SAN DIEGO GAS & ELECTRIC COMPANY

EAST COUNTY SUBSTATION PROJECT
SURFACE TREATMENT PLAN

PREPARED
DECEMBER 5, 2012

PREPARED BY:

ENVIRONMENTAL VISION

PREPARED FOR:

SDGE

A Sempra Energy utility℠

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ATTACHMENTS

1 – INTRODUCTION

San Diego Gas & Electric Company's (SDG&E)'s East County (ECO) Substation Project (Project) includes the construction of a new 500/230/138 kilovolt (kV) ECO Substation east of Jacumba, the rebuilding of Boulevard Substation near the community of Boulevard, and the installation of a new transmission line between the Boulevard and ECO substations, along with a new transmission interconnect to the Southwest Powerlink (SWPL) at the ECO Substation. The locations of these Project components are depicted in Attachment A: Project Component Overview – Surface Treatment Plan. This Structure Surface Treatment Plan (Plan) outlines measures to be taken by SDG&E to reduce the potential visual impacts associated with the construction and operation of the Project. Specifically, this Plan has been prepared to support compliance with Mitigation Measure (MM) VIS-3g: Reduce visual contrast associated with substations and ancillary facilities. This Plan addresses the use of structure surface treatment that will reduce visibility and contrast of substation and ancillary facilities and will help these elements to blend in with the surrounding landscape setting.

2 – OBJECTIVES

The purpose of this Plan is to specify structure surface treatment that will reduce potential visibility and contrast of substation and ancillary facilities. Implementation of the Plan will help the Project elements blend in with the surrounding landscape setting thereby reducing potential short- and long-term visual impacts.

3 – MITIGATION MEASURES

MM VIS-3g: Reduce visual contrast associated with substation and ancillary facilities; requires SDG&E to address the following requirements:

"Submit to the CPUC a Surface Treatment Plan describing the application of colors and textures to all new facility structure buildings, walls, fences, and components comprising all ancillary facilities including substations. The Surface Treatment Plan must reduce glare and minimize visual intrusion and contrast by blending the facilities with the landscape. The Surface Treatment Plan shall be submitted for approval at least 90 days before (a) ordering the first structures that are to be color treated during manufacture or (b) construction of any of the ancillary facility components, whichever comes first. The Surface Treatment Plan shall include:

- Specification and 11" × 17" color simulations at life-size scale of the treatment proposed for use on project structures including structures treated during manufacturing
- A list of each major project structure, building, tower and/or pole, and fencing specifying the color(s) and finish proposed for each (colors must be identified by name and by vendor brand or a universal designation)
- Two sets of brochures and/or color chips for each proposed color

- A detailed schedule for completion of the treatment
- Procedures to ensure proper treatment maintenance for the life of the project."

In addition to MM VIS-3g, this Plan also addresses MM VIS-3i, which calls for reducing potential visual contrast of transmission structures through the use of dulled metal finish transmission structures and non-specular conductors. This Plan addresses the use of structure surface treatment to reduce potential long term visual impact identified in the Final Environmental Impact Report/Environmental Impact Statement, resulting from contrast of Project structures as seen by the public at locations along Interstate (I-) 8 and Old Highway 80 from distances within 0.75 mile.

4 – PLAN IMPLEMENTATION

Implementation of this Plan is intended to be coordinated with the Project Landscape Screening Plan for the ECO and Boulevard substations and the Project Habitat Restoration Plan, which call for installation of landscaping and revegetation that will reduce potential visibility and visual contrast associated with Project structures (and grading). In addition, to comply with MM VIS-3i: Reduce potential visual contrast of transmission structures, SDG&E will use non-specular conductors for overhead lines located outside of the fenced substation areas and a dulled metal finish for transmission structures, including new poles.

4.0 ECO SUBSTATION

Attachment B: ECO Substation Plan and Elevation Drawings shows a plan and elevation drawing of the ECO Substation. The substation will be split into two separate yards—a 500 kV yard and a 230/138 kV yard—at offset elevations. The substation pads will be enclosed by chain-link fencing. The substation footprint includes a 20-foot area outside the perimeter of the fencing required for maintenance purposes. The tallest structures in the substation will be the 500 kV line and transformer dead-end structures and the new communication tower. The maximum height for the 500 kV structures and communication tower will be approximately 135 feet.

