

IV. Environmental Impact Analysis

D.2 Artificial Light and Glare

1. Introduction

This section describes the potential for artificial light sources associated with the Proposed Project to affect the visual environment. This section is based in part on the Convention and Event Center Project EIR Lighting Technical Report (Lighting Report) prepared by Arup North America, Ltd. dated February 2012. The Lighting Report is included as Appendix K of this Draft EIR.

There are two types of artificial, or man-made, light sources: (1) point sources (e.g., illuminated signage, street light poles, vehicle headlights); and (2) indirect sources that reflect light onto adjacent properties (e.g., reflective or light-colored surfaces). The effect produced by indirect light sources is commonly referred to as “glare.” Point sources are addressed in the analysis of nighttime illumination impacts, while indirect sources are addressed in the analysis of daytime and nighttime glare impacts.

Nighttime illumination of varying intensities is characteristic of most urban and suburban land uses, including those in the City of Los Angeles. New nighttime light sources have the potential to increase ambient nighttime illumination levels and result in spillover of light onto adjacent properties. These effects have the potential to interfere with certain functions including vision, sleep, privacy, and general enjoyment of the natural nighttime condition. 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. As discussed in more detail below, according to the L.A. CEQA Thresholds Guide, land uses that are considered sensitive to nighttime light include, but are not limited to, residential, some commercial and institutional uses, and natural areas. These land uses are recognized as light-sensitive because they are typically occupied by persons who have expectations for privacy during evening hours and who are subject to disturbance by bright light sources (or in the case of natural areas, biological resources that are subject to disturbance by bright light sources). The analysis below evaluates the potential for the nighttime lighting sources introduced by the Proposed Project to impact these light-sensitive uses.

Glare occurs during both daytime and nighttime hours. Daytime glare is caused by the reflection of sunlight or artificial light from highly polished surfaces, such as window

glass or reflective materials, and, to a lesser degree, from broad expanses of light-colored surfaces. Daytime glare generation is common in urban areas and is typically associated with mid- to high-rise buildings with exterior façades largely or entirely comprised of highly reflective glass or mirror-like materials from which the sun can reflect, particularly following sunrise and prior to sunset. Daytime glare generation is typically related to sun angles, although glare resulting from reflected sunlight can occur regularly at certain times of the year. Glare can also be produced during evening and nighttime hours by artificial light directed toward a light-sensitive land use. The analysis of glare provided below assesses the Proposed Project's potential impacts on glare-sensitive uses, which include light-sensitive uses and transportation corridors (i.e., roadways).

2. Environmental Setting

a. Existing On-Site Artificial Lighting Environment

The Project Site vicinity experiences high activity levels at night and during the day. Within the Project Site, visitors regularly attend events and performances at STAPLES Center, as well as conventions, conferences and meetings at the Los Angeles Convention Center (Convention Center). STAPLES Center plays host to professional basketball games, professional hockey games, and regular performances by traveling artists and shows.

Exterior lighting is used throughout the Project Site to illuminate buildings, parking facilities, pedestrian walkways, roadways, and signage, resulting in a range of low to high ambient nighttime light levels, depending on the specific location on-site. Consistent with its use as a major sports and entertainment complex, existing sources of light on the Project Site include illuminated façades and a mixture of illuminated changeable light-emitting diode (LED) signage and static illuminated signage. Low-level light sources are also present on the Project Site including street lights and parking, accent, wayfinding, and security lighting. The highest illuminance areas occur near the entrances of the Convention Center and STAPLES Center to direct visitors to lit gathering areas and serve as a means of wayfinding. STAPLES Center also includes distinguishing façade lighting to illuminate the architecture. The Convention Center has minimal façade lighting, but significant lighting for plazas, loading areas, pedestrian ways, and entrances.

Notable illuminated signage within the Project Site includes several animated and/or illuminated pole signs used to advertise events and sponsors. Specifically, the Convention Center has five 9-foot-tall by 15.5-foot wide changeable message pole signs that range in height from 65 to 85 feet above grade located along the Project Site perimeter (at the southeast corner of Chick Hearn Court and L.A. Live Way, the northeast corner of Pico Boulevard and L.A. Live Way, the northwest corner of Pico Boulevard and Figueroa Street,

the northwest corner of Venice Boulevard and Figueroa Street, and the northeast corner of Venice Boulevard and Convention Center Drive), while STAPLES Center signage includes two 140-foot tall animated and illuminated pole signs located adjacent to the I-10 Freeway and the SR-110 Freeway (at the northwest corner of Figueroa Street and Venice Boulevard and the northeast corner of Chick Hearn Court and L.A. Live Way, respectively). Notable illuminated signage also includes internally illuminated red identification lettering on the roof of STAPLES Center.

As viewed from surrounding locations, the nighttime lighting environment on the Project Site varies. Bright luminaries and surfaces from within the Project Site and L.A. LIVE (described below) can be viewed from a considerable distance by specific receptors. The following discussion focuses on the Project Site's nighttime lighting environment as seen from the thoroughfares immediately adjacent to the Project Site that largely define the public's perception of the Project Site: the SR-110 Freeway and Figueroa Street.

From the SR-110 Freeway, on-site light sources are prominent in only a few intermittent locations. The most notable light sources seen from this location are the aforementioned 140-foot-tall changeable message signs. These are corporate sponsor signs that announce events at STAPLES Center and the Convention Center. The illuminated façade of STAPLES Center and associated illuminated roof signage are also notable sources of artificial light as seen from the SR-110 Freeway. To a lesser degree, three-dimensional internally illuminated wall signs identifying the Convention Center's South Hall and West Hall are visible on the roof overhangs of the freeway-facing façades of each respective building. For viewers traveling south, similar signage is visible on the northern façade of the West Hall facing Chick Hearn Court. Views of lighting interior to the Convention Center site are limited due to the presence of tree clusters along the east side of the freeway and the elevated vantage point of the freeway in relation to the Project Site.

When approaching the Project Site along Figueroa Street from the north, the first view of the Project Site is the view of STAPLES Center, marked with large lit red letters high on the building and a bank of well lit windows on the mid level floors shining out over the street. Street lighting along Figueroa Street is strong with tall street lights and closely spaced pedestrian oriented lights below. Continuing south past STAPLES Center, Gilbert Lindsay Plaza is well lit and the pavement is readily discernible from Figueroa Street. Approaching the Convention Center's South Hall from this vantage point, a large LED freestanding sign announces the presence of the Convention Center and displays current events and advertising. There is a large curving translucent canopy over the entrance to the South Hall and bright lighting is apparent below this canopy. Above the canopy, the main structure of the South Hall is unlit. Continuing south along Figueroa Street the tall façade of the South Hall supports a Convention Center sign in dark letters against a lighter wall. Approaching the Project Site along Figueroa Street from the south, the first indication

of the Project Site are the large lit red letters of STAPLES Center. These are first visible from as far south as Washington Boulevard. The view of the Convention Center for those arriving from the south of Figueroa Street is the reverse of the view from the north described above.

Existing sources of glare on the Project Site include the façades of on-site structures, which include glass and painted metal surfaces; and reflective vehicle surfaces. The glass and metal building façades on the Project Site are not highly reflective; as such, glare levels emanating from the Project Site are relatively low. Similarly, the presence of vehicles on the Project Site does not generate excessive glare that is atypical for the area. Overall, the existing glare environment on the Project Site is not considered substantial and is characteristic of a developed, urban environment.

b. Existing Surrounding Artificial Lighting Environment

The Project Site is located in a highly urbanized area of Downtown Los Angeles. The area surrounding the Project Site includes a diverse mix of commercial/retail, office, hotel, entertainment, restaurant, auto-related, residential, hospital, educational, manufacturing, and parking uses. As discussed in detail below, existing nighttime lighting within the vicinity of the Project Site consists of streetlights; illuminated building signs; light spillage from high-rise buildings (particularly when viewing the Financial District to the north of the Project Site); security lighting; architectural lighting on building façades, in landscaped areas, and in pedestrian walkways and plaza; and vehicle headlights. Illuminated signage, including building identification signs and billboards or other types of advertising signage, and streetlights occur within commercial areas. Nighttime illumination is lowest in the area's primarily multi-family residential neighborhoods, as further described below.

Adjoining the Project Site to the north is the Los Angeles Sports and Entertainment District, commonly referred to as L.A. LIVE. Here, ornamental lighting in the street trees and large LED signs announce the gateway into L.A. LIVE. Looking into L.A. LIVE from Figueroa Street, visitors catch a glimpse of the bright courtyard entry into the larger central plaza, Nokia Plaza L.A. LIVE (Nokia Plaza), fronting on Chick Hearn Court. At times, large rotating klieg lights¹ beam up towards the night sky. L.A. LIVE features pedestrian-oriented ground level uses; substantial and large-scale signage, including illuminated and animated signage; moderate to bright lighting on buildings, particularly within the interior portions of

¹ *Klieg lights, commonly known as "spotlights" or "skytrackers," are powerful carbon arc lamps that emit high intensity light pointed upwards to light the sky.*

L.A. LIVE; and a high-rise tower, all of which promote an active, urban, pedestrian environment. The 54-story tower houses the JW Marriot Los Angeles at L.A. LIVE (Marriott Hotel), Ritz-Carlton Los Angeles at L.A. LIVE (Ritz Hotel), and Ritz-Carlton Residences at L.A. LIVE (Ritz Residences), with the residential units located on floors 27 through 52. Nighttime illumination within L.A. LIVE is characterized by lighting from storefront windows, interior lighting associated with the hotel and residential uses, illuminated signage, architectural lighting on buildings, and security lighting. Additionally, the Luxe Hotel located on the east side of Figueroa Street across from L.A. LIVE features distinguishing exterior façade lighting, illuminated signage including a large LED identification sign on the rooftop, interior lighting, and security lighting.

To the east of the Project Site, the Figueroa Street corridor is primarily characterized by surface parking lots and auto-related uses between Chick Hearn Court and Venice Boulevard, with the exception of the City Lights on Fig multi-family housing development at the corner of Pico Boulevard and Figueroa Street. The low- to mid-rise residential and auto-related structures use moderate levels of exterior lighting for security, signage, architectural highlighting, and wayfinding purposes. Nighttime illumination of the parking lots along the Figueroa Street corridor is characterized by light pole fixtures used for visibility and safety purposes. One notable source of artificial lighting to the east of the Project Site is the Met Lofts building at Flower and 11th Streets, an 8-story residential structure that features an animated LED light display on its northwest-facing façade.

Venice Boulevard forms a portion of the Project Site's southern boundary and is characterized by auto-related uses. Night-time illumination of the auto-related uses, namely an automobile sales lot, is characterized by light pole fixtures used for visibility and safety purposes. Night-time illumination of the I-110/SR-110 and I-10 Freeway interchange located southwest of the South Hall is characterized by light generated by vehicle headlights, light pole fixtures utilized for visibility and safety purposes, and illuminated signage. Two multi-family residential buildings located inside the northern loop of the I-110/SR-110 and I-10 Freeway interchange also generate low levels of exterior lighting for security, architectural highlighting, and wayfinding purposes.

To the west, the SR-110 Freeway and its associated landscape berm serve as the Project Site's western boundary. The Pico-Union area located west of the SR-110 Freeway includes a wide variety of uses, including residential, manufacturing, related industrial, and commercial uses. Pico-Union is also one of the densest neighborhoods in the City of Los Angeles and is characterized primarily by four- to six-story brick buildings. Along the area's east-west and north-south arterial streets, vertical mixed-use buildings are common (i.e., commercial uses at street level with residential above), and numerous manufacturing and merchandising facilities remain. The Pico-Union area is characterized by decreased illuminance levels that are commensurate with the lower nighttime activity

levels in the neighborhood. As such, the lighting environment in the Pico-Union area is typical of suburban conditions, despite being located in an urban area. Architectural exterior lighting for low-rise and mid-rise mixed use, commercial and residential properties provide low to medium brightness, consistent with the property use. Illuminated signage associated with businesses, as well as illuminated billboard signage, are also located in these areas.

