



SUNRISE POWERLINK

Imperial Valley Substation

Lighting Mitigation Plan

January 18, 2011

Background

In accordance with mitigation measure V-21a of the Mitigation, Monitoring and Compliance Program (MMCRP) for the approved Sunrise Powerlink Project, SDG&E submits this Lighting Mitigation Plan for the four new permanent lighting fixtures at Imperial Valley Substation. Mitigation measure V-21a requires SDG&E to submit a Lighting Mitigation Plan 90 days prior to ordering permanent lighting fixtures for the Imperial Valley Substation.

Imperial Valley (IV) Substation is located approximately 9 miles southwest of the city of El Centro, in Imperial County, California. The substation is located in a remote area, away from residences or other sensitive receptors. The location of the substation is in the northwest corner of the Sonora Desert, where the summer daytime temperature averages 107 degrees Fahrenheit, and often exceeds 110 degrees Fahrenheit. Due to these extreme conditions, maintenance work is routinely performed between the hours of 1am and 1pm between June 1st and September 30th. In addition to extreme heat, system conditions may warrant that cutovers and energization work be performed during nighttime, off-peak load conditions, even during cooler months. This is due to outages that may be required, as well as the risk of outages which could have severe system impacts. Working during nighttime hours requires the use of both fixed substation lighting, and when the task warrants, portable task flood lighting.

Lighting Design

Appendix A shows the layout of the IV Substation 500 kV switchyard including existing and proposed lighting. SDG&E will add (4) 400W sodium flood lights in the 500 kV switchyard as part of the Sunrise upgrades. This will bring the total number of lights in the 500 kV switchyard to 13. Existing lights are placed at approximately 40 feet from the ground, and have a hooded design. These lights are directed downward to cast the maximum light possible within the work areas. Proposed lights will be placed approximately 40 feet from the ground, matching the existing design and the downward orientation. All lights are attached to steel structural members within the substation. The lights will be oriented at an angle of less than 34 degrees to eliminate glare to offsite public viewing areas. Appendix B shows the design of the proposed lighting fixtures. The proposed fixtures will utilize the PF1 hood design, which hoods the sides and front of the light fixture.

Due to the flat nature of the terrain surrounding IV substation, and the hooded design, the new lights will not be visible from public viewing areas. Residences with a view of IV substation would not be impacted by the lights due to the hooded design.

Substation lights operate from switches in the control shelter, with lighting in each portion of the substation (230kV switchyard, 500kV switchyard, etc.) connected to different individual lighting circuits. With this design, construction and

maintenance crews will only turn on lights in the area where they are working, minimizing light usage.

SDG&E designs the lighting in substations to provide enough illumination to safely move about the substation and identify and avoid hazards. In general, the amount of light required for this purpose is 0.5 foot-candles at ground level.

As designed, the permanently installed lighting and temporary maintenance lighting will meet the requirements of mitigation measure V-21a.

Lighting Requirements

During nighttime maintenance activities, SDG&E construction crews will employ enough lighting fixtures to safely perform the required work. For ground-based activities, existing substation lighting will be used where feasible, with additional lighting provided by temporary, portable flood lighting directed downward where necessary. Aerial activities will be lit by temporary, portable flood lights used in a directed manner. The lighting will focus on the immediate work area to minimize reflected glare and illumination of the nighttime sky. The use of directed lighting for nighttime aerial activities is required to maintain worker safety.

The portable flood lighting will be provided by two (2) portable lighting trailers, consisting of four (4) 1000W flood lights, each trailer powered by a 10kW diesel powered generator that is attached to the trailer. Appendix C shows the portable lighting trailer that will be used for maintenance activities.

Per the applicant proposed measure BIO-APM-29 during nighttime maintenance activities SDG&E will use the minimum lighting necessary to ensure a safe working environment. The lighting will focus on the immediate construction area, minimizing the glare on surrounding areas. The temporary flood lighting will be directed downward or turned off when not in use.

After completion of the substation upgrades, the installed lights at IV Substation will only be used for emergency operations or other required maintenance. Nighttime maintenance activities will only be required when system conditions are such that daytime line and bus outages at Imperial Valley Substation are not allowed.¹

In compliance with mitigation measure L-1a, SDG&E has identified a public liaison and a toll-free hot line, to respond to concerns of neighboring property owners related to construction disturbances. Contact information for the public liaison person is included in the construction notices. SDG&E will respond to complaints in a timely manner. SDG&E will log the complaint, notify the CPUC of

¹ In reviewing the last 20 year history for Imperial Valley 500/230kV Substation, it appears that emergency work has occurred 3 to 5 times a year. SDG&E does not maintain records on when temporary lighting was utilized but, not all of this emergency work required portable lighting and even when portable lighting is required only a few would require aerial activities.

the complaint, and provide documentation to the CPUC that the complaint was effectively resolved.

Applicable Mitigation Measures

V-21a: Reduce night lighting impacts.	Design and install lighting to avoid night lighting impacts	SDG&E shall design and install all permanent lighting such that light bulbs and reflectors are not visible from public viewing areas; lighting does not cause reflected glare; and illumination of the project facilities, vicinity, and nighttime sky is minimized.
	Submit a Lighting Mitigation Plan 90 days prior to construction	SDG&E shall submit a Lighting Mitigation Plan to the CPUC for review and approval at least 90 days prior to ordering any permanent exterior lighting fixtures or components. SDG&E shall not order any exterior lighting fixtures or components until the Lighting Mitigation Plan is approved by the CPUC. The Plan shall include but is not necessarily limited to the following: <ul style="list-style-type: none"> • Lighting shall be designed so exterior light fixtures are hooded, with lights directed downward or toward the area to be illuminated and so that backscatter to the nighttime sky is minimized. The design of the lighting shall be such that the luminescence or light sources is shielded to prevent light trespass outside the project boundary • All lighting shall be of minimum necessary brightness consistent with worker safety • High illumination areas not occupied on a continuous basis shall have switches or motion detectors to light the area only when occupied.
BIO-APM-29: Construction lighting and traffic	Minimize impacts of exterior lighting adjacent to preserved habitat	Exterior lighting within the project area adjacent to preserved habitat shall be of the lowest illumination allowed for human safety, selectively placed, shielded, and directed away from preserved habitat to the maximum extent practicable.

APPENDIX A

Imperial Valley Substation General Arrangement

APPENDIX B

Lighting Fixture Design

APPENDIX C

Portable Flood Lighting