Table 1: Summary of Structure Surface Treatment – ECO Substation lists the structures proposed at the ECO Substation and summarizes the predominant visual backdrop and recommended surface treatment. As seen from the primary affected public view corridors, including places along Interstate (I-) 8 and Old Highway 80, the predominant visual backdrop for the ECO Substation will be desert landscape comprised of a mottled pattern of sparse vegetation and exposed rock and soil. The Project Landscape Screening Plan for the ECO Substation calls for installation of plant material, including small trees, shrubs and grasses, that will reduce potential visibility of the substation structures and help the facility blend in with its surrounding desert landscape setting.

In light of these visual conditions, structure surface treatment will primarily involve use of gray color and dulled metal finishes for major transmission and substation facilities in combination with Otay Ranch Brown-colored split-face concrete block for the control and maintenance shelters, and similar darker colors that will blend in with the desert landscape.

Table 1: Summary of Structure Surface Treatment – ECO Substation

Equipment/Structure	Approximate Height	Predominant Visual Backdrop	Recommended Surface Treatment Color/Finish
500 kV A-frames	130 feet	Desert landscape	Dulled steel/metal finish substation and transmission structures
230 kV A-frames	73 feet	Desert landscape	Dulled steel/metal finish substation and transmission structures
138 kV A-frames	55 feet	Desert landscape	Dulled steel/metal finish substation and transmission structures
Control Shelter	12 feet	Desert landscape	Otay Ranch Brown-colored split-face concrete block
Maintenance Shelter	12 feet	Desert landscape	Otay Ranch Brown-colored split-face concrete block
Warehouse	25 feet	Desert landscape	Weathered Copper-colored steel building finished in a standard mesa wall
Transformer Fire Walls	30 feet	Desert landscape	Toffee Bar (UL140-21 – Behr) colored manufactured fiberglass panels or concrete walls
Water Tank	18 feet	Desert landscape	Weathered Copper-colored steel tank
Fence	8 feet	Desert landscape	Standard Gray galvanized steel chain link
Less Visible Elements			
500/230/12 kV Transformer	34 feet	Desert landscape	ANSI 70 Gray factory-applied finish
Emergency Generator	9 feet	Desert landscape	ANSI 70 Gray factory-applied finish
500 kV, Single-Phase Circuit Breaker	26 feet	Desert landscape	ANSI 70 Gray factory-applied finish
500 kV, Three-Phase Disconnect Switch	30 feet	Desert landscape	ANSI 70 Gray factory-applied finish
230 kV Circuit Breaker	17 feet	Desert landscape	ANSI 70 Gray factory-applied finish
230 kV Disconnect Switch	20 feet	Desert landscape	ANSI 70 Gray factory-applied finish
230 kV Shunt Capacitor	28 feet	Desert landscape	ANSI 70 Gray factory-applied finish

230/138 kV Transformer	27 feet	Desert landscape	ANSI 70 Gray factory-applied finish
138 kV Circuit Breaker	14 feet	Desert landscape	ANSI 70 Gray factory-applied finish
138/12 kV Transformer	16 feet	Desert landscape	ANSI 70 Gray factory-applied finish
12 kV Circuit Breaker	11 feet	Desert landscape	ANSI 70 Gray factory-applied finish
12 kV Reactor	7 feet	Desert landscape	ANSI 70 Gray factory-applied finish
Paving	0 feet	Desert landscape	Asphalt

Color samples for the Project structures are provided in Attachment C: Block/Wall Color Samples and Attachment D: Gray Color Samples. All finishes will be factory- or manufacturer-applied. The recommended surface treatments are durable and will minimize visual contrast of Project structures. Attachment E: Visual Simulation of ECO Substation from Old Highway 80 is a visual simulation that shows the ECO Substation with implementation of both this Plan and the Project Landscape Screening Plan.

4.1 BOULEVARD SUBSTATION

The Boulevard Substation rebuild will include a 138/69/12 kV fenced yard measuring approximately 296 feet by 338 feet, and a 10-foot cleared area around the perimeter. The fenced area of the new substation will encompass approximately two acres; the installed substation equipment will be fully contained within the fenced area. The tallest substation elements will be the 138 kV A-frame structures and 69 kV bus structures, which will be respectively 39 and 30 feet tall. Attachment F: Boulevard Substation Plan and Elevation Drawings shows a plan and elevation drawing of Boulevard Substation.