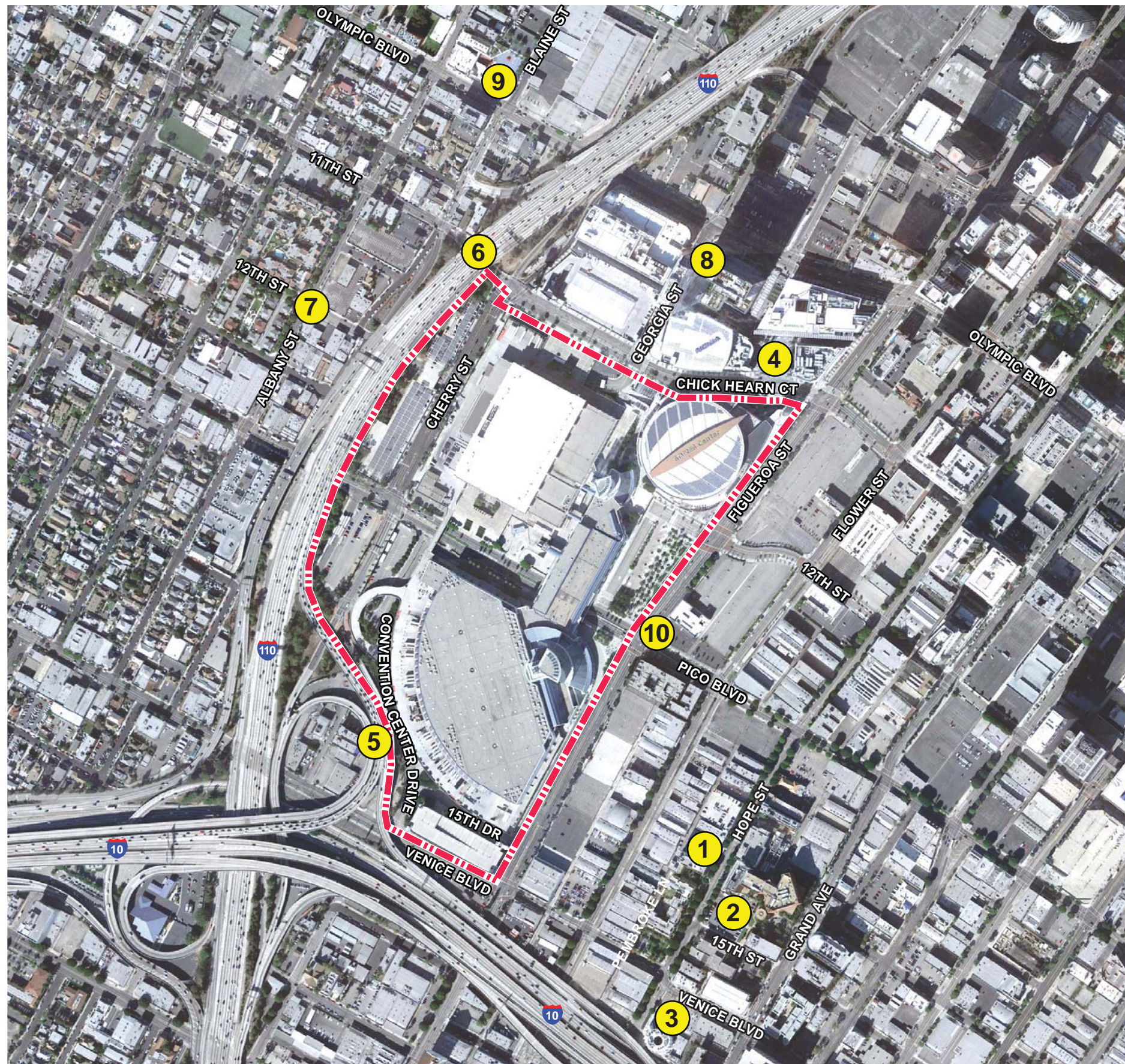
c. Existing Conditions

(1) Identification of Receptor Locations

An extensive field survey was conducted in the vicinity of the Project Site to locate and identify land uses that could be exposed to artificial light associated with the Proposed Project based on their locations and fields of view in relation to the Project Site. As shown in Figure IV.D.2-1 on page IV.D.2-7, locations were identified that are representative of the surrounding uses and lighting conditions in the vicinity of the Project Site (the Receptor Locations). The Receptor Locations include uses that are considered to be sensitive to artificial light. As stated above, according to the L.A. CEQA Thresholds Guide, land uses that are considered sensitive to nighttime light include, but are not limited to, residential, some commercial and institutional uses, and natural areas. Based on this definition, sensitive uses that are located within the vicinity of the Project Site and are represented by the Receptor Locations include residential, hospital/medical center, and hotel uses. The following discussion describes the identified Receptor Locations by geographic area. Photographs depicting views of the Project Site from each Receptor Location are provided in the Lighting Report included in Appendix K of this Draft EIR.²

As shown in Figure IV.D.2-1, Receptor Locations 1, 2, and 3 are at two residential buildings and a hospital, respectively, to the southeast of the Project Site. These locations were selected to be representative of the residential and medical facilities located to the southeast of the Project Site. Specifically, the Villa de Esperanza apartment complex located at 1401 Hope Street was selected as Receptor Location 1. The California Hospital Medical Center located at 1401 South Grand Street was selected as Receptor Location 2. The Carver Apartments, located at 1624 South Hope Street, were selected as Receptor Location 3. The upper levels of Receptor Locations 1, 2, and 3 have unobstructed views to the Project Site. The upper floors of Receptor Locations 1, 2, and 3 (where sensitive uses are located) were not accessible when measurements were taken. Thus, illuminance

² See Section 3.3 in the Lighting Report included in Appendix K of this Draft EIR.



Source: Google Earth Pro, 2011; Matrix Environmental, 2012.

LEGEND



Project Site Boundary

- ① Villa de la Esperanza Apartments, 1401 South Hope Street
- ② California Hospital Medical Center, 1401 South Grand Avenue
- ③ The Carver Apartments, 1624 South Hope Street
- ④ Nokia Plaza, 777 Chick Hearn Court
- ⑤ Residences, 1430 and 1438 South Wright Street, and 1-10 eastbound to the SR-110 north connector ramp
- ⑥ SR-110 southbound at 11th Street
- ⑦ Intersection of 12th Street and Albany Street
- ⑧ The Residences at the Ritz Carlton, 900 West Olympic Boulevard
- ⑨ Olympic Primary Center, 950 Albany Street
- ⑩ Intersection of Figueroa Street and Pico Boulevard



0' 500' 1,000 Feet
Approximate Scale in Feet

levels at Receptor Locations 1, 2, and 3 are estimated based on measurements taken at a representative location that is at a comparable height and has comparable views of the Project Site: the uppermost deck of the California Hospital Medical Center Parking Garage at 1341 Hope Street. The methodology for estimating illuminance levels at the Receptor Locations based on the measurements taken at the measurement location is described in Section 3.2.4 of the Lighting Report included in Appendix K of this Draft EIR.³

Receptor Location 7 is located at the intersection of 12th Street and Albany Street. Receptor Location 9 is located adjacent to the Olympic Primary Center located at 950 Albany Street. Receptor Locations 7 and 9 were selected to be representative of residential uses in the Pico-Union area, with the location of Receptor Location 7 being considered a “worst-case” location with respect to spill light and views of the northwestern portion of the Project Site,⁴ and the location of Receptor Location 9 being representative of more distant locations within this neighborhood. The view of the Project Site from Receptor Location 7 is partially obstructed due to distance and intervening development, but some architectural and signage elements at the Project Site may be visible above adjacent buildings and trees if viewed from upper levels of the apartments at this Receptor Location. The view from Receptor Location 9 is also largely obstructed, but similar to Receptor Location 7, some architectural and signage elements at the Project Site may be visible above adjacent buildings and trees if viewed from upper levels of the buildings near this location. At other locations further west, views of the Project Site are reduced, and thus, light exposure is reduced proportionately. The upper floors of private residential uses near these Receptor Locations were unavailable to field surveyors. As such, the measurements were taken at street level. Because intervening development would block less light from the Project Site at higher elevations, light emissions at sensitive receptors within the upper floors may be higher than the measured levels. It should be noted that in the analysis of Proposed Project impacts below, lighting levels are estimated at upper floors for Receptor Locations 7 and 9 based on the methodology described in Section 3.2.4 of the Lighting Report included in Appendix K of this Draft EIR.

³ *Receptor Locations 1, 2, and 3 are located approximately 2,000, 2,100, and 2,800 feet from the Project Site, respectively. At 1,700 feet from the Project Site, the representative measurement location is closer to the Project Site than the Receptor Locations. The measurement location is at a comparable height as the upper floors of the Receptor Locations and has comparable views of the Project Site. As such, measured lighting levels at the measurement location are representative of lighting levels at the upper floors of Receptor Locations 1, 2, and 3.*

⁴ *The SR-110 Freeway and the proposed Bond Street and L.A. Live Way Garages would obscure the proposed Event Center when observed from locations within the Pico-Union area that are closer to the SR-110 Freeway.*

Receptor Location 4 is located within Nokia Plaza, located at 777 Chick Hearn Court. Receptor Location 8 is located at the edge of the mechanical level at the Marriot/Ritz Tower at 900 West Olympic Boulevard. Receptor Locations 4 and 8 were selected to be representative of sensitive hotel and residential uses within L.A. LIVE. The views of the Project Site are unobstructed from both Receptor Locations 4 and 8. The Luxe Hotel at 1020 South Figueroa Street across from L.A. LIVE also includes sensitive hotel uses. Since L.A. LIVE is closer than the Luxe Hotel to the proposed development areas within the Project Site, Receptor Locations 4 and 8 represent a “worst-case” analysis in terms of impacts to all hotel uses to the north of the Project Site.

Receptor Location 5 is at the I-10 Freeway eastbound connector ramp to the SR-110 Freeway north. Receptor Location 6 is at the intersection of L.A. Live Way and Chick Hearn Court. This location is near the SR-110 Freeway and has direct views to the Convention Center and obstructed views to STAPLES Center and other portions of the Project Site. Receptor Locations 5 and 6 were selected to be representative of views as seen by drivers on the nearby roadways. Receptor 5 was also selected to be representative of views from the multi-family residential buildings at 1430 and 1438 South Wright Street. These residences are located inside the northern loop of the I-110/SR-110 and I-10 Freeway interchange. As such, Receptor Location 5 is analyzed below as both a roadway location and a sensitive residential receptor. From Receptor Location 5, the view of the Project Site is primarily limited to the back-side of the South Hall, as well as the existing STAPLES Center luminous sign. From this location, the existing South Hall largely obstructs views of other on-site development. Views of the Project Site from the upper levels of the multi-family residential buildings at 1430 and 1438 South Wright Street are substantially similar to views from Receptor Location 5, which is located directly north (within 50 feet) of these units on the freeway connector ramp. Therefore, measurements taken at Receptor Location 5 were used to estimate future lighting levels at these residential units. From the lower levels of these buildings, views of the Project Site are obstructed by the freeway. The view of the Project Site from Receptor Location 6 is extensive due to the close proximity of the Project Site. The Convention Center is prominent in views from this location, with the STAPLES Center and related signage also clearly visible.

Receptor Location 10 is located at the southeast corner of the intersection of Figueroa Street and Pico Boulevard. This Receptor Location was selected to be representative of the existing City Lights on Fig residential building immediately east of the Project Site. As it is the closest residential building to the east of the Project Site, this Receptor represents a “worst-case” analysis in terms of impacts to residential uses to the east of the Project Site. Views of the Project Site from Receptor Location 10 are unimpeded due to the close proximity to the Project Site. As such, the measurements were

taken at street level and are indicative of the light emissions that would be expected at individual units above street level.⁵

(2) Measurements of Existing Lighting Levels

Illuminance measurements of the existing lighting levels at the Receptor Locations were taken with a calibrated luminance meter in a manner consistent with the Illuminating Engineering Society of North America (IESNA) recommendations for measuring light trespass. Measurements were taken on July 13, 2011, the night the Nokia Theatre L.A. LIVE (Nokia Theatre) hosted the Excellence in Sports Performance Yearly Awards (ESPYS). The Nokia Theatre and STAPLES Center were fully illuminated for this event. Lighting levels during the ESPYS are indicative of the typical existing maximum light emissions that could be expected from the Project Site and L.A. LIVE during an event (Event measurements). The same measurements were taken again after the lighting associated with the ESPYS was turned off (Non-Event measurements) to understand the range of lighting conditions that occur on-site. Maximum, minimum, and median measurements were assessed at each Receptor Location for both Event and Non-Event measurements. The Lighting Report included in Appendix K of this Draft EIR provides a detailed description of the measurement methodology, as well as high dynamic range (HDR) images depicting views of the Project Site from the Receptor Locations, mapped with color to illustrate the observed lighting levels.

The resulting illuminance values at each Receptor Location are provided in Section 3.3 in the Lighting Report included in Appendix K of this Draft EIR. As shown therein, illumination levels ranged from 0.50 to 41.00 foot-candles (fc)⁶ during Event measurements, and from 0.34 to 19.58 fc during Non-Event measurements. The highest illumination levels during both Event and Non-Event measurements were observed at Receptor Location 4, which is located at Nokia Plaza and has unobstructed views of the

⁵ *Measurements were taken at ground level. Vertical variations of less than 200 feet represent a less than 1 percent change in overall distance from source to receptor when the distance between the receptor and light source exceeds 1,500 horizontal feet. Similarly, vertical variations of less than 40 feet represent a less than 1 percent change in overall distance from source to receptor when the distance between the receptor and light source exceeds 300 horizontal feet. As such, variation in the elevation of individual building units has a negligible effect on measurements taken at the ground level.*

⁶ *A foot-candle ("fc") is a unit of measure of illuminance. One fc is one lumen per square foot ("lm/ft²"). A lumen is the International System of Units ("SI") unit of luminous flux. It is the luminous flux emitted within a unit solid angle (1 steradian) by a point source having a uniform luminous intensity of 1 candela. Candela ("cd") is the SI unit of luminous intensity that measures luminous intensity from a light source in a given direction. A common candle emits light with a luminous intensity of roughly one cd. If emission in some directions is blocked by an opaque surface, the emission would still be approximately one candela in the directions that are not obscured.*

Project Site. The lowest illumination levels during both Event and Non-Event measurements were observed at Receptor Location 3 (the Carver Apartments located at 1624 South Hope Street). In nearly all cases, Event measurements were higher than Non-Event measurements. The change in illuminance between Event and Non-Event measurements demonstrates the variation possible in the existing light levels emanating from the Project Site.

(3) Additional Lighting Considerations

The previous sections address observed existing conditions within representative views towards the Project Site from the Receptor Locations. However, other specific considerations affect existing light levels. Sky-tracker “searchlights” within the Project Site and vicinity currently emit high intensity focused beams when used temporarily during events at STAPLES Center and L.A. LIVE. In addition, cloud cover and atmospheric conditions can increase illuminance intensities. Specifically, low-level clouds in an overcast sky condition can create a reflective surface that has the potential to increase measured illuminance levels. This condition can also magnify light pollution.

Vehicle headlights are also a source of lighting within the Project Site vicinity. Lighting from vehicle headlights can be visible from Receptor Locations that have direct views of the street or existing Proposed Project garages. In the case of the Venice Garage, tree canopies currently shield existing vehicular headlights from view.

Additionally, views of the night sky at the Project Site are compromised due to the accumulation of existing light emitters that direct light into the night sky, a typical effect in a highly urbanized environment. This creates “sky glow” or “light pollution” in the vicinity of the Project Site.

d. Regulatory Framework

There are numerous state and local regulations, as well as internationally recognized guidelines, regarding artificial light that are relevant to and would be implemented by the Proposed Project. These regulations and guidelines include the guidelines adopted by the International Commission on Illumination (CIE); the IESNA Handbook, 10th Edition; the California Building Code, Electrical Code, and Vehicle Code; the Outdoor Advertising Act (Cal. Bus. & Prof. Code § 5200, et seq.); California Green Building Standards Code; California Energy Commission Efficiency Standards, Title 24 (2008); the Los Angeles Municipal Code (LAMC), including Section 93.0117, Part (b), which limits the maximum amount of illuminance from an exterior light source to a residential property to a maximum of 21.5 lux (2.0 fc), and Section 14.4.4, General Provisions, Part (e), which limits the maximum contribution from illuminated signage above

ambient levels to 32.3 lux (3.0 fc) as measured at the nearest property line zoned for residential use; and City Ordinance No. 172,465, which establishes limitations on the number, location, height, sign area, and illumination of the various sign types placed on and around STAPLES Center. These regulations and guidelines are described in Appendix G of this Draft EIR.

3. Environmental Impacts

a. Methodology

The following analysis evaluates the effects of new sources of artificial light and glare that would be introduced by the Proposed Project and the extent to which Proposed Project light and glare sources, including illuminated signage, would spill off the Project Site onto off-site light-sensitive uses, represented by the Receptor Locations. An evaluation of light trespass is also provided to determine artificial light levels at the Project Site boundary. Lastly, this analysis evaluates the extent to which artificial light and glare sources associated with the Proposed Project would interfere with the operation of motor vehicles along representative transportation corridors adjacent to the Project Site.

