approaching pilots. The runways are to the north and south of the Project site. In addition, the CTA is currently an area of high illumination. This lighting does not interfere with the nighttime visibility of ATC personnel and incoming pilots, or interfere with lighting used to guide aircraft such as approach lighting, runway/taxiway guidance lighting, runway end identifier lights, and ground lighting/markings. Additionally, implementation of the Project Design Features that include directing the diodes associated with the digital displays down and towards the airport roadways, and floodlights on the supergraphics would be aimed directly at the signage they are designed to illuminate, which would limit light trespass. Lighting associated with proposed signage would not represent a substantial change in brightness levels within the CTA. Therefore, the Project would not result in light impact on pilots that could impair aviation safety, and impacts would be less than significant.

Glare

By design, signage does not include large areas of reflective elements, because they would detract from the visibility of the signage. Similar to artificial light, with implementation of Project Design Features that would limit the location of the signage and illumination, brightness or special effects associated with lighting, as well as distance and intervening structures, neither daytime nor nighttime glare impacts would be significant because the proposed signage would not incorporate substantial amounts of reflective materials in close proximity to glare-sensitive uses, including off-airport vehicle traffic and residential communities. The eastern boundary of the Project site has very little area associated with the Airside Sub-Area (only the eastern elevation of Terminal 1 gates). In addition, the proposed Project includes a Project Design Feature that would prohibit electronic or light enhanced signage within the Airside Sub-Area. In addition, the Project would comply with applicable LAX-related plans and LAX Master Plan Commitment LI-2 described above regarding use of non-reflective building materials. Therefore, the Airside Sub-Area would not have lighting or highly reflective surfaces and impacts would be less than significant.

Western Boundary

As discussed previously, there are no sensitive receptors within approximately one mile west of the Project site. To the immediate west of the Project site are hangars and various structures associated with LAX airport operations. Proposed signage on the Airside Sub-Area would not include any lighting or be a substantial source of glare. Therefore, lighting associated with the proposed signs on the Landside Sub-Area would be the only signs that could add to the ambient glow of the Project site and the surrounding area. Although the proposed Project signage within the Landside Sub-Area would potentially be an additional light source, implementation of Project Design Features would prohibit signage within the Landside Sub-Area to extend above the building facades and the signs and lighting would be directed inward toward the CTA area (which is the intended audience of the signage) and therefore not visible from receptors to the west. In addition, to limit potential impacts on surrounding off-airport views, the proposed Project includes a Project Design Feature that prohibits new off-site signage along the Project boundary.

Artificial Light

Given that the Project area is already characterized by high ambient light levels, a change in brightness and light trespass would not occur, and Project contributions to increased ambient glow would not be perceptible from the nearest sensitive receptor (the Habitat Restoration Area within the Los Angeles/El Segundo Dunes) located approximately one mile to the west; there are no residential properties to the west of the Project site. Therefore, the Project would not result in substantial changes to existing artificial light conditions; nor would the lighting interfere with the performance of an off-airport activity; and any increase in lighting would not generate light intensity of more than 0.3 fc above ambient lighting as measured at the property line of a residential property. In addition, the Project would comply with applicable LAX-related plans and LAX Master Plan Commitments LU-4, DA-1 and LI-3 described under Section 2(b) above, and implement Project Design Features regarding restrictions on light spill-over and limiting maximum brightness levels (i.e., brightness levels would not exceed 4,500 cd/m² during the daytime and 300 cd/m² during the nighttime). The proposed Project includes a Project Design Feature that would prohibit electronic or light enhanced signage within the Airside Sub-Area, and given the distance of the proposed signs on the Landside Sub-Area to the closest sensitive receptors, and the implementation of Project Design Features, no light spill-over onto adjacent properties would occur. Given that no sensitive receptors exists to the west, along with distance and the presence of intervening structures, no light spill-over onto adjacent properties would occur. No impact is anticipated.

During certain weather conditions, airplanes land at LAX from a westerly direction. Signage located within the Airside Sub-Area would not be lit and therefore, would not result in a light impact on pilots. Therefore, no impact is anticipated.

Glare

By design, signage does not include large areas of reflective elements, because they would detract from the visibility of the signage. Similar to artificial light, with implementation of Project Design Features that would limit the location of the signage, illumination and brightness associated with lighting within the CTA, as well as distance and intervening structures, neither daytime nor nighttime glare impacts would be significant because the proposed signage would not incorporate substantial amounts of reflective materials in close proximity to glare-sensitive uses, including vehicle traffic on- or off-airport, and air traffic. In addition, the proposed Project includes a Project Design Feature that would prohibit electronic or light enhanced signage within the Airside Sub-Area. In addition, the Project would comply with applicable LAX-related plans and LAX Master Plan Commitment LI-2 described above regarding use of non-reflective building materials. Therefore, the proposed Airside Sub-Area signage would not have lighting or highly reflective surfaces and impacts would be less than significant.

