URS

Memorandum

Date: December 12, 2013

To: Cristin Hallissy and Ngoc Bui, Caltrans District 4

From: Jeff Zimmerman, URS, on behalf of the Santa Clara Valley Transportation Authority

Subject: ***Supplement to the Visual Impact Assessment, US 101 Express Lanes Project, Santa Clara County, CA (No. 0412000459/EA 2G7100)***

The purpose of this memorandum is to document a change to the proposed project since the *Visual Impact Assessment, United States Highway 101 (US 101) Express Lanes Project, Santa Clara County, CA* (VIA, January 2013) was approved on January 14, 2013. A Preliminary Dark Collision Assessment was performed by the Caltrans Office of Traffic Safety which evaluated the concentration of accidents that occurred during dark driving conditions. The assessment recommended that the project include a total of 21.2 miles of additional lighting as mitigation.

Project lighting was not addressed in the approved VIA because lighting was not included in the project design at that time. Therefore, the following information addresses the existing lighting conditions in the US 101 corridor, the proposed lighting, and the potential project impacts. The addition of lighting on US 101 would not result in substantial adverse changes to the visual environment from light trespass, glare, or surface brightness, as described further below.

Existing Conditions

As stated in the VIA, US 101 in the project corridor is not designated or eligible for designation as a state scenic highway. The County of Santa Clara considers the South Valley Freeway (US 101 from Gilroy to the SR 85/US 101 interchange in southern San Jose) a Scenic Highway and proposes to add it to the *California Master Plan of Scenic Highways Eligible for Official Scenic Highway Designation* (County of Santa Clara 1994). In addition, the City of San Jose General Plan designates US 101 as a Rural Scenic Corridor from the southern limits of the City of San Jose to Metcalf Road. The City of San Jose General Plan states, "Development along designated Rural Scenic Corridors should preserve significant views of the Valley and Mountain, especially in, or adjacent to Coyote Valley, the Diablo Range, the Silver Creek Hills, the Santa Teresa Ridge and the Santa Cruz Mountains" (City of San Jose 2008). The City of San Jose General Plan also identifies "the broad sweep of the Santa Clara Valley, the hills and mountains which frame the Valley floor, the baylands and the urban skyline itself" as scenic resources (San Jose 2008).

Lighting is present in approximately 550 locations within the US 101 right-of-way and adjacent to US 101 along the 37.65-mile corridor. Mast-arm luminaires[1] are present along the freeway shoulder, off- and on-ramps, and freeway overcrossings. Other types of lighting structures are visible along the project corridor on local streets and in adjacent parking lots.

Project Lighting

As a result of the Caltrans recommendations, the following additional lighting is proposed:

- Mast-arm luminaires would be mounted on the concrete median barrier along each of the approximately 29 express lane access zones on US 101. Mast-arm luminaires may also be added along the roadway in accordance with Caltrans standards and policies. The conceptual access zones are shown in VIA Appendix A.

[1] A luminaire is a light fixture that is mounted to a pole, either directly or on a cantilever arm (referred to as a mast arm).

- Light fixtures would be added to each of the approximately 29 tolling structures in the median of US 101. The tolling structures are described in VIA Section 2.2.4. The light fixtures would be mounted on a mast arm that would be approximately 10 to 15 feet above the mast arm as shown in Exhibit N in VIA Section 2.2.4.
- Light fixtures would be installed on the project-related overhead signs described in VIA Section 2.2.4. Conceptual sign locations are shown in VIA Appendix A. A representative light fixture on an overhead sign is shown in Exhibit J in VIA Section 2.2.4.

The actual spacing and number of lights in the project corridor will be determined during the design phase in coordination with Caltrans Traffic Safety and other functional groups.

The maximum height of the luminaires and other light fixtures would be 35 to 40 feet. In the median, the luminaires would be double mast arm to provide illumination to both directions of US 101. All light fixtures will have light-emitting diodes (LEDs) configured at the minimum necessary number of bulbs, optimal mounting height, mast-arm length, and angle to restrict light to the freeway right-of-way. If needed, the fixtures will be outfitted with shields to prevent light trespass to adjacent properties.