To assess the artificial light impacts of the Proposed Project, an analytical model was developed as part of the Lighting Report. The model simulated the light and glare levels that would be generated by the Proposed Project. The project design features outlined below were applied to the model. The model consists of a computer simulation that captures the three-dimensional building geometry of both existing and proposed buildings on the Project Site. Off-site structures were included in the computer simulation if their inclusion was meaningful when predicting illuminance intensities or views from the Receptor Locations. Utilizing the Radiance software program, illuminance calculations were performed for each Receptor Location to quantify the increase in illuminance relative to existing, measured conditions. Calculations were performed for both signage and architectural lighting associated with the Proposed Project in order to apply the thresholds of significance outlined below. Also, in accordance with the thresholds of significance, illuminance calculations were performed along the Project Site boundary to quantify light trespass with respect to architectural lighting and stadium spectator event lighting. Finally, HDR images were produced from the computer model for each Receptor Location to capture luminance (i.e., glare) information as seen from each Receptor Location. Appendix G of the Lighting Report included in Appendix K of this Draft EIR provides a detailed description of the computer simulation process as well as the HDR images that were produced.

As further described below, the Event Center roof would be deployable (i.e., able to open or close). For the purposes of this analysis, the roof is assumed to be open, as this

would provide the most conservative analysis because there would be no shielding of any of the interior stadium light sources by the roof.

b. Thresholds of Significance

Appendix G of the CEQA Guidelines provides a sample question that addresses impacts with regard to artificial light and glare. This question is as follows:

Would the project create a new source of substantial light and glare which would adversely affect day or nighttime views in the area?

In the context of the above question from Appendix G of the CEQA Guidelines, the L.A. CEQA Thresholds Guide (2006) states that the determination of significance regarding artificial light impacts 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.

The L.A. CEQA Thresholds Guide also references illuminance thresholds contained within the LAMC.

With regard to glare impacts, in the context of the above question from Appendix G of the CEQA Guidelines, daytime glare impacts would be considered significant if future mid- to high-rise buildings, signage or thematic elements that incorporate substantial amounts of reflective building materials were to be developed on the project site in areas that are highly visible to off-site glare-sensitive uses. Nighttime glare impacts would be considered significant if future buildings, signage or thematic elements which incorporate highly reflective building materials were to be developed on the project site in close proximity to both glare sensitive uses and motor vehicle traffic.

(1) Construction Impacts

Based on the above factors, the Proposed Project would have a significant artificial light and/or glare impact during construction if Proposed Project construction light and/or glare sources were to substantially alter the character of off-site areas surrounding the Project Site, or result in substantial light spill and/or glare off the Project Site and on to adjacent light-sensitive receptors.

(2) Operational Impacts

Based on the above factors and the relevant standards and regulations regarding artificial light and glare, the specific criteria below have been identified to determine whether significant artificial light and/or glare impacts would occur during operation of the Proposed Project:

Project Site Boundary Impacts. Per the measurement procedures outlined by the IESNA, spill light beyond the boundary of the Project Site would be considered significant if the following condition were to occur:

- Light intensity resulting from architectural lighting and luminaries measured at the Project Site boundary exceeds 8 lux (0.7 fc).⁷ In the case of the Proposed Project, this excludes the boundary that parallels Chick Hearn Court.⁸

Spill Light Impacts at Sensitive Receptors. Per the measurement procedures outlined by the IESNA, and based on relevant LAMC provisions, spill light at the property line of a residence or other sensitive receptor would be considered significant if any of the following conditions were to occur:

- An exterior light source produces a light intensity exceeding 21.5 lux (2.0 fc) at the property line of a residence or other sensitive receptor (this value excludes contributions from illuminated signage).⁹

⁷ By way of example, the illuminance from the full moon can reach up to 1 lux (0.1 fc), although this varies greatly depending on the lunar cycle and the altitude and latitude of the viewing location.

⁸ The IESNA Lighting Handbook, Tenth Edition provides classifications for outdoor lighting zones given context (Appendix B, Table 26.4). Chick Hearn Court borders the L.A. LIVE site and is not considered a significant boundary with respect to light trespass due to its use as a pedestrian thoroughfare between the Project Site and L.A. LIVE. The illuminance levels required to provide safe passage to pedestrians at night will exceed 8 lux (0.7 fc), given the context of the existing L.A. LIVE light levels in excess of 53 lux (5 fc) at the ground plane.

⁹ This threshold is consistent with the L.A. CEQA Thresholds Guide (2006), which references illuminance thresholds contained within the LAMC (L.A. CEQA Thresholds Guide, Section A.4, Nighttime Illumination, Exhibit A.4-1, Selected City Municipal Code Lighting Regulations, p. A.4-5). This threshold specifically corresponds to LAMC Section 93.0117, Part (b), which generally prohibits new exterior light sources (other than signage) from illuminating a residential use by more than two fc (refer to Appendix A of the Lighting Report included as Appendix K of this Draft EIR for the specific excerpt of this code section). While this LAMC requirement pertains to residential uses, for the purposes of providing a conservative analysis, it has been extended to all light-sensitive receptors in this analysis.

- Light emissions associated with an illuminated sign produce a light intensity exceeding 32.3 lux (3.0 fc) at the property line of a residence or other sensitive receptor.¹⁰

Glare. Light emissions from the Proposed Project would be considered significant with respect to glare if any of the following conditions were to occur:

- The building façade luminance (excluding contributions from illuminated signage) exceeds 10 candelas per square meter (cd/m^2) average, with a maximum luminance in excess of $40 \text{ cd}/\text{m}^2$ visible beyond the Project Site boundary.¹¹
- Luminaire intensities exceed 10,000 candelas (cd) and are not shielded from view beyond the Project Site boundary.¹²
- Spectator Event luminaires exceed a Glare Rating of 55 as viewed from a sensitive receptor.¹³ Given the additional potential safety risks posed to motorists experiencing glare, a separate glare threshold for roadway locations is provided below.

¹⁰ This threshold is consistent with the L.A. CEQA Thresholds Guide (2006), which references illuminance thresholds contained within the LAMC (L.A. CEQA Thresholds Guide, Section A.4, Nighttime Illumination, Exhibit A.4-1, Selected City Municipal Code Lighting Regulations, p. A.4-5). This threshold specifically corresponds to LAMC Section 14.4.4, General Provisions, Part (e), which prohibits new signage light sources from illuminating a residential use by more than three fc (refer to Appendix A of the Lighting Report included as Appendix K of this Draft EIR for the specific excerpt of this code section). While this LAMC requirement pertains to residential uses, for the purposes of providing a conservative analysis, it has been extended to all light-sensitive receptors in this analysis.

¹¹ The International Commission on Illumination (CIE) 150:2003, an internationally accepted guide on limiting obtrusive light, provides standardized maximum, average luminance values for building façades (Appendix C, Table 2.6). The luminance criteria adopted is prescribed for a site with select residential surroundings. Field measurements of luminance within the existing L.A. LIVE site (refer to Appendix E of the Lighting Report included as Appendix K of this Draft EIR) demonstrate that this luminance intensity is consistent with Proposed Project's context.

The maximum luminance value dictates that brighter surfaces be illuminated more uniformly than less-bright surfaces in order to mitigate glare. The maximum luminance value is determined from a calculation using the IESNA's façade maximum illuminance recommendations for users adapted to moderately high ambient lighting (refer to Appendix B of the Lighting Report included as Appendix K of this Draft EIR for Table 26.2 and the associated calculation).

¹² The CIE 150:2003 provides maximum values for luminaire intensities when views of bright luminaires are potentially troublesome to residents (refer to Appendix C of the Lighting Report included as Appendix K of this Draft EIR, Table 2.3).

¹³ The CIE 112:1994 provides a Glare Rating assessment specifically for outdoor sports lighting to determine the potential for glare from an observer location (refer to Appendix C of the Lighting Report included as Appendix K of this Draft EIR, CIE 112:1994 insert).

- The signage luminance exceeds 800 cd/m^2 after sunset or before sunrise and is visible beyond the Project Site.¹⁴

Impacts to Motorists. Based on criteria outlined in the California Motor Vehicle Code and the CIE 112-1994 guide, light emissions from the Proposed Project would be considered significant with respect to impairing drivers' visibility if any of the following conditions were to occur:

- The maximum measured brightness of a light source within 10 degrees from a driver's normal line of sight shall not be more than 1,000 times the minimum measured brightness in the driver's field of view, except when minimum values are less than 10 footlamberts (fL).^{15,16}
- If minimum values are below 10 fL, the source brightness shall not exceed 500 fL plus 100 times the angle, in degrees, between the driver's line of sight and the light source.¹⁷
- Spectator Event luminaires exceed a Glare Rating of 45 as viewed from a roadway location.¹⁸

c. Project Design Features

(1) Overview of Proposed Project Light Sources

The Proposed Project would introduce new sources of artificial light to the Project Site including field event lighting for the proposed Event Center (i.e., stadium field lighting); architectural and façade lighting for the proposed structures including the Event Center, the

¹⁴ The CIE 150:2003 provides maximum permitted values of average surface luminance for signs. The luminance criteria proposed are prescribed for a site with select residential surroundings (refer to Appendix C of the Lighting Report included as Appendix K of this Draft EIR, Table 2.6).

¹⁵ The California Department of Motor Vehicles publication 2011 California Vehicle Code includes Section 21466.5: Light Impairing Driver's Vision. This code section stipulates the limitation requirements on light sources that may be considered potentially objectionable. Refer to Appendix D of the Lighting Report included as Appendix K of this Draft EIR for this specific code section.

¹⁶ A footlambert is a unit of luminance equal to the luminance of a perfectly diffusing surface that emits or reflects one lumen per square foot.

¹⁷ California Department of Motor Vehicles, *op. cit.*

¹⁸ The CIE 112:1994 provides a Glare Rating assessment specifically for outdoor sports lighting to determine the potential for glare from an observer location (refer to Appendix C of the Lighting Report included as Appendix K of this Draft EIR, CIE 112:1994 insert).

New Hall, and the Bond Street and L.A. Live Way Garages; illuminated signage; vehicle headlights associated with visitors to the new Proposed Project uses, particularly in and around the proposed parking structures; and exterior lighting for public safety, security, and to illuminate the buildings, landscaping, plazas, roadways, pedestrian and bicycle pathways, and signage. Additionally, decorative lighting would not be used during inactive times (i.e., when events are not scheduled). The lighting plan would be coordinated with ongoing City improvements along the Figueroa Corridor and would be consistent with the Los Angeles Green Building Code, with provisions above and beyond that required by the California Energy Code.

(2) Spectator Lighting

Field event lighting within the Event Center would consist of an array of high output narrow beam metal halide fixtures aimed at the field. The system would provide 300 fc (average horizontal) on the playing field (the requirement for illuminating National Football League fields for high definition video recording) and 20 fc to 100 fc at seating locations. The floodlights would be located near the edge of the two long sides of the roof at an elevation angle of 30 degrees above center of field.

(3) Signage

New signage would be included on both new and existing buildings on the Project Site. The proposed types and locations of all Proposed Project signage are shown in Figure II-24 in Section II, Project Description, of this Draft EIR. An existing and proposed signage inventory is also provided in Appendix D of this Draft EIR. Lighting emissions resulting from the illuminated signage proposed by the Proposed Project are expected to be emitted from three types of signs: front-lit billboard style signs; luminous channel letter signs; and changeable LED signs that can play video or display changeable graphics. Changeable or animated LED signs would be permitted, including moving, programming, flashing, neon, LCD, or similar lighting displays or installations. Illuminated signage would also comply with the power requirements outlined in Title 24. Illuminated signage is not subject to photometric cut-off requirements, but rather would be controlled with automatic photo and time switch controls, similar to existing illuminated and architectural lighting.

Proposed Project signage would be regulated by a signage program that would be implemented via the proposed Convention and Event Center Specific Plan (the Specific Plan) or a Sign District (SN), hereafter referred to as the Proposed Project's Signage Regulations. A copy of the Specific Plan is provided in Appendix A of this Draft EIR. The Signage Regulations would create three sign zones (Zones A, A1, and B) throughout the Project Site, with each zone further divided into two or three vertical sign levels (Levels 1 through 3), as shown in Figure II-23 in Section II (Project Description) of this Draft EIR, and discussed in further detail therein. These zones and height levels overlap the Specific Plan's Subareas. The Sign Regulations would be in addition to City Ordinance No.

172,465 which will remain in effect and continue to regulate certain existing and permitted signage for STAPLES Center and the Convention Center.

On an overall basis, except as permitted by City Ordinance No. 172,465, the following general standards are proposed to apply to signage within the Project Site: (1) individual signs could vary from 500 to 5,000 square feet in size, depending on the sign zone and vertical sign level; (2) heights could vary from 3 to 80 feet, with total signage comprising between 5 and 60 percent of building façades, depending on location; and (3) operating hours for certain signs would be from dawn to 2:00 A.M., although some locations would have no restrictions on operating hours.

The following are the proposed limitations on signage area:¹⁹

- Maximum amount of signage permitted: 110,000 square feet of permanent signs, excluding wayfinding signage, 10,000 square feet of temporary signage, and 59,200 square feet of on-site aerial view signage;
- Maximum amount of off-site signage: 70,000 square feet.

As required by the Outdoor Advertising Act, Proposed Project signage would not contain flashing images that are visible from freeways. Electronic digital display signage visible from the freeway would consist of static images that remain at a constant brightness for 8 seconds and then complete an instant refresh to the next image which would then be static for 8 seconds.²⁰ The project design features for illuminated signage outlined below establish specific performance standards that cannot be exceeded. To achieve these project design features, Proposed Project signage would be designed to the specifications provided in Table 6.1.2.1 and Section G.2.4 of Appendix G of the Lighting Report included as Appendix K of this Draft EIR. These include specific maximum sign luminance values in units of cd/m^2 for all types of proposed signage.

(4) Special Event Lighting

In support of the Event Center, sky-tracker searchlights would be used from time to time during Spectator Events in the Event Center and other special events, similar to existing operations within L.A. LIVE and STAPLES Center. The Sky-tracker luminaires that

¹⁹ Totals exclude wayfinding and temporary signage.

²⁰ The Outdoor Advertising Act defines "flashing" as a light or message that changes more than once every four seconds.

may potentially be used during events at the Project Site would have center beam candlepower intensities that exceed 10,000 candelas. Also, pyrotechnic shows not to exceed 20 minutes in duration may be provided up to 35 times per year in conjunction with football games, soccer games, special events, and concerts. Additionally, an illuminated internal scoreboard and digital display board would be used within the Event Center during special events.