3. CUMULATIVE IMPACTS

The existing level of ambient lighting in the Project area is typical of a highly urbanized area and due to the high density of development already present. As indicated above, no significant light or glare impacts would occur from construction or operation of the proposed Project. Several related projects are currently planned or are underway on the airport property, as discussed in Chapter III, Environmental Setting, and would result in an increase in ambient nighttime lighting levels and potentially generate glare in the Project area. Such projects include the Bradley West Project, the Midfield Satellite Concourse, the "New Face" of the CTA Improvements/Enhancements, the Central Utility Plant Replacement Project, the LAX Specific Plan Amendment Study, and the LAX Northside project. With the exception of LAX Northside, these projects are located within the CTA or within the Airside Sub-Area and developed portion of the airfield and would occur in the context of infill development within a lit and glare-generating urban environment. The conversion of the largely vacant LAX Northside would result in a noticeable increase in ambient light and glare as seen from existing adjacent light-sensitive uses in the Westchester area. However, the LAX Northside area is subject to height restrictions, setback requirements, and lighting and landscape guidelines and requirements contained in the LAX Northside Design Plan and Development Guidelines and the LAX Specific Plan, with the goal of avoiding land use conflicts, creating a visually open appearance, and promoting design sensitivity to the residential interface, enhancing privacy. Compliance with regulatory requirements and applicable Project Design Features, including LAMC Sec. 93.0117, which prohibits light spill-over and requires that light sources be shielded and directed downward, and LAX Master Plan Commitments LI-3 and DA-1, would ensure that cumulative projects would not result in a substantial change to existing artificial light conditions, artificial lighting that would interfere with the performance of an on- or off-airport activity, or an increase in lighting that would generate light intensity of more than 0.3 fc as measured at the property line of a residential property or make it difficult for pilots or ATC personnel to distinguish between existing lights and aeronautical lights or otherwise impair their ability to operate or guide aircraft. In addition, compliance with regulatory requirements and applicable Project Design Features, including LAX Master Plan Commitment LI-2, would ensure that cumulative projects would not result in substantial amounts of reflective materials in close proximity to glare-sensitive uses over existing conditions. Therefore, cumulative projects, in combination with the proposed Project, would not result in significant cumulative artificial light and glare impacts.

4. PROJECT DESIGN FEATURES AND MITIGATION MEASURES

As listed in Section 2(b) above, the following Project Design Features, including applicable LAX Master Plan Commitments, would reduce or avoid potential artificial light and glare impacts associated with the proposed Project:

Project Design Features

- The allowable locations and sizes of signs have been designed to limit visibility from off-airport locations (i.e., surrounding communities) and to not visually or otherwise negatively affect airport operations or affect or alter historical buildings within LAX.
- No new off-site signage would be placed along the Project boundary, and no electronic or light enhanced signage would be visible from the adjacent residential areas (i.e., community of Westchester to the north and City of El Segundo to the south).
- No electronic or light enhanced signage would be installed within or be visible from the Airside Sub-Area.
- Off-site signs would not be permitted on a number of buildings within the Project site, including the Theme Building, the Airport Traffic Control Tower, and the Clifton A. Moore Administration Building (including the former Airport Traffic Control Tower [1961]).

