
V. ENVIRONMENTAL IMPACT ANALYSIS

A. AESTHETICS

2. LIGHT AND GLARE

ENVIRONMENTAL SETTING

Project Vicinity

Ambient lighting in the vicinity of the Project Site consists of relatively low to high levels of lighting. The streets surrounding Exposition Park and the Project Site, Figueroa Street, Martin Luther King Jr. Boulevard, Vermont Avenue, and Exposition Boulevard include streetlights for their entire length. The other uses in Exposition Park all maintain mid-level lighting at night, and surface parking lots in the Park are relatively brightly lit. Surrounding commercial uses along Figueroa Street and Vermont Avenue maintain high-level lighting, while residential areas along Martin Luther King Jr. Boulevard maintain a relatively low level of nighttime lighting. Overall, existing ambient lighting levels surrounding the Project Site range from low to high.

Project Site

The existing permanent lighting at the Coliseum consists of small and moderate scale area lighting at the entrances and on the surrounding plaza as well as floodlights positioned around the Coliseum for various events. Because the former has little or no effect on adjacent properties, attention in this section is focused on the primary lighting component, the field lighting. There are 360 existing floodlights within the Coliseum.

The impact of the field lighting on the surrounding community at the Coliseum can be measured through the evaluation of two conditions: light trespass and light pollution.

Light Trespass

Light trespass is defined as the unwarranted or uninvited incursion of light from one property onto adjacent properties or surrounding land uses. The magnitude of this condition can be analyzed through the evaluation of the intensity of *direct glare* on the surrounding properties and the determination of the actual *area* which is affected. The comparison of values ascertained for the existing and proposed lighting schemes yields relative levels of trespass, allowing the determination of improvement or degradation of the existing light trespass condition expected to result from implementation of the Proposed Project.

Direct Glare. Direct glare is the annoyance or discomfort resulting from high luminances or insufficiently shielded light sources in the field of view. An analysis of the luminaire aiming angles, architectural configuration, and intensity of light at angles which project light directly onto adjacent properties, produces a metric which can be used as an evaluative barometer of direct glare.

The architectural configuration of the Coliseum causes direct visual shielding of the luminaires from view on adjacent properties surrounding the stadium, the magnitude of which can be determined through analysis of the concept known as architectural cut-off (shielding) angles. The average height of floodlights above the north rim of the Coliseum is 16 feet, resulting in a cut-off angle to the opposite (south) rim of approximately one degree below horizontal. The average height of the floodlights above the south rim wall (and press box) is 29 feet, yielding a cut-off angle to the opposite rim of approximately two degrees below horizontal.

Given an average vertical aiming angle for all floodlights of 16 degrees below horizontal, a vertical angle of 15 degrees above floodlight beam center is, on average, the photometric plane which projects over the opposite parapet walls and beyond. In the existing condition, a viewer to the north of the Coliseum sees a maximum of 204 floodlights when looking south. A viewer to the south looking north sees a maximum of 156 floodlights.

Affected Area. Though not an indicator by itself, the size and location of the area(s) upon which the stadium floodlighting projects direct illumination is also relevant. The inner perimeter of the area affected is determined by evaluation of the cut-off, or shielding, provided by the stadium parapets themselves. The outer perimeter or maximum extent of the area affected by direct glare is determined by the cut-off, or light source shielding, provided by and integral with the floodlights. Land uses within the area approximated by Exposition Boulevard to the north, Figueroa Street to the east, Vernon Avenue to the south and Vermont Avenue to the west could be potentially affected by direct glare from distances away from the Coliseum. The inner perimeter of the affected area starts approximately 4,000 feet from the stadium exterior on the south side and approximately 2,000 feet to the north. It should be noted that there is no outer perimeter because the existing floodlights do not have any lamp shielding or controlled cut-off. However, potential glare annoyance would extend only to areas with a direct line-of-sight to the Coliseum. It is also noted that, in reality, direct glare and trespass dissipate over great distances.

Light Pollution

Light pollution is defined as the contamination of the atmosphere with unwanted light above and around an installation. A relative measurement of this factor can be achieved by the evaluation of direct and indirect light pollution independently. The combination of these two components will produce a fixed quantity of light which is projected directly from the floodlights into the atmosphere and reflected indirectly from the ground. The magnitude of the light pollution effect is variable depending upon the moisture content of the atmosphere as well as the amount of other air carried particles such as smoke, exhaust fumes, pollen, etc. A relative scale to quantify light pollution is utilized not only because of its variable nature, but also because its impact is highly subjective. The fixed quantity of light is measured below in *lumens*. Lumens is a measurement of the amount of light present, just as gallons are a measurement of the amount of fluid present.