(5) Identification of Project Design Features

The following section outlines the specific Project Design Features that are proposed as part of the Proposed Project to control light trespass at the Project Site boundary and restrict glare from specific lighting sources by limiting the visibility of select light sources and the intensities of light that can be applied to architectural surfaces. The project design features are divided into the following categories relating to the type of design feature: (1) Architectural Lighting; (2) Luminaires; (3) Illuminated Signage; (4) Construction Lighting; (5) Special Event Lighting; and (6) Interior Lighting.

It should be noted that all lighting that already exists on the Project Site on the effective date of the Specific Plan would not be subject to the project design features set forth below. Future alterations or additions to existing lighting would be permitted if those changes do not materially change the location, orientation, or intensity of a previously existing light source. Comparable lighting could replace existing lighting in the event the fixtures become damaged or fail.

(a) Architectural Lighting Project Design Features

The following architectural design features and constraints shall be implemented as part of the Proposed Project to minimize lighting from proposed structures:

- **Event Center Architecture:** The Event Center architectural design includes the structure, façade, and the upper portion of the stadium structure supporting the deployable roof element in the open position. The architectural design shall provide equivalent or reduced light transmissions when compared to the configurations of material properties shown in Figure 6.1.5.1 and Figure 6.1.5.2 of the Lighting Report included as Appendix K of this Draft EIR. These transmission limits shall reduce emissions from some field event lighting (located within the bowl) and other bowl light sources.
- **Screening on Parking Garages:** Exterior screening shall be installed to minimize the spill light from luminaires within open structure buildings from reaching beyond the Project Site. The screening shall also be installed so as to minimize the views and potential glare of headlights of motor vehicles within the

garage from beyond the Project Site boundary. Screening measures may include, but are not limited to, shielding attached to the luminaire, building, or site structures.

- **Building Façades:** The maximum measurable luminance of the illuminated building façade shall not exceed 40 cd/m². Additionally, an area weighted average of field measurements shall not exceed 10 cd/m² for any single contiguous façade area greater than 7,500 square feet in area. Additionally, glass used in building façades shall be anti-reflective or treated with an anti-reflective coating in order to minimize glare.
- **Plaza Lighting:** Light levels from permanent light fixtures shall not exceed 10 fc (average, horizontal at the ground) within Gilbert Lindsey Plaza.

(b) Luminaire Project Design Features

The following design and specification constraints for luminaires shall be implemented as part of the Proposed Project to minimize light emissions from lighting equipment:

- Illuminance from specified light sources shall not exceed 21.5 lux (2.0 fc) at the property line of the nearest residential property or light sensitive receptor.
- Luminaires illuminating the building façade with intensities greater than 10,000 candelas shall be shielded from view beyond the Project Site boundary.
- Luminaires not illuminating the building façade with intensities greater than 10,000 candela shall be shielded or rated as cut-off per the IESNA.
- Luminaires within the Bond Street and L.A. Live Way Garages shall be equipped with screening measures that limit light spill beyond the north and west sides of the garage toward the Project Site's northern and western boundaries, which are adjacent to sensitive receptors.
- Luminaires shall be shielded, reduced in intensity, or otherwise protected from view such that the brightness of a light source within 10 degrees from a driver's normal line of sight would not be more than 1,000 times the minimum measured brightness in the driver's field of view, except when minimum values are less than 10 fL. If minimum values are below 10 fL, the source brightness shall not exceed 500 fL plus 100 times the angle, in degrees, between the driver's line of sight and the light source.

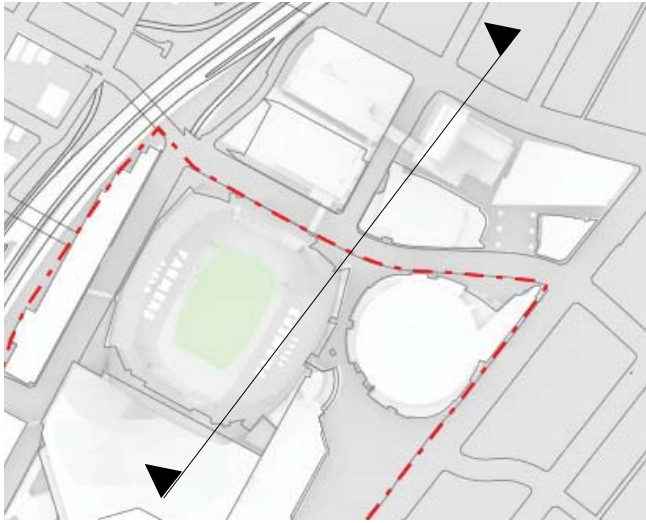
- Luminaires used for field lighting within the Event Center shall be aimed, shielded, or screened from view so that the Glare Rating does not exceed 45 for motorists and vehicles operated on roadways. Prior to the issuance of the first building permit for the Event Center structure, the Event Center Applicant shall prepare a study of the Glare Ratings at all roadways that have a direct line of sight to the Event Center's Spectator Event luminaires located within a 1-mile radius of the Project Site. The lighting study shall demonstrate to the satisfaction of the City of Los Angeles Department of Building and Safety that the Event Center's design does not result in a Glare Rating above 45 at any roadway location within a 1-mile radius of the Project Site.
- The aiming of Sky-Tracker luminaires shall be regulated to prevent the high intensity beam from striking any building façades. As illustrated in Figure IV.D.2-2 on page IV.D.2-22, Sky-Tracker luminaires shall not project light more than 25 degrees from zenith.²¹

(c) Illuminated Signage Project Design Features

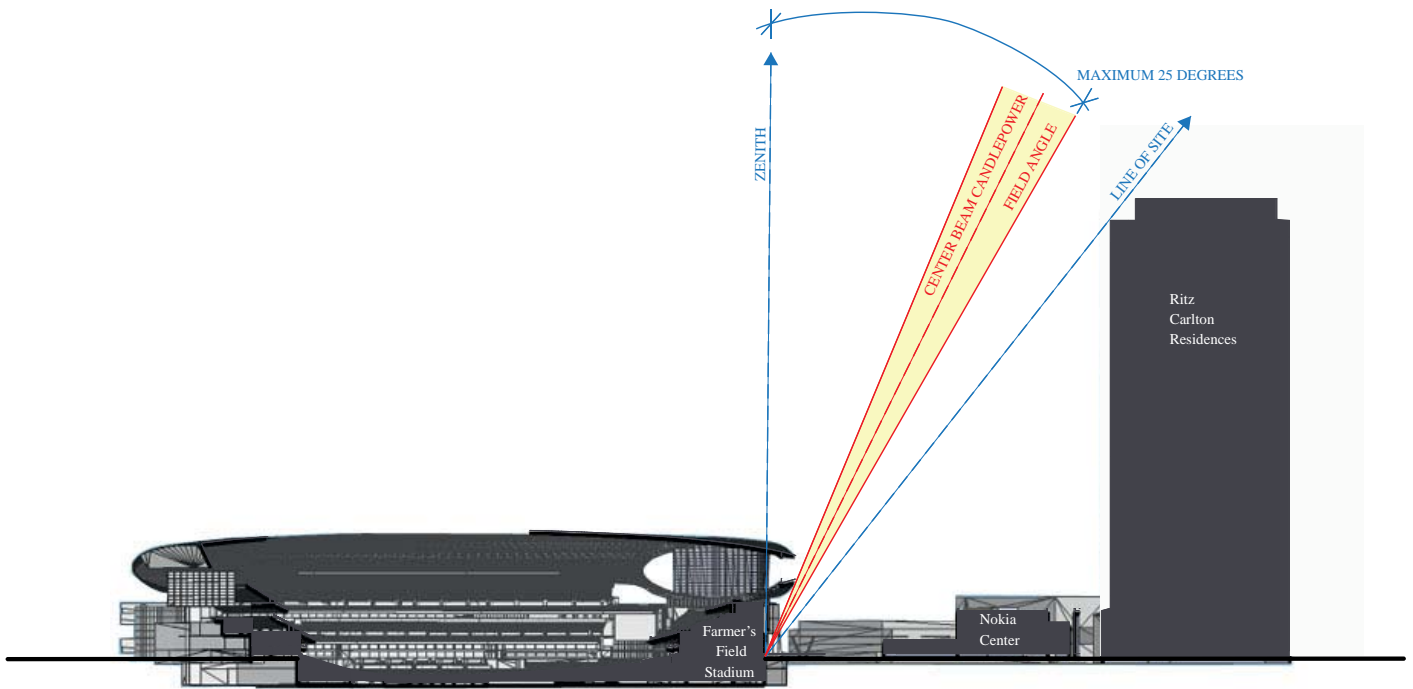
The following design and specification constraints for illuminated signage shall be implemented as part of the Proposed Project to minimize light emissions from illuminated signs:

- Illuminance from Proposed Project signage shall not exceed 32.3 lux (3.0 fc) at the property line of the nearest residential property or light-sensitive receptor.
- The measured luminance from Proposed Project signage shall not exceed 800 cd/m² after sunset or before sunrise.
- In accordance with the California Motor Vehicle Code, self-illuminated signs and/or luminaires intended to illuminate signs shall be shielded, or reduced in intensity, or otherwise protected from view such that the brightness of a light source within 10 degrees from a driver's normal line of sight would not be more than 1,000 times the minimum measured brightness in the driver's field of view, except when minimum values are less than 10 fL. If minimum values are below 10 fL, the source brightness shall not exceed 500 fL plus 100 times the angle, in degrees, between the driver's line of sight and the light source.

²¹ Zenith is the direction pointing directly above a particular location.



Key plan diagram showing section cut for diagram below.



Skytracker 'Searchlight' aiming diagram shown in section.

Source: Arup North America Ltd, 2011

- The intensity of illuminated signage shall be controlled with a photocell with an adjustable set-point that measures available daylight. This set-point shall be used to control the intensity of the sign output to either the daytime or nighttime luminous intensity.

(d) Construction Lighting Project Design Features

The following project design feature shall be implemented as part of the Proposed Project to minimize light emissions from Proposed Project construction activities:

- Light sources associated with Proposed Project construction shall be shielded and/or aimed so that no direct beam illumination is provided outside of the Project Site boundary. However, construction lighting shall not be so limited as to compromise the safety of construction workers.

(e) Special Event Lighting Project Design Features

High-definition television broadcasts of sporting events are anticipated to be the brightest future condition that would occur within the Event Center upon Proposed Project implementation. Light sources associated with these events would be subject to the luminaire project design features set forth above. The Proposed Project would also introduce other, less luminous events within the Project Site on a temporary basis. The following project design feature would be implemented as part of the Proposed Project to minimize light emissions from these “special events” within the Event Center:

- Any Sky-tracker luminaire within the Event Center that is aimed out of the open roof structure shall be aimed within 25 degrees of zenith.

In addition, the following project design features shall be implemented as part of the Proposed Project to minimize light emissions from special events external to the Event Center:

- All luminaires installed on a temporary basis on the Project Site shall be aimed so that the direct beam illuminance is directed on the area of activity.

(f) Interior Lighting Project Design Features

The following project design features shall be implemented as part of the Proposed Project to minimize light emissions from interior light sources (i.e., light sources located within proposed structures):

- The interior lighting for the Proposed Project and associated luminances or interior surfaces shall be designed, specified, and installed so that maximum candela direct beam illuminance (from luminaires) is not directed out of the building envelope.

(6) Analysis of Project Design Features on Artificial Light Levels

The project design features identified above would be implemented to minimize artificial light effects, including light trespass (referred to as spill light) and brightness associated with glare. This section provides a demonstration of how the project design features would minimize light trespass and glare. This section is followed by an analysis of the Proposed Project's potential impacts at the Project Site boundary and on off-site receptors pursuant to the thresholds of significance set forth above.

(a) *Event Center Architecture Project Design Features*

An analysis was conducted to determine the effectiveness of the Event Center architecture project design features, including the structure, façade, and deployable roof element in the open position. Without these project design features, the field event lighting positions for the luminaires illuminating the stadium bowl would be directly visible to the east and west of the Event Center and at Receptor Location 8. The roof element limits this potential impact by screening the views to these luminaires. Furthermore, the architecture would mitigate direct views to the field event lighting equipment within the stadium. The Event Center skin, façade, and roof elements would reduce illuminance intensities associated with spill light at the uppermost levels of the Ritz Residences. The properties of a semi-transparent roof would have a negligible effect on spill light intensities at the lower residences within the Marriot/Ritz Tower due to the transparency and diffusion characteristics of the architecture. Figure IV.D.2-3 on page IV.D.2-25 depicts luminance values from the Proposed Project after implementation of the Event Center architecture project design features as seen from the lower levels of the Marriot/Ritz Tower.

As described above, the Event Center roof would be deployable (i.e., able to open or close). For the purposes of this analysis, the roof is assumed to be open, as this would provide the most conservative analysis because there would be no shielding of any of the interior stadium light sources from the rooftop.