The proposed luminaires would have a slender profile and would be visually compatible with those in the existing freeway corridor. US 101 in the project limits already contains lighting along and just outside of the freeway, and adjacent commercial and other land uses have nighttime illumination. Project lighting would introduce a moderate level of change to the existing environment.

Impacts

The following discusses project impacts from (1) the lighting structures and (2) project illumination and glare.

Lighting Structures

The luminaires and other light fixtures would be visible in the foreground of motorists' distant views of hills and undeveloped areas adjacent to the freeway. Mast-arm luminaires are already present along the project corridor. Views of the lighting structures would be consistent with existing freeway apparatus in the corridor and short in duration for motorists moving at freeway speeds.

Similar to the project signs and tolling structures, the majority of the luminaires and other light fixtures would be on US 101 between the northern SR 85/US 101 interchange in Mountain View and the southern SR 85/US 101 interchange in San Jose, where large sections of roadway are bordered by sound walls or vegetation. In a few sections between just north of the Cochrane Road interchange to the Yerba Buena Road interchange, US 101 is depressed by as much as 25 feet in relation to the development on the northbound side of the freeway. In those areas, the height differential would fully or partially block views of the luminaires and other light fixtures to observers outside of the freeway corridor. Partial views of these project features would not be highly conspicuous or intrusive, and would not substantially change the visual quality of the setting.

The luminaires and other light fixtures would also be visible to viewers at various land uses adjacent to US 101 in locations where the freeway corridor is not shielded by sound walls, trees, tall embankments, or development. Views of the lighting structures would be generally compatible with this highly trafficked corridor and its segments of urbanization. The luminaires would have slender profiles that would not obstruct views and would be minimally visible from a distance.

Views of the lighting structures would be consistent with the existing freeway setting. No substantial adverse effects on scenic vistas, scenic resources, or visual quality in or around the project corridor would occur.

Project Illumination and Glare

As noted above, the proposed luminaires and other light fixtures would have LEDs configured at the minimum necessary illumination level and optimal angle to restrict light to the freeway right-of-way. If needed, the fixtures would be outfitted with shields to prevent light trespass to surrounding properties. The proposed luminaires would be the same or similar to those used by Caltrans on Dumbarton Bridge and approved for use on other roadways. LED fixtures minimize light trespass, uplighting (i.e., urban sky glow), and reflected light from the roadway compared with high-pressure sodium fixtures (Leotek 2013). The distance of the light spread by an LED fixture similar to the type proposed for this project ranges from 50 to 80 feet in front of the fixture and from 20 to 50 feet behind the fixture, depending on configuration and shielding (ALR 2013). The extent of the light spread by LED fixtures would remain within the freeway right-of-way. In addition, the distance and pattern of the light distribution would be controlled by the number of LED bulbs, mounting height, mast-arm length, shielding, and angle of the fixture as part of project design.

The project lighting would not adversely affect motorists on US 101. Additional lighting would increase visibility of roadway and traffic conditions, which would benefit motorists.

There is residential development adjacent to US 101 along many portions of the project corridor. As stated previously, much of the northern portion of US 101 (north of the southern SR 85/US 101 interchange in San Jose) is shielded by sound walls or vegetation. Nighttime lighting from the luminaires and other fixtures would be confined to the US 101 right-of-way, with minimal glare or trespass affecting surrounding residences and other properties.

Conclusions

The lighting structures and project illumination would be visible to motorists and to some viewers outside of the project corridor. The proposed lighting would be installed as needed to provide additional illumination and would not result in inappropriate intensities of light and glare. The luminaires and other light fixtures would have nonreflective surfaces. LED fixtures minimize uplighting and reflected light from the roadway compared with high-pressure sodium fixtures, and would not contribute appreciably to urban sky glow. Substantial adverse changes to the visual environment from light trespass, glare, or surface brightness will not occur. No avoidance, minimization, or mitigation is proposed.

References

ALR 2013. E-mail communication between Tim Haley, Associated Lighting Representatives, Inc., Oakland, CA, and Angela Obeso, URS, June 17, 2013.

Leotek 2013. Green Cobra LED product information. URL: http://www.leotek.com/products/documents/ci/Leotek.GC.Brochure.051413.811.pdf.