Direct Light Pollution. Based upon the average vertical aiming angle of 16 degrees below horizontal for all floodlights, the quantity of direct light pollution is determined by the product of light emitted above a horizontal plane coincident with the floodlight times the total number of floodlights. Each floodlight projects

19,134 lumens above the floodlight's 15 degree horizontal photometric plane. With a total of 360 floodlights, the total contribution of direct light pollution is approximately 6.9 million lumens.

Indirect Light Pollution. The quantity of indirect light pollution (reflected light from the ground) is determined by the product of light emitted below a horizontal plane coincident with the floodlight, multiplied by the total number of floodlights. This product is then multiplied by the ground reflectance factor (the percentage of light which reflects off of the field and stands). An estimated ground reflectance factor of 10 percent was used for this evaluation.¹ An average vertical aiming angle of 16 degrees below horizontal was used for all floodlights consistent with that used for the direct light pollution evaluation. Each floodlight projects 88,230 lumens below the floodlight's 15 degree horizontal photometric plane. With a total of 360 floodlights, and a ground reflectance of 10 percent, the total contribution of indirect light pollution is approximately 3.2 million lumens.

Under existing conditions, the direct and indirect light pollution components yields a total light pollution basis of 10.1 million lumens.

ENVIRONMENTAL IMPACTS

Thresholds of Significance

The California State CEQA Guidelines requires the assessment of aesthetic impacts to consider whether a project would create a significant impact. An impact to light and glare is considered to be significant if the project would result in a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

Project Impacts

As discussed in Section III.C of this document, Project Characteristics, the Coliseum is currently limited to hosting 25 weekend or holiday events per year (for events exceeding 25,000 attendees), and will continue to be limited to this number with the NFL as a new permanent tenant. The field lighting, then, is assumed to be in operation for the same number of events under the Proposed Project as under the existing project.

Floodlight Description

A detailed lighting system has not yet been designed for the Coliseum. However, the Proposed Project includes the incorporation of a tensile fabric roof structure along the north and south sides of the

¹ *The 10 percent factor was derived using values from Figure 7-28 of the IES Lighting Handbook (1984 Reference Volume).*

stadium and the field will be illuminated by floodlights attached to this roof. Figure V.A.2-1, provides an illustrative rendering of the Coliseum while lit. The effects of the lighting system, located under the roof structure can be noted. Also visible is the ability of the roof structure to shield light from spilling to adjacent areas, and instead directing lighting toward the field. The new lighting system will improve upon the existing pole mounted lights by including directional light and glare control in the design criteria. The lighting fixtures will have a narrow beam distribution and will be mounted high enough to eliminate shallow aiming angles that can cause light to “spill” out of the stadium. Lighting will be employed in a manner that will not increase the reflectivity of the site.

Because the floodlight design of the Proposed Project directs lighting more accurately than the existing lighting system, a significant beneficial reduction in the amount of light projected onto adjacent properties would result as compared to existing conditions. Thus, the *magnitude* of direct light and glare from the field lighting will be reduced significantly with the Proposed Project. The reduction is primarily the result of the steeper floodlight aiming angles in the proposed scheme as compared with existing conditions.

Affected Area. Land uses that could be adversely impacted by glare and light trespass would be predominantly residential dwelling units in the area generally bounded by Martin Luther King Jr. Boulevard to the north, Flower Street to the east, Vernon Avenue to the south, and Vermont Avenue to the west. However, because of the steeper floodlight angles, and the directed field lighting, a smaller area is expected to be impacted by the project, and the magnitude of the brightness, or direct glare, would be reduced as compared to existing conditions.

Anticipated Light Pollution

Total light pollution would be slightly reduced in the proposed scheme, as compared to existing conditions. The reduction described herein results from a significant reduction in light pollution from individual floodlights because of their steeper aiming angles.

Currently, the Coliseum is lit by field lights located along the rim of the stadium, directed toward the field. The field lights are not designed to prevent light spill outside of the stadium, as are those in the Proposed Project’s preliminary design. The Proposed Project will further reduce existing light and glare impacts through the incorporation of lighting located within the roof structures and directed toward the field. As such, the project’s impact on light and glare will be less than significant.

Figure V.A.2-1, Views 15 and 16

CUMULATIVE IMPACTS

Development of the Proposed Project, in conjunction with the related projects, would cumulatively contribute to light and glare impacts in and around the Exposition Park area. While each related project's light and glare impacts would be evaluated by either the City of Los Angeles, State agencies or stakeholders in Exposition Park, or other agencies, as appropriate in accordance with applicable regulations, the cumulative effects of this development would be experienced as modifications to the light levels in the general vicinity in which each particular project is located. However, no significant alteration to light or glare impacts would be expected to occur in the immediate vicinity. Since the Proposed Project will reduce light and glare impacts from existing levels, the project will not contribute to significant cumulative light and glare impacts.

MITIGATION MEASURES

The project is not anticipated to result in any significant light or glare impacts. Therefore, no mitigation measures are required.