(b) *Architectural Lighting and Luminaire Project Design Features*

The architectural lighting and luminaire project design features were also analyzed to determine their effectiveness at reducing light trespass at the boundary of the Project Site. Figure IV.D.2-4 on page IV.D.2-26 shows the extent to which light trespass at the Project Site boundary from architectural lighting components would be reduced with

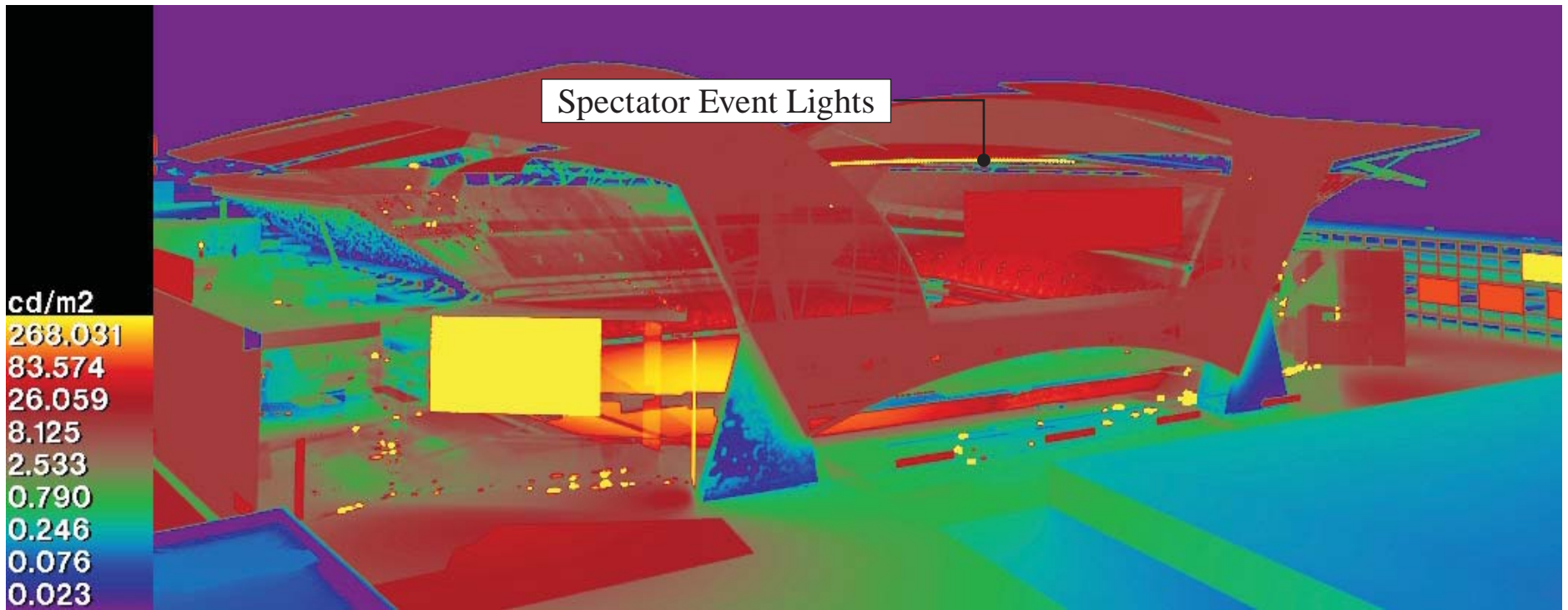
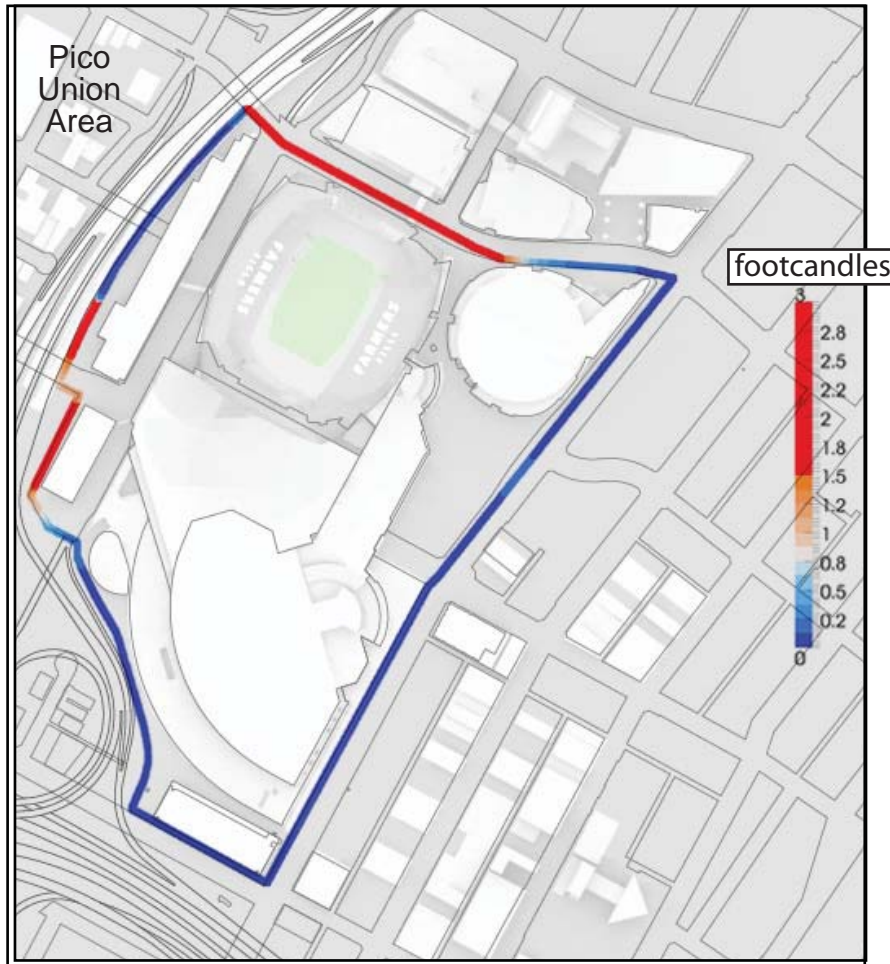
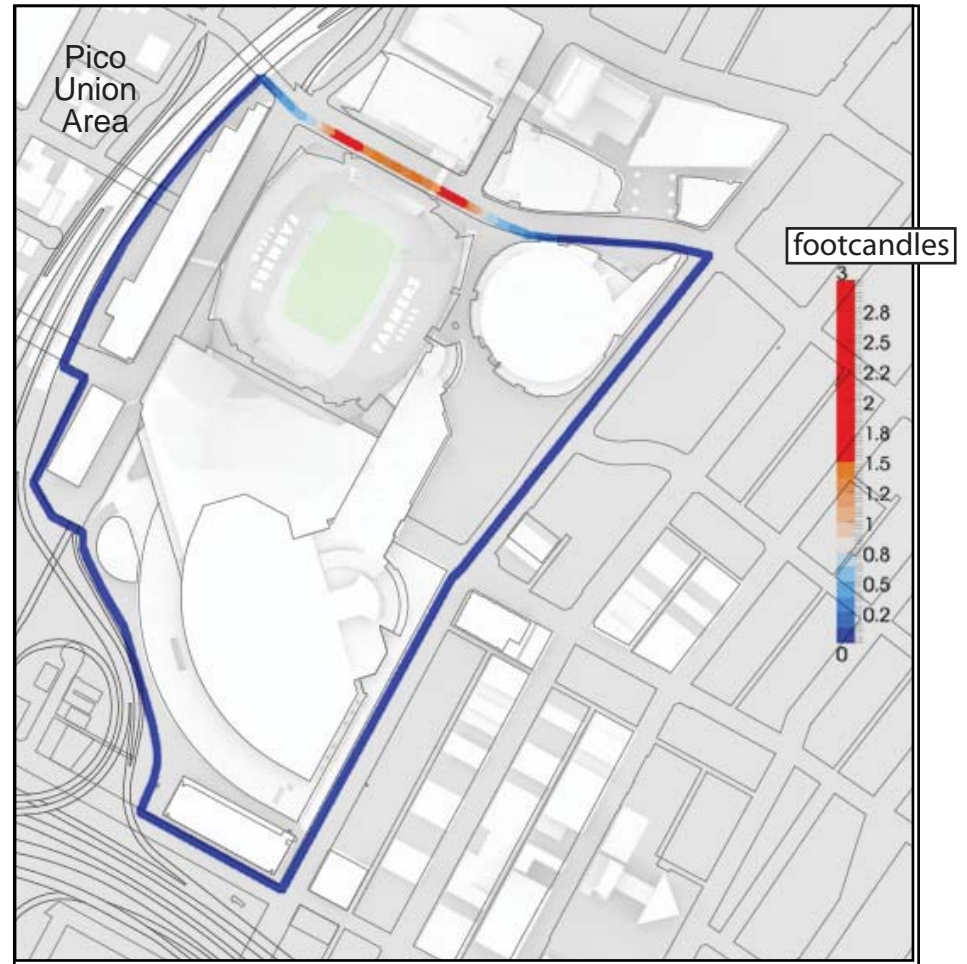


Image depicting luminance values from spectator event lighting within the Event Center with implementation of the Event Center Architecture Project Design Features.

Source: Arup North America Ltd, 2011



Light trespass at Project Site boundary without implementation of the Architectural Lighting and Luminaire Project Design Features.



Light trespass at Project Site boundary with implementation of the Architectural Lighting and Luminaire Project Design Features.

Colors illustrate the intensity of light at the Project Site boundary as indicated in the color key to the right.

Source: Arup North America Ltd, 2011

implementation of the architectural lighting and luminaire project design features. As shown, light trespass would primarily be reduced along the western and northern Project Site boundaries.

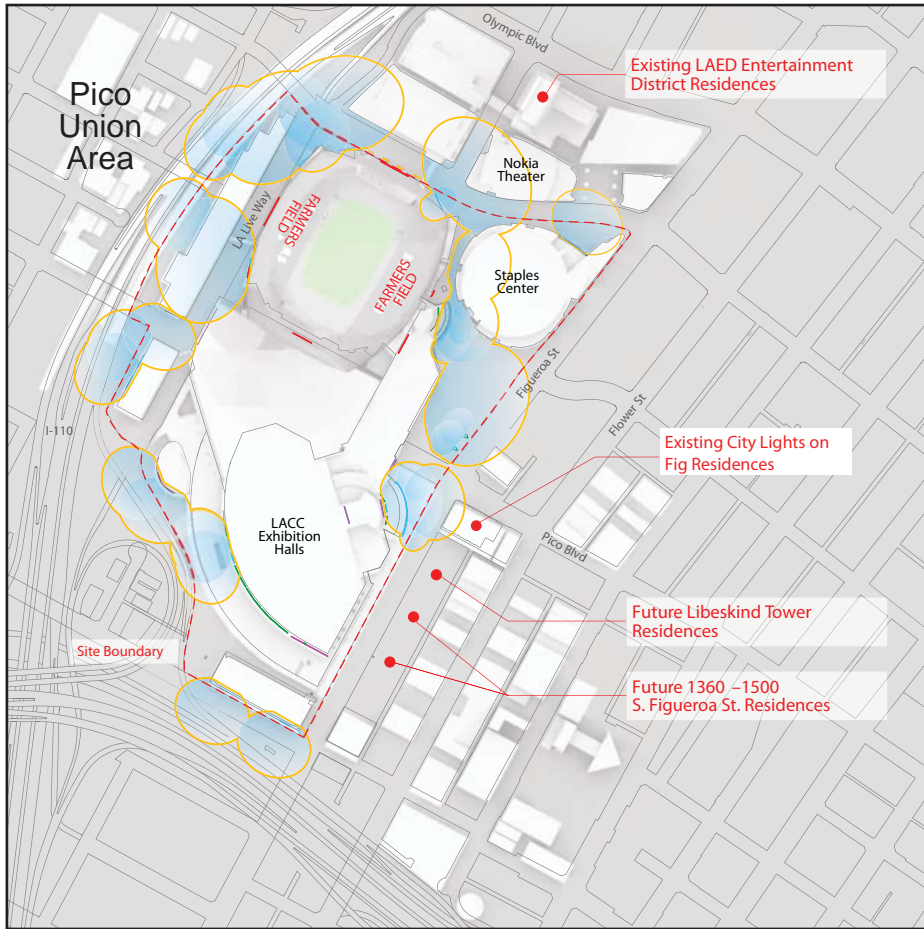
(c) Illuminated Signage Project Design Features

Lighting calculations were performed for changeable LED signs to identify their “zones of influence” for three typical sizes (see Appendix F to the Lighting Report included as Appendix K of this Draft EIR for calculations). The zone of influence is the extent at which the sign produces 3 fc vertical illuminance as measured directly perpendicular from the face of the sign. The zone of influence is a maximum potential, and the measured illuminance is dependent on the elevation of the measurement location as compared to the elevation of the sign. A measurement location that is not in the same elevation plane as a sign may experience lower illuminance levels. Figure IV.D.2-5 on page IV.D.2-28 shows the degree to which implementation of the project design features would reduce the zone of influence from Proposed Project signage. As shown, the zones of influence would be reduced so that they would no longer extend beyond Figueroa Street to the east, the I-10 Freeway to the south, and the SR-110 Freeway to the west. Additionally, the extent to which the zones of influence would extend into L.A. LIVE would also be reduced.

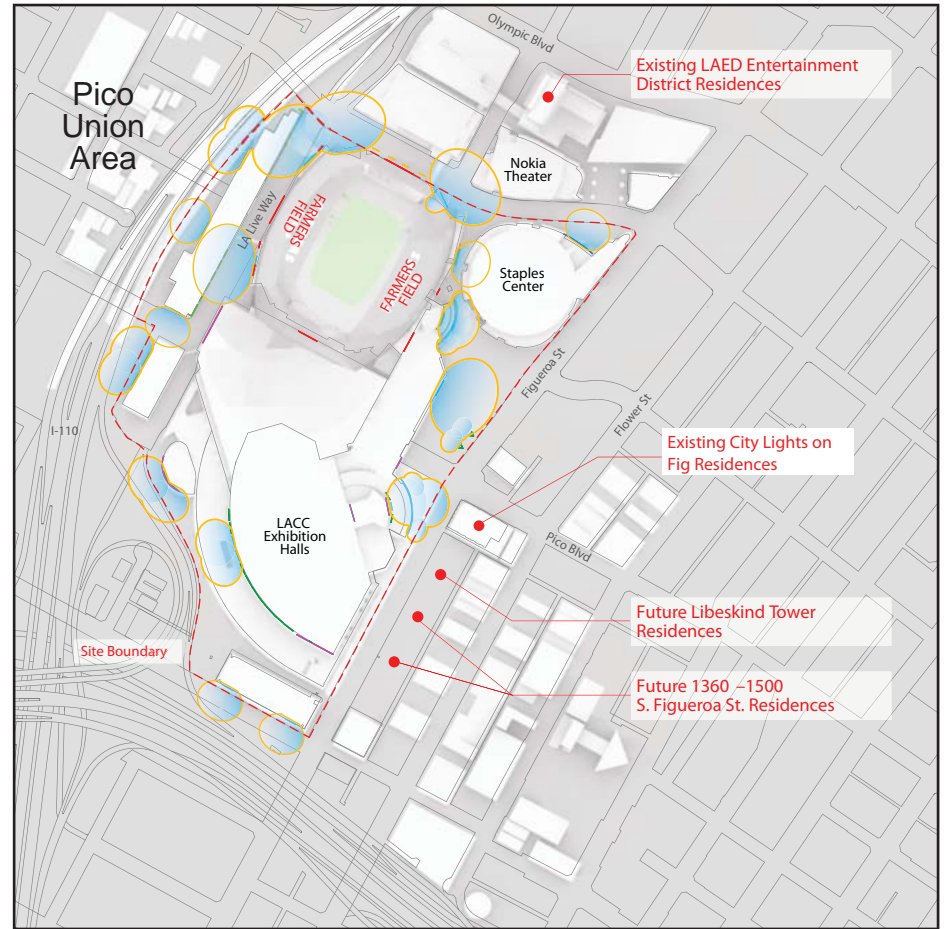
d. Project Impacts

(1) Construction Impacts

As discussed in Section II, Project Description, of this Draft EIR, the Proposed Project would request an extension to allow construction activities to occur during nighttime hours. Outdoor lighting sources such as floodlights, spot lights, and/or headlights associated with construction equipment and hauling trucks typically accompany nighttime construction activities. Increased nighttime lighting effects would occur throughout the duration of Proposed Project construction activities. However, this effect would be temporary and would cease upon completion of Proposed Project construction. Construction-related illumination would be used for safety and security purposes only, in compliance with LAMC light intensity requirements. Additionally, as a project design feature, construction lighting would be shielded and/or aimed so that no direct beam illumination would fall outside of the Project Site boundary. Nighttime light and glare reflected from construction light sources can be intrusive for adjacent light-sensitive uses, but would not be anticipated to affect those light-sensitive uses located farther away. This is because construction lighting, while bright, is highly focused on the particular area undergoing work. Therefore, uses which are not adjacent to the Project Site would not be anticipated to be substantially affected by construction light or glare. The greatest construction light and glare impacts would be experienced at the Ritz Residences located on floors 27 through 52 of the Marriot/Ritz Tower (represented by Receptor Location 8),



Light trespass at Project Site boundary without implementation of the Illuminated Signage Project Design Features.



