

## **LIGHTING GUIDELINES FOR ARENA GREEN PROJECT**

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Author: Brian Orter

Brian Orter Lighting Design

5455 Wilshire BLVD suite 1210

Los Angeles, CA 90036

### *Riparian Corridor*

Light fixtures within the riparian corridor that are visible from the water surface should be shielded to prevent glare on the river. This ensures no ALAN (Artificial Lighting at Night), beyond what is already present on site, reaches these sensitive natural habitats. All additional lighting associated with the project, including additional life-safety lighting, should also be shielded from the river's surface and optically designed to cast light where needed. These sources should also avoid the use of lighting that incorporates any UV wavelengths to minimize their attraction to local insect and bat populations. These methods will prevent further disruption to natural behaviors among the native and migratory aquatic animals, such as the steelhead, salmon, and pond turtles.

### *Main Structure*

The structure itself should avoid using any steady sources of light that project upwards into migratory airspace which have been shown to attract and subsequently trap and confuse birds. Instead, the structure should use kinetic sources of light which are less attractive and therefore less disruptive to natural migration. Any necessary steady sources of light should be kept at the lowest possible level of luminance. Wherever possible, especially during periods of high migration, lights on the structure should be full-cutoff – shielded completely from casting any light up into the sky – to prevent attracting migratory birds off their natural path, and to minimize the project's contribution to general skyglow.

For any necessary steady light sources projecting into migratory airspace, the project should use as little full-spectrum white light or long wavelength red light as possible to minimize impact to the bird's magnetic compass. Instead, light from the shorter wavelength end of the spectrum – greens and blues – can be used as these interfere less with the magnetic detection of the migration path.

Finally, lights on the structure should incorporate time-clock controls. Research has shown that by turning lights off during the most sensitive times of the night or season, which can vary depending on the habitats or species in question, the most negative impacts of ALAN can be heavily reduced. This might mean shutting off any lights not necessary for life-safety after a certain time of night, like midnight or after the end of special events on site; alternately, lights could shut off during the dusk and dawn hours when many native species engage in light-triggered behaviors such as mating or hunting.

These are general suggestions based on the currently available research and current observations of the proposed site for the Arena Green project. If, during the structure design process, more specific questions are raised regarding the effect of light type, intensity, wavelength, etc. on certain animal species' behavior, more research may be needed to address those specific questions.

Through the use of mitigating measures such as those described above, the Arena Green project can leave a minimal impact on the surrounding natural environment, while becoming a beautiful and iconic piece of the San Jose landscape in celebration of the town's continued innovation and growth.