- Limit illuminance contribution of signage to 0.3 fc at 350 feet from face of sign.
- The proposed signage locations and their placement would be in a manner that would prevent automobile headlight-related glare. For example, signage would be placed at a higher level than the roadway or perpendicular to headlights (i.e., signage placed on sky bridges).
- The proposed Project would include a plan to remove a number of billboards in LAWA's control and comply with other applicable requirements from the Department of City Planning.
- Digital displays signs would display static images only (i.e., restriction for any type of sign that contains images, text, parts, or illumination which flash, change, move, blink, or otherwise refresh in whole or in part).
- The digital displays would have the LEDs aimed horizontally towards the street view using a cubic louvering system to help to limit light trespass, direct the visual impact of the display to the appropriate audience, and direct light away from flight paths and highly focused driving tasks. Refer to Figure IV.C-2 for a typical light emitting diode beam spread and plan view of the layout for the directionality of the LEDs associated with the digital display signs.
- The proposed location of the two types of digital display signs - CR I and CR III - have been chosen being mindful of driver, pedestrian, ATC personnel and pilot safety.
- Digital display signs shall be limited in their refresh events. CR I images would refresh (change) no more than one event every eight seconds (with the exception being Parking Structure 1 which would refresh every 14 seconds). CR III images would refresh no more than one event every 12 hours. In addition, the CR III images on the sky bridges would refresh simultaneously no more than one event every 12 hours.
- Digital signage would be subject to limits on brightness levels (i.e., 4,500 cd/m² during the daytime and 300 cd/m² during the nighttime) and equipped with sensors that modify the brightness of the sign in response to ambient lighting conditions.
- Dim lights of digital displays slowly at dusk over a 45 minute fade rate, controlled by an astronomical time clock. The transition from day to nighttime brightness would be required to occur gradually, to prevent a sudden change in perceptible brightness levels by pedestrians and motorists.
- Digital displays would not include large areas of reflective elements and have a contrast ratio of less than 30:1 to eliminate glare.
- Supergraphic signage over 20-feet tall at parking structure locations would be illuminated with LED or metal halide floodlights consisting of adjustable floodlight fixtures mounted at the top of the signage element with a locking knuckle precisely aimed at the signage to eliminate any chance of throwing light into the flight path. Cantilever arms, louvers, barn doors and/or glare shields would be used to allow the fixture to be aimed towards the supergraphic to illuminate the signage element exclusively.
- Supergraphic signage over 20-feet tall on terminal facades above canopy locations would be illuminated with LED or metal halide floodlights mounted to the adjacent canopy. Adjustable floodlight fixtures would be mounted above the canopy with a locking knuckle to precisely aim at the signage and eliminate any chance of throwing light into the flight path. Cantilever arms, louvers, barn doors, and/or glare shields would be used to allow the fixture to be aimed towards the supergraphic to illuminate the signage element exclusively.
- Maximum vertical luminance of illuminated supergraphic signage would be 5 to 7 fc during nighttime.
- Supergraphics/wall signs/column wraps would have matte finishes, which would prevent glare from the light fixtures.

Applicable LAX Master Plan Commitments

LU-4. Neighborhood Compatibility Program. Ongoing coordination and planning will be undertaken by LAWA to ensure that the airport is as compatible as possible with surrounding properties and neighborhoods. Measures to enforce this policy will include: 1) Along the northerly and southerly boundary areas of the airport, LAWA will provide and maintain landscaped buffer areas that will include setbacks, landscaping, screening or other appropriate view-sensitive uses with the goal of avoiding land use conflicts, shielding lighting, enhancing privacy and better screening views of airport facilities from adjacent residential uses. Use of existing facilities in buffer areas may continue as required until LAWA can develop alternative facilities. 2) Locate airport uses and activities with the potential to adversely affect nearby residential land uses through noise, light spill-over, odor, vibration and other consequences of airport operations and development as far from adjacent residential neighborhoods as feasible. 3) Provide community outreach efforts to property owners and occupants when new development on airport property is in proximity to and could potentially affect nearby residential uses.

DA-1. Provide and Maintain Airport Buffer Areas. Along the northerly and southerly boundary areas of the airport, LAWA will provide and maintain landscaped buffer areas that will include setbacks, landscaping, screening or other appropriate view-sensitive improvements with the goals of avoiding land use conflicts, shielding lighting, enhancing privacy and better screening views of airport facilities from adjacent residential uses. Use of existing facilities in buffer areas may continue as required until LAWA can develop alternative facilities.

LI-2. Use of Non-Glare Generating Building Materials. Prior to approval of final plans, LAWA will ensure that proposed LAX facilities will be constructed to maximize use of non-reflective materials and minimize use of undifferentiated expanses of glass.

LI-3. Lighting Controls. Prior to final approval of plans for new lighting, LAWA will conduct reviews of lighting type and placement to ensure that lighting will not interfere with aeronautical lights or otherwise impair Airport Traffic Control Tower or pilot operations. Plan reviews will also ensure, where feasible, that lighting is shielded and focused to avoid glare or unnecessary light spill-over. In addition, LAWA or its designee will undertake consultation in selection of appropriate lighting type and placement, where feasible, to ensure that new lights or changes in lighting will not have an adverse effect on the natural behavior of sensitive flora and fauna within the Habitat Restoration Area.

With these Project Design Features and applicable LAX Master Plan Commitments, artificial light and glare impacts would be less than significant and no mitigation measures are required.

5. LEVEL OF SIGNIFICANCE AFTER MITIGATION

No significant unavoidable impacts related to artificial light and glare would occur as a result of construction or operation of the proposed Project; therefore, no additional mitigation is required and impacts would be less than significant.