Light trespass at Project Site boundary with implementation of the Illuminated Signage Project Design Features.

Blue shading indicates the "zone of influence" from Project signage. The zone of influence is the extent at which the sign produces 3 footcandles (fc) vertical illuminance as measured directly perpendicular from the face of the sign.

Source: Arup North America Ltd, 2011

which would have a direct line of sight to construction activities occurring on the Project Site.

With implementation of the construction lighting project design feature, construction lighting contained within the bowl of the Event Center would not be visible from beyond the Project Site boundary. However, construction lighting at elevations of 80 feet or higher on the Event Center (above the parking garages) would be visible from beyond the Project Site boundary. Construction lighting at this elevation would result in significant impacts to sensitive receptors located to the west and north of the Project Site. In addition, construction light sources located at grade, including safety lighting, emergency lighting or temporary supplemental lighting used for repair or construction on the Project Site by the City or government agencies, and temporary supplemental lighting provided by public agencies for the purposes of directing or navigating vehicular traffic, may cause spill light beyond the Project Site boundary. These temporary lighting sources would result in significant impacts with respect to spill light and glare. Therefore, temporary impacts from nighttime construction lighting associated with the Proposed Project would be significant.

Daytime glare could potentially occur during Proposed Project construction activities if reflective construction materials were positioned in highly visible locations where the reflection of sunlight could occur. However, any glare would be highly transitory and short-term, given the movement of construction equipment and materials within the construction area and the temporary nature of construction activities within each development site. In addition, large, flat surfaces that are generally required to generate substantial glare are typically not an element of construction activities. Thus, impacts associated with daytime glare during construction activities would be less than significant and no mitigation measures would be required.

(2) Operational Impacts—Project Site Boundary Assessment

Figure IV.D.2-4 on page IV.D.2-26 provides an illustrative depiction of lighting trespass from the Project Site after implementation of the Proposed Project and all of the project design features regarding the architectural design components. As shown therein, the illuminance values from architectural lighting and luminaires at the Project Site would not exceed 8 lux (0.7 fc) at the Project Site boundary. As previously discussed, Chick Hearn Court is not a significant boundary with respect to light trespass because it borders L.A. LIVE. Therefore, impacts with respect to the thresholds of significance set forth above for spill light beyond the boundary of the Project Site would be less than significant, and no mitigation measures would be required.

(3) Operational Impacts—Project Impacts at Receptor Locations

(a) *Light Impacts at Receptor Locations*

Table IV.D.2-1 on page IV.D.2-31 shows the calculated future illuminance values at the Receptor Locations following implementation of the Proposed Project. As shown therein, the illuminance values from architectural lighting of the Proposed Project would range from 0.0 to 11.7 lux (0.01 to 1.08 fc) and thus, would not exceed 21.5 lux (2 fc) at any Receptor Location. In addition, the illuminance values from signage elements of the Proposed Project would range from 0.0 to 31.7 lux (0.00 to 2.94 fc) and thus, would not exceed 32.3 lux (3 fc) at any Receptor Location. Therefore, impacts with respect to the thresholds of significance set forth above for spill light at the property line of a residence or other sensitive receptor would be less than significant and no mitigation measures would be required.

(b) *Glare Impacts at Receptor Locations*

Section 6.4 in the Lighting Report included as Appendix K to this Draft EIR provides illustrative depictions of the calculated future luminance values at each Receptor Location following implementation of the Proposed Project.²² As shown therein, the façade luminances of the Proposed Project would vary depending on the vantage point of the receptor and the focal point on the Proposed Project, but would not exceed 10 cd/m² at any of the Receptor Locations. Similarly, illuminated signage luminances would vary depending on the vantage point of the receptor and the focal point on the Proposed Project, but would not exceed 800 cd/m² at any of the Receptor Locations after sunset or before sunrise.

With regard to field event lighting, there may be some non-roadway locations at which the 55 Glare Rating threshold would be exceeded, namely locations that have a direct line of sight to the bank of lights used to light the playing field. Of the studied non-roadway sensitive receptor locations in the Lighting Report, three would have direct and unimpeded views to the spectator lighting: Receptor Locations 2, 8 and 9. Based on this, it is anticipated that isolated locations throughout the Project Site vicinity, potentially including locations with the Pico-Union and South Park areas, would experience glare levels that would exceed the 55 Glare Rating threshold. This would constitute a significant glare impact.

²² Specifically, see Figures 6.4.1.4 (Receptor Location 1), 6.4.2.4 (Receptor Location 2), 6.4.3.3 (Receptor Location 3), 6.4.4.3 (Receptor Location 4), 6.4.5.3 (Receptor Location 5), 6.4.6.3 (Receptor Location 6), 6.4.7.3 (Receptor Location 7), 6.4.8.5 (Receptor Location 8), 6.4.9.3 (Receptor Location 9), and 6.4.10.3 (Receptor Location 10).

**Table IV.D.2-1
Proposed Project Predicted Illuminance (Spill Light) Values at Receptor Locations**

Contributing Components ^a	Illuminance		Significant Spill Light Impact?
	fc	lux	
Receptor Location 1 ^b			
Architectural Lighting	0.04	0.4	No
Signage Lighting	0.17	1.8	No
Receptor Location 2 ^b			
Architectural Lighting	0.03	0.3	No
Signage Lighting	0.15	1.6	No
Receptor Location 3 ^b			
Architectural Lighting	0.03	0.4	No
Signage Lighting	0.03	0.3	No
Receptor Location 4			
Architectural Lighting	0.01	0.0	No
Signage Lighting	1.05	11.3	No
Receptor Location 5 ^b			
Architectural Lighting	0.03	0.3	No
Signage Lighting	2.05	25.2	No
Receptor Location 6			
Architectural Lighting	0.49	5.3	No
Signage Lighting	2.94	31.7	No
Receptor Location 7			
Architectural Lighting	0.06	0.6	No
Signage Lighting	0.00	0.0	No
Receptor Location 8			
Architectural Lighting	1.08	11.7	No
Signage Lighting	0.93	4.3	No
Receptor Location 9			
Architectural Lighting	0.07	0.7	No
Signage Lighting	0.19	2.0	No
Receptor Location 10 ^c			
Architectural Lighting	0.02	0.1	No
Signage Lighting	0.93	10.1	No
<p>^a Architectural lighting values include Event Center architectural lighting, Event Center sports field lighting, New Hall architectural lighting, parking garage lighting (Bond Street Garage and L.A. Live Way Garage), and plaza lighting. Signage lighting values include LED illuminated changeable signage and static illuminated signage.</p> <p>^b As discussed above, estimated illuminance levels at this Receptor Location are based on measured values taken from a representative measurement location.</p> <p>^c Variation in light levels due to elevation at Receptor 10 are negligible due to the overall building height representing less than 1 percent variation in distance from the majority of project light sources.</p> <p>Source: AEG Convention and Event Center Project EIR Lighting Technical Report, Arup North America Ltd., February 2012. (Refer to Appendix K, AEG Convention and Event Center Project EIR Lighting and Technical Report, of this Draft EIR.)</p>			

(c) Impacts to Motorists at Roadway Receptor Locations

Receptor Locations 5 and 6 are subject to the requirements of the California Motor Vehicle Code Section 21466.5 (Light Impairing Driver's Vision). As illustrated in Section 6.4 in the Lighting Report included as Appendix K to this Draft EIR,²³ with implementation of the project design features, the visible luminances would vary depending on the vantage point of the receptor and the focal point on the Proposed Project. Views to the field event lighting would be direct and unimpeded at Receptor Location 6, without any structure or architectural element to reduce the visual intensity of the field event lighting fixtures. Nonetheless, luminance intensities would be less than 500 foot-lamberts with implementation of the project design features. Therefore, the visible luminances would comply with the restrictions of the California Motor Vehicle Code and would not have sufficient brightness to impair drivers' vision, and light impacts would be less than significant.

Pursuant to Project Design Feature D.2-11 below, the Event Center's final design would incorporate shielding, aiming, or elements to reduce the Glare Rating at this location to 45. Furthermore, in accordance with Project Design Feature D.2-11, prior to the issuance of the first building permit for the Event Center structure, the Event Center Applicant would be required to prepare a study that demonstrates to the satisfaction of the City of Los Angeles Department of Building and Safety that the Event Center's design does not result in a Glare Rating above 45 at any roadway location within a 1-mile radius of the Project Site with a direct line of sight to the Proposed Project. As such, glare impacts to roadway receptor locations would also be less than significant.

(4) Operational Impacts—Other Lighting Considerations

The analysis above addresses potential light and glare impacts associated with Proposed Project architectural lighting and signage illumination. However, other Proposed Project components would have the potential to increase light and glare levels from the Project Site. This section provides an overview of the potential light and glare impacts from the following:

- Temporary special event lighting internal and external to the Event Center;
- Cloud cover and atmospheric conditions, which can increase ambient light levels by reflecting more light to the ground;

²³ *Ibid.*

- Sky-tracker searchlights, which would be used temporarily during events and would emit high intensity focused beams;
- Increased motor vehicle presence associated with Proposed Project uses, which would have the potential to increase vehicle headlight sources in parking structures that would be visible to surrounding areas;
- Pyrotechnic events; and
- Sky glow impacts.

(a) Temporary Special Event Lighting

Temporary lighting for productions and special events, including but not limited to traveling shows, concerts, and performances, represents a variety of temporary installations of lighting. Examples of lighting associated with these types of events could include light shows, klieg lights, and video displays. The type, intensity, aiming, and distribution of these temporary lights are not able to be clearly identified for all types of events due to the unique lighting requirements of each event and the myriad of different lighting configurations that could be required. Temporary lighting associated with productions internal to the Event Center would increase illuminance levels emanating from the Project Site. The greatest light and glare impacts from special events would be experienced at the Ritz Residences located on floors 27 through 52 of the Marriot/Ritz Tower (represented by Receptor Location 8), and the hotel units located below, due to their elevated vantage point in relation and proximity to the Event Center. The south and south-west faces of the Marriot/Ritz Tower would be most susceptible to increases in ambient illumination due to their orientation in relation to the Event Center. In accordance with the project design features, any luminaire or light source within the Event Center that is directed upward would be aimed within 25 degrees of zenith or otherwise completely contained within the Event Center façade, which would reduce impacts to Receptor Location 8.

Special event lighting external to the Event Center would be anticipated to occur most frequently in Gilbert Lindsey Plaza, as is the case under existing conditions. In this instance, Receptor Locations 8 and 10 would be most impacted by increased illuminance levels due to their proximity to the Project Site. In accordance with the project design features, all luminaires installed on a temporary basis on the Project Site would be installed such that the reflectors, lamps, or light emitting diodes are aimed so that the direct beam illuminance is directed on to the area of activity.

In both instances (special events internal or external to the Event Center) the illuminance intensities of temporary special events are unlikely to exceed most of the

thresholds of significance for light impacts, with the exception of the threshold for Project Site boundary impacts. Temporary luminaires in close proximity to the Project Site boundary would have the potential to cause spill light conditions in excess of the 8 lux threshold of significance. Additionally, temporary lighting sources would represent a possible source of glare that could result in significant glare impacts when viewed directly by sensitive receptors beyond the Project Site boundary. As discussed below, pyrotechnics would also have the potential to exceed the thresholds for spill light and glare, despite the temporary and intermittent nature of the light emission. As such, impacts associated with special events and pyrotechnic displays would be significant with respect to the thresholds of significance for Project Site boundary impacts and glare.

(b) Impacts Related to Cloud Cover

Cloud cover would influence light emissions from the Proposed Project by scattering upward directed light. The primary sources of upward directed light from the Proposed Project would include the event field lighting reflected off the stadium field and backlighting of the stadium roof element. Secondary sources would include rotating sky-tracker searchlights (the impacts of which are addressed below), façade lighting, and general on-site lighting that would reflect off the ground. The scattered light from these sources would be proportional to the height of the cloud layer (see cloud ceiling definition below) and the albedo, or reflectance, of the cloud due to moisture content.

Analysis was undertaken to determine the sensitivity of the cloud ceiling on Receptor Location illuminance calculations. The cloud ceiling is the height above the ground of the base of the lowest layer of cloud that covers more than half the sky.²⁴ For the purpose of this analysis, cloud albedo or reflectance was assumed to be 80 percent (most sources indicate cloud albedo ranges from 10 percent to 90 percent) while the cloud ceiling height assumption varied from 0 to 7,000 feet above ground level. Only stadium lighting sources (field lighting and roof element lighting) were included in the analysis, as these are the primary potential sources of upward illumination from the Proposed Project.

The analysis indicates that cloud cover can cause up to a 1.2 fc increase at the Receptor Locations beyond what is measured on a clear night. Each Receptor Location would experience a maximum effect at different cloud ceiling heights, but most would peak at 400- to 1,000-foot cloud ceilings, that is, when cloud cover extends to an elevation as low as 400 to 1,000 feet from the ground. The increased illuminance intensity associated

²⁴ As defined by the International Civil Aviation Organization, Aerodrome Meteorological Observation and Forecast Study Group (Amofsg) Eighth Meeting, Melbourne Australia, 15–18 February 2010 (AMOFSG.8.IP.005.5.en.doc).

with the primary sources of field lighting and roof element lighting experienced at all Receptor Locations would be increasingly negligible at cloud heights at or exceeding 5,000 feet. This analysis is presented in Figure IV.D.2-6 on page IV.D.2-36.

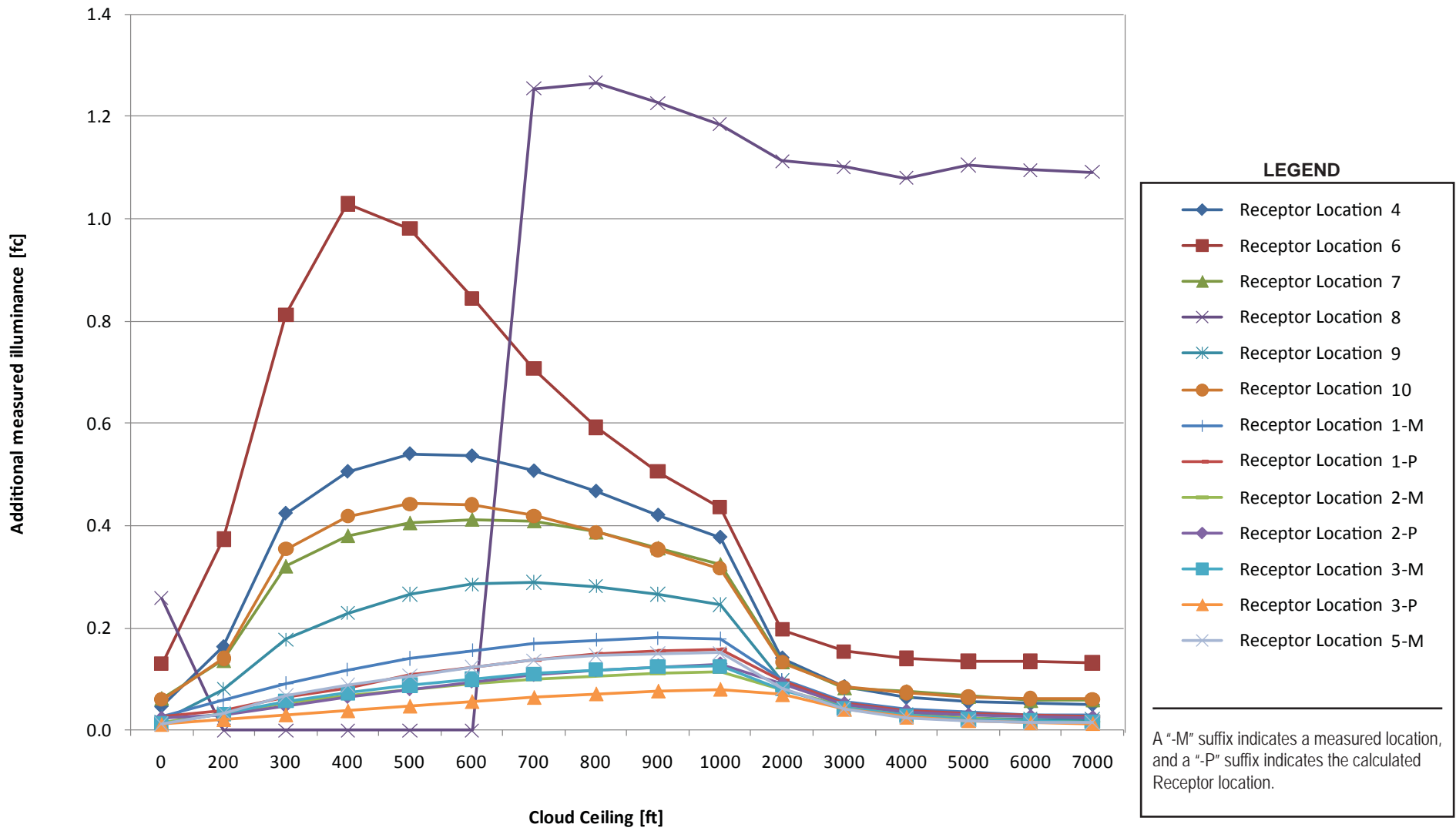
Climate analysis for Los Angeles was undertaken to determine the most frequent sky condition and cloud ceiling height for the Project Site. According to the Los Angeles climate data, skies are mostly clear for the majority (approximately 75 percent) of the time and partly cloudy to overcast for approximately 25 percent of the time. The 1,000- to 1,500-foot elevations are the most frequent cloud ceiling heights in Los Angeles, occurring 5.5 percent and 9 percent of nighttime hours, respectively. At the most common cloud ceiling height (1,000 feet to 1,500 feet), lighting at most Receptor Locations would not exceed the thresholds of significance. Supporting climate data are provided in the Lighting Report included as Appendix K of this Draft EIR.

Event lighting at full output in combination with low-ceiling clouds with high albedo, or reflectivity, (+50 percent) has the potential to create significant spill light impacts at sensitive uses, but only under specific climatic conditions. Of all of the locations analyzed, the only location where this effect could result in a significant impact is at the hotel and residential uses in the Marriot/Ritz Tower (Receptor Location 8). As this location would be subject to a significant glare impact (i.e., Glare Rating above 55) the significant impact resulting from atypical climatic conditions would occur at a location that is significantly impacted by another artificial light source. Further, based upon a review of typical atmospheric conditions for Los Angeles, these climatic conditions are likely to occur, in conjunction with the sports lighting being turned on, less than 5 percent of the year. Nonetheless, impacts from these infrequent events are considered significant and unavoidable.

(c) Sky-Tracker Searchlight Impacts

The Proposed Project would use Sky-tracker luminaires, or searchlights, during events at the Project Site. As with the existing use of sky-tracker luminaires within the Project Site vicinity, this type of high-intensity lighting equipment would have center beam candlepower intensities that exceed 10,000 candelas. The searchlights would be visible from considerable distances from the Project Site and would have the potential to increase ambient lighting levels in the vicinity of the Project Site.

The hotel and residential uses in the Marriot/Ritz Tower (Receptor Location 8) have the greatest potential for exposure to lighting from sky-tracker searchlights. In accordance with the project design features described above, sky-tracker searchlights would be controlled so that they are not aimed at the Marriot/Ritz Tower, thereby preventing the high intensity beam from striking any building façades. The specific aiming constraints are



Source: Arup North America Ltd, 2011

Figure IV.D.2-6
 Incremental Change to Measured Illuminance Levels at Receptor Locations With Cloud Cover at Varying Heights

shown diagrammatically in Figure IV.D.2-2 on page IV.D.2-22. With implementation of these project design features, artificial light impacts, including those at Receptor Location 8, would not exceed levels established in the thresholds of significance, and impacts would be less than significant.

(d) Impacts from Headlight Glare in Parking Structures

Headlights associated with vehicular traffic can be a source of discomfort and potentially disabling glare when viewed from elevated adjacencies. The proposed L.A. Live Way and Bond Street Garages would be multi-story structures that would have vehicles at elevations that may be visible from off-site locations.

The most intense headlights on vehicles use controlled optics to mitigate glare while driving. These intense headlights can produce over 3,000 lumens of output that would be directed laterally when automobiles are elevated in the Proposed Project garages. Most vehicle headlights are located at 24 inches above the ground. Thus, any design elements between an elevated driving surface and 30 inches above that surface can limit the majority of glare associated with headlights. The project design features described above include screening on the proposed L.A. Live Way and Bond Street Garages that would shield headlights from views external to the parking garages for the façades adjacent to the SR-110 Freeway. With implementation of this project design feature, impacts related to headlight glare in parking structures would be less than significant.

(e) Impacts from Pyrotechnic Events

As previously stated, pyrotechnic shows not to exceed 20 minutes in duration may be provided up to 35 times per year during football games, soccer games, special events and concerts. These events would have the potential to increase ambient nighttime lighting levels throughout the Project Site vicinity. Light emissions associated with the use of pyrotechnics and/or fireworks that are not contained within the Event Center (i.e., visible above the roof line) would result in significant lighting and glare impacts to proximate receptors with a line of sight to the emission source, albeit on a temporary and short-term basis. As it is anticipated that some pyrotechnic and/or firework displays would reach heights above the Event Center roofline, it is conservatively concluded that light and glare impacts from pyrotechnic events would be significant, albeit temporary and intermittent.

(f) Daytime Glare Impacts

Glare effects would not be expected to increase substantially under the Proposed Project. The Proposed Project would integrate a mix of high-quality and durable building materials and the use of highly reflective materials would be prohibited. In accordance with the project design features, glass used in building façades would be anti-reflective or

treated with an anti-reflective coating in order to minimize glare. Sunlight reflected from these surfaces would not be expected to generate substantial daylight glare during most of the year, as under existing conditions. Additionally, the Bond Street Parking Lot, the only surface parking lot on the Project Site, would be replaced with an aboveground garage and, as such, would eliminate the reflection potential from parked cars on the Project Site as viewed from surrounding areas. Overall, the Proposed Project would not cause glare that would substantially interfere with the performance of an off-site activity or sensitive uses. Therefore, daytime glare impacts associated with operation of the Proposed Project would be less than significant.

(g) Sky Glow Impacts

Night time events within the Event Center are likely to be limited in duration and frequency and would not impede observations of the night sky. The contribution of lighting emissions from the Proposed Project from such events would be less than significant given the context of the Proposed Project and the current levels of light pollution experienced in downtown Los Angeles. Additionally, permanent lighting equipment would be aimed and shielded in an effort to limit contributions to the night sky in accordance with the project design features. Therefore, sky glow impacts associated with operation of the Proposed Project would be less than significant.

(5) Summary of Artificial Light and Glare Impacts During Proposed Project Operation

During normal sky conditions, the exterior light sources associated with the Proposed Project would not produce a light intensity exceeding 21.5 lux (2.0 fc) at the property line of any sensitive use represented by the analyzed Receptor Locations. Illuminated signage associated with the Proposed Project would not produce a light intensity exceeding 32.3 lux (3.0 fc) at the property line of any sensitive use represented by the analyzed Receptor Locations. The façade luminance of proposed buildings would not exceed 10 cd/m² at any of the analyzed Receptor Locations. In addition, signage luminance would not exceed 800 cd/m² after sunset or before sunrise. Lastly, visible luminance would not exceed 500 fL at any of the Receptor Locations located along roadways. These conditions are anticipated during normal sky conditions. However, the hotel and residential uses in the Marriot/Ritz Tower (Receptor Location 8) are likely to experience lighting in excess of the spill light significance thresholds when low cloud ceilings with high albedo (+50 percent) are present. These climatic conditions are likely to occur, in conjunction with the sports lighting being turned on, less than 5 percent of the year. Nonetheless, impacts from these infrequent events are considered significant and unavoidable.

Furthermore, there may be some non-roadway locations at which the 55 Glare Rating threshold would be exceeded, namely locations that have a direct line of sight to the bank of lights used to light the playing field. Of the studied non-roadway sensitive receptor locations in the Lighting Report, three would have direct and unimpeded views to the spectator lighting: Receptor Locations 2, 8 and 9. Based on this, it is anticipated that isolated locations throughout the Project Site vicinity would experience glare levels that would exceed the 55 Glare Rating threshold. This would constitute a significant glare impact.

Temporary lighting for productions and special events, including but not limited to traveling shows, concerts, and performances, represents a variety of temporary installations of lighting. The type, intensity, aiming, and distribution of these temporary lights are not able to be clearly identified for all types of events due to the uniqueness of each event and the myriad of different lighting configurations that could be required. In both instances (special events internal or external to the Event Center) the illuminance intensities of temporary special events are unlikely to exceed most of the thresholds of significance for light impacts, with the exception of the threshold for Project Site boundary impacts. Temporary luminaires in close proximity to the Project Site boundary would have the potential to cause spill light conditions in excess of the 8 lux threshold of significance. Additionally, temporary lighting sources would represent a possible source of glare that could result in significant glare impacts when viewed directly by sensitive receptors beyond the Project Site boundary. Pyrotechnics would also have the potential to exceed the thresholds for spill light and glare, despite the temporary and intermittent nature of the light emission. As such, impacts associated with special events and pyrotechnic displays would be significant with respect to the thresholds of significance for Project Site boundary impacts and glare.

Light emissions associated with the use of pyrotechnics and/or fireworks that are not contained within the Event Center (i.e., visible above the roof line) would result in significant lighting and glare impacts to proximate receptors with a line of sight to the emission source, albeit on a temporary and short-term basis. As it is anticipated that some pyrotechnic and/or firework displays would reach heights above the Event Center roofline, it is conservatively concluded that impacts from pyrotechnic events would be significant, albeit temporary and intermittent.

With regard to other light sources, including sky-tracker searchlights and headlight glare in the proposed parking garages, impacts would be less than significant with implementation of the project design features.

4. Cumulative Impacts

The geographic context for the cumulative impact analysis for artificial light is the immediate vicinity of the Project Site where related projects may have the potential to combine with the artificial light generated by the Proposed Project to cumulatively create a significant artificial lighting impact. As discussed in Section III.B, Basis for Cumulative Impact Analysis, of this Draft EIR, a total of 133 related projects have been identified within a 3-mile radius of the Project Site.

The Proposed Project would request an extended hours permit to allow construction activities to occur during nighttime hours. Temporary lighting sources associated with construction of the Proposed Project would result in significant impacts with respect to spill light and glare. Nighttime construction is required for the Proposed Project in order to achieve the Project Objectives. However, it is anticipated that construction activities associated with most, if not all, of the related projects would occur between the hours of 7:00 A.M. and 9:00 P.M. Monday through Friday, 8:00 A.M. and 6:00 P.M. on Saturday, and not at all on Sunday, in accordance with LAMC Section 41.40. However, because this is not known with certainty, and due to the proximity of some of the related projects to the Project Site, some of which are within a 2- to 3-block radius of the Project Site (refer to Figure III-2 in Section III.B, Basis for Cumulative Impact Analysis, of this Draft EIR), and the potential for simultaneous construction, it is conservatively concluded that cumulative construction impacts with respect to artificial light and glare would also be significant.

Upon completion of construction, development of the Proposed Project and the related projects would introduce new and expanded sources of artificial light in downtown Los Angeles. Several related projects would have the potential to be visible from light-sensitive uses in conjunction with the Proposed Project, including but not limited to Related Projects 27, 60, 91, 7, 34, 64, 2, and 65 which are located within a 2- to 3-block radius of the Project Site.

As stated in the analysis of Proposed Project impacts above, the Proposed Project would have a less than significant impact at all of the Receptor Locations with respect to artificial light with implementation of the project design features during normal cloud conditions, except with regard to field event lighting, special event lighting, pyrotechnics at some of the Receptor Locations, and spill light impacts at Receptor Location 8 under atypical atmospheric conditions. Consistent with the use of the Project Site as a major sports and entertainment complex and the highly urbanized nature of the Project Site area, the additional artificial light sources represented by the related projects are not anticipated to be of a sufficient magnitude to substantially alter the existing characteristics of the artificial light environment that currently exist in downtown Los Angeles. In the event that other projects propose extensive artificial light components that could cause a cumulative

impact, it is anticipated that these projects would be regulated via their respective project approval processes (including in most cases CEQA review) such that significant cumulative impacts would be precluded. The Proposed Project's building materials would not generate substantial glare, and the related projects are not located sufficiently close to the Project Site such that significant cumulative impacts could occur. Furthermore, the related projects would be subject to applicable LAMC regulations and other applicable regulations discussed above. Thus, cumulative artificial light impacts would be less than significant with regard to building façades, interior lighting, public plazas, parking garages, signage, sky tracker searchlights, and sky glow at all of the Receptor Locations.

As discussed above, a significant Project lighting impact at the Marriot/Ritz Tower (Receptor Location 8) could occur when both low cloud ceilings with high albedo (+50 percent) are present and a night event at the Event Center are occurring simultaneously. The likelihood of such an impact to actually occur is quite low and is not anticipated to occur more than a few times per year. As stated above, it is anticipated that the related projects would be regulated via LAMC regulations and their respective project approval processes (including in most cases CEQA review). While these regulatory controls would be anticipated to preclude significant impacts from the related projects, the potential exists for the related projects (particularly Related Project 27 which is located adjacent to the Marriot/Ritz Tower) to increase artificial light levels to some extent. Such increases would have the potential to add to the Proposed Project's significant spill light impact during atypical atmospheric conditions. Therefore, cumulative spill light impacts under this atypical atmospheric condition are also considered significant and unavoidable.

Furthermore, during normal atmospheric conditions, there may be some non-roadway locations at which the 55 Glare Rating threshold would be exceeded by the Proposed Project, namely locations that have a direct line of sight to the bank of lights used to light the playing field. Of the studied non-roadway sensitive receptor locations in the Lighting Report, three would have direct and unimpeded views to the spectator lighting: Receptor Locations 2, 8, and 9. To the extent lighting associated with any related projects would also be visible from the same locations, a significant cumulative glare impact would result.

Additionally, temporary luminaires associated with special events on the Project Site would have the potential to cause glare and spill light conditions and the temporary and intermittent use of pyrotechnics at the Event Center would be in excess of the thresholds of significance. Light and glare generated by the related projects, particularly Related Project 27 which is located adjacent to the Marriot/Ritz Tower, would have the potential to add to these significant light and glare impacts. Therefore, cumulative light and glare impacts from temporary special events are also considered significant and unavoidable.

5. Project Design Features and Mitigation Measures

a. Project Design Features

(1) Architectural Lighting Project Design Features

The following architectural design features and constraints shall be implemented as part of the Proposed Project to minimize lighting from proposed structures:

Project Design Feature D.2-1: Event Center Architecture: The Event Center architectural design includes the structure, façade, and the upper portion of the stadium structure supporting the deployable roof in the open position. The architectural design shall provide equivalent or reduced light transmissions when compared to the configurations of material properties shown in Figure 6.1.5.1 and Figure 6.1.5.2 of the Lighting Report included as Appendix K of this Draft EIR. These transmission limits shall reduce emissions from some field event lighting (located within the bowl) and other bowl light sources.

Project Design Feature D.2-2: Screening on Parking Garages: Exterior screening shall be installed to minimize the spill light from luminaires within open structure buildings from reaching beyond the Project Site. The screening shall also be installed so as to minimize the views and potential glare of headlights of motor vehicles within the garage from beyond the Project Site boundary. Screening measures may include, but are not limited to, shielding attached to the luminaire, building, or site structures.

Project Design Feature D.2-3: Building Façades: The maximum measurable luminance of the illuminated building façade shall not exceed 40 cd/m^2 . Additionally, an area weighted average of field measurements shall not exceed 10 cd/m^2 for any single contiguous façade area greater than 7,500 square feet in area.

Project Design Feature D.2-4: Glass used in building façades shall be anti-reflective or treated with an anti-reflective coating in order to minimize glare.

Project Design Feature D.2-5: Light levels from permanent light fixtures shall not exceed 10 fc (average, horizontal at the ground) within Gilbert Lindsey Plaza.

(2) Luminaire Project Design Features

The following design and specification constraints for luminaires shall be implemented as part of the Proposed Project to minimize light emissions from lighting equipment:

Project Design Feature D.2-6: Illuminance from specified light sources shall not exceed 21.5 lux (2.0 fc) at the property line of the nearest residential property or light sensitive receptor.

Project Design Feature D.2-7: Luminaires illuminating the building façade with intensities greater than 10,000 candelas shall be shielded from view beyond the Project Site boundary.

Project Design Feature D.2-8: Luminaires not illuminating the building façade with intensities greater than 10,000 candela shall be shielded or rated as cut-off per the Illuminating Engineering Society of North America.

Project Design Feature D.2-9: Luminaires within the Bond Street and L.A. Live Way Garages shall be equipped with screening measures that limit light spill beyond the north and west sides of the garage toward to Project Site's northern and western boundaries, which are adjacent to sensitive receptors.

Project Design Feature D.2-10: Luminaires shall be shielded, reduced in intensity, or otherwise protected from view such that the brightness of a light source within 10 degrees from a driver's normal line of sight shall not be more than 1,000 times the minimum measured brightness in the driver's field of view, except when minimum values are less than 10 fL. If minimum values are below 10 fL, the source brightness shall not exceed 500 fL plus 100 times the angle, in degrees, between the driver's line of sight and the light source.

Project Design Feature D.2-11: Luminaires used for field lighting within the Event Center shall be aimed, shielded, or screened from view so that the Glare Rating does not exceed 45 for motorists and vehicles operated on roadways. Prior to the issuance of the first building permit for the Event Center structure, the Event Center Applicant shall prepare a study of the Glare Ratings at all roadways that have a direct line of sight to the Event Center's Spectator Event luminaires located within a 1-mile radius of the Project Site. The lighting study shall demonstrate to the satisfaction of the City of Los Angeles Department of Building and Safety that the Event Center's design does not result in a Glare Rating above 45 at any roadway location within a 1-mile radius of the Project Site.

Project Design Feature D.2-12: The aiming of Sky-Tracker luminaires shall be regulated to prevent the high intensity beam from striking any building façades. Sky-Tracker luminaires shall not project light more than 25 degrees from zenith. Use of Sky-Tracker luminaires shall adhere to the aiming constraints shown diagrammatically in Figure IV.D.2-2 on page IV.D.2-22.

(3) Illuminated Signage Project Design Features

The following design and specification constraints for illuminated signage shall be implemented as part of the Proposed Project to minimize light emissions from illuminated signs:

Project Design Feature D.2-13: The measured illuminance from Proposed Project signage shall not exceed 32.3 lux (3.0 fc) at the property line of the nearest residential property or light sensitive receptor.

Project Design Feature D.2-14: The measured luminance from Proposed Project signage shall not exceed 800 cd/m² after sunset or before sunrise.

Project Design Feature D.2-15: Self-illuminated signs and/or luminaires intended to illuminate signs shall be shielded, or reduced in intensity, or otherwise protected from view such that the brightness of a light source within 10 degrees from a driver's normal line of sight shall not be more than 1,000 times the minimum measured brightness in the driver's field of view, except when minimum values are less than 10 fL. If minimum values are below 10 fL, the source brightness would not exceed 500 fL plus 100 times the angle, in degrees, between the driver's line of sight and the light source.

Project Design Feature D.2-16: The intensity of illuminated signage shall be controlled with a photocell with an adjustable set-point that measures available daylight. This set-point shall be used to control the intensity of the sign output to either the daytime or nighttime luminous intensity.

(4) Construction Lighting Project Design Features

The following project design feature shall be implemented as part of the Proposed Project to minimize light emissions from Proposed Project construction activities:

Project Design Feature D.2-17: Light sources associated with Proposed Project construction shall be shielded and/or aimed so that no direct beam illumination is provided outside of the Project Site boundary. However, construction lighting shall not be so limited as to compromise the safety of construction workers.

(5) Special Event Lighting Project Design Features

The following project design feature shall be implemented as part of the Proposed Project to minimize light emissions from special events within the Event Center:

Project Design Feature D.2-18: Any Sky-tracker luminaire within the Event Center that is aimed out of the open roof structure shall be aimed within 25 degrees of zenith.

In addition, the following project design feature shall be implemented as part of the Proposed Project to minimize light emissions from special events external to the Event Center:

Project Design Feature D.2-19: All luminaires installed on a temporary basis on the Project Site shall be aimed so that the direct beam illuminance is directed on the event activity.

In addition, the following project design feature shall be implemented as part of the Proposed Project to minimize light impacts on sensitive receptors from pyrotechnic events:

Project Design Feature D.2-20: The number of pyrotechnic displays at the Event Center shall be limited to 35 events per year. Each pyrotechnic display shall not exceed 20 minutes in duration.

(6) Interior Lighting Project Design Features

The following project design features shall be implemented as part of the Proposed Project to minimize light emissions from interior light sources (i.e., light sources located within proposed structures):

Project Design Feature D.2-21: The interior lighting for the Proposed Project and associated luminances or interior surfaces shall be designed, specified, and installed so that maximum candela direct beam illuminance (from luminaires) is not directed out of the building envelope.

b. Mitigation Measures

(1) Construction Mitigation Measures

Nighttime construction is required for the Proposed Project in order to achieve the Project Objectives. Thus, no feasible mitigation measures beyond the project design

features exist to reduce Proposed Project-level and cumulative construction impacts to a less than significant level.

(2) Operational Mitigation Measures

To mitigate glare impacts on sensitive receptors from field event lighting equipment, the following mitigation measure shall be implemented:

Mitigation Measure D.2-1: Luminaires used for field lighting within the Event Center shall be aimed, shielded, or screened from view in an effort to prevent the Glare Rating from exceeding 55 at all residences that have a direct line of sight to the Event Center's Spectator Event luminaires located within a one-mile radius of the Project Site. Prior to the issuance of the first building permit for the Event Center structure, the Event Center Applicant shall prepare a study of the Glare Ratings at all such residences located as specified above to determine whether the Glare Rating at such residences from the Event Center's Spectator Event luminaires exceeds a Glare Rating of 55. For those residences located as specified above that exceed a Glare Rating of 55, the Event Center Applicant shall offer to install, at the Event Center Applicant's expense, window coverings that reduce the Glare Rating to a level of 55 or below.

To mitigate light emissions from special events within the Event Center, the following mitigation measure shall be implemented:

Mitigation Measure D.2-2: As part of the building approval process, the Event Center Applicant shall submit a lighting plan to the satisfaction of the Director of Planning. The lighting plan shall include the following:

- the location(s) of Sky-tracker searchlights; and
- the locations of architectural lighting, as that type of lighting is defined in the Proposed Convention and Event Center Specific Plan.

To mitigate light emissions from signage visible from the freeway, the following mitigation measure shall be implemented:

Mitigation Measure D.2-3: The Director of Planning shall have the authority to limit the refresh rate on any Animated Sign or Electronic Message Display Sign visible from the freeway to refresh no more frequently than once every four seconds, with an interval between messages of not less than one second, and with an unchanged intensity of illumination.

6. Level of Significance After Mitigation

With the implementation of the proposed project design features and mitigation measure identified above, Proposed Project and cumulative lighting impacts would be less than significant with regard to light trespass and lighting levels at the analyzed receptors (from both architectural and signage lighting sources); whereas less than significant glare impacts would occur during daytime construction, and during Project operations from the use of skytrackers, illuminated signage, driver visibility/distraction, building/façade lighting, plaza lighting, headlights within the parking garages, daytime glare, and sky glow.

Mitigation Measure D.2-1 would reduce potentially significant impacts with respect to Event Center lighting used to light the playing field. However, it may not be feasible to achieve a Glare Rating of 55 or less at all locations, and it is possible that some of these locations would not elect to have window covering installed to reduce the Glare Rating. For those locations at which the Glare Rating exceeds 55 that do not elect to have window coverings installed, artificial lighting impacts would be significant and unavoidable during those times when the Event Center's luminaires are in use. Therefore, the Proposed Project's and cumulative impacts due to spectator event lighting at the Event Center are conservatively considered to be significant and unavoidable.

Significant Proposed Project and cumulative lighting impacts would occur during nighttime construction, and during Project operations from special event lighting, pyrotechnics, and unusual atmospheric conditions. Construction lighting impacts would only be significant when Event Center construction lighting occurs at elevations of 80 feet or higher (i.e., above the proposed parking garages) for locations to the west and north of the Event Center. Nighttime construction cannot be avoided in order to complete the Project within the timeframe identified in the Project Objectives.

Temporary lighting during Project operations for productions and special events, including but not limited to traveling shows, concerts, and performances, represents a variety of temporary installations of lighting. The type, intensity, aiming, and distribution of these temporary lights are not able to be clearly identified for all types of events due to the unique lighting requirements of each event and the myriad of different lighting configurations that could be required. Thus, it is not possible to identify with certainty specific mitigation measures that would mitigate impacts from all types of special events that could occur. As such, no feasible mitigation measures beyond the project design features exist that could reduce this impact to a less than significant level. It is conservatively concluded that significant and unavoidable Proposed Project and cumulative lighting impacts would occur with respect to temporary lighting during productions and special events.

Light impacts related to pyrotechnic and firework events could only be reduced by eliminating such events. However, such features are integral to the fan experience associated with the Event Center, as set forth in the Project Objectives. As such, no feasible mitigation measures exist that could reduce this impact to a less than significant level. Section V, Alternatives, of this Draft EIR includes an analysis of five alternatives to the Proposed Project that do not include the Event Center (i.e., no pyrotechnics): No Project—Status Quo Alternative (Alternative 1); No Project—Buildout Per Existing Approvals Alternative, (Alternative 2); New Hotel and Expansion Alternative (Alternative 5); Maximum Convention Center Alternative (Alternative 6); and Rehabilitation of West Hall and Limited Expansion Alternative (Alternative 7).

Significant spill light impacts would occur at Receptor Location 8 when low cloud ceilings with high albedo (+50 percent) are present in conjunction with the sports lighting being turned on. These specific conditions are likely to occur less than 5 percent of the year. No feasible mitigation measures have been identified that could reduce this impact to a less than significant level during these infrequent weather events.