Table 2: Summary of Structure Surface Treatment – Boulevard Substation lists each structure proposed at the Boulevard Substation site and summarizes its predominant visual backdrop and appropriate surface treatment. As seen from the primary affected public view corridors within the surrounding vicinity, including places along Old Highway 80, the predominant visual backdrop for the Boulevard Substation will be a combination of sky and undulating landscape terrain. The installation of trees, shrubs, and grasses called for in the Boulevard Landscape Screening Plan will provide partial screening of the substation structures. Given these visual conditions, structure surface treatment will primarily involve use of neutral gray color and dulled metal finishes for major transmission and substation facilities in combination with Otay Ranch Brown-colored split-face concrete block for the control shelter. All finishes will be factory- or manufacturer-applied. The recommended surface treatments are durable and will minimize contrast of the partially visible structures. Attachment G: Visual Simulation of Boulevard Substation from Old Highway 80 presents a visual simulation that shows the Boulevard Substation with implementation of both this Plan and the Project Landscape/Screening Plan.

4.2 TRANSMISSION LINE

Attachment A: Project Component Overview shows the overall transmission line layout and Attachment H: Transmission Pole Typical Elevation Drawings presents typical elevation drawings of the transmission poles.

4.2.0 SWPL Loop-In

The existing SWPL 500 kV transmission line, which will include approximately six three-pole structures east of the ECO Substation fence, will be looped in and out of the ECO Substation.

Table 2: Summary of Structure Surface Treatment – Boulevard Substation

Equipment/Structure	Approximate Height	Predominant Visual Backdrop	Recommended Surface Treatment Color/Finish
138 kV A-Frames	39 feet	sky	Dulled steel/metal finish substation and transmission structures
69 kV Bus Structure	30 feet	sky	Dulled steel/metal finish substation and transmission structures
Control Shelter	12 feet	landscape	Otay Ranch Brown
Capacitor Bank	28 feet	landscape	ANSI 70 Gray factory-applied finish
Fence	8 feet	landscape	Standard Gray galvanized steel chain link
Less Visible Elements			
138 kV Circuit Breakers	14 feet	landscape	ANSI 70 Gray factory-applied finish
69 kV Circuit Breakers	12 feet	landscape	ANSI 70 Gray factory-applied finish
138/69 kV Transformer	24 feet	landscape	ANSI 70 Gray factory-applied finish
138/12 kV Transformer	16 feet	landscape	ANSI 70 Gray factory-applied finish
12 kV Switchgear	11 feet	landscape	ANSI 70 Gray factory-applied finish
Paving	0 feet	landscape	Asphalt

4.2.1 138 kV Overhead Line

The Project includes construction of one new 138 kV transmission line from the rebuilt Boulevard Substation to the new ECO Substation. Approximately seven miles will be constructed overhead, including 56 poles, and 6.9 miles will be constructed underground. An overhead portion will extend west from the ECO Substation site for approximately 0.45 miles before transitioning underground at one new riser pole located between Milepost (MP) 0.3 and MP 0.4. It will transition back to an overhead line near MP 3.1, where one riser pole will be installed. It will then extend approximately 6.8 miles, paralleling the SWPL line to a location near MP 9.8, where one additional riser pole will be installed and the line will again transition to an underground configuration. As an alternative, SDG&E is considering splitting the phasing and installing a second riser pole at each transition. In either case, the riser poles will receive the same surface treatment

Table 3: Summary of Structure Surface Treatment – Transmission Poles lists each transmission pole number and structure type with a summary of its corresponding height, predominant visual backdrop, and appropriate surface treatment. The recommended dulled metal surface treatment will minimize potential visual contrast of the structures. As seen from the primary affected public view corridors along I-8 and Old Highway 80 and in the Jacumba community, the predominant visual backdrop for the overhead portion of the transmission line will be a combination of sky and hillside landscape. Views of the Project's 138 kV transmission line will generally include the nearby or adjacent existing SWPL transmission line structures. As described in the Visual Resources section of the Final EIR/EIS, the existing SWPL structures dominate the visual landscape as a result of their bulk and scale, and their presence "would reduce the overall visual change attributed to the 138 kV transmission line." Given these visual conditions, structure surface treatment will primarily involve the use of dulled metal finishes for the transmission poles and use of non-specular conductors. Finishes will be durable and factory- or manufacturer-applied. The recommended surface treatment will further minimize visual contrast of the 138 kV Project structures, the visual impacts of which were determined to be less than significant in the Final EIR/EIS. Attachment I: Visual Simulation of Transmission Line from Old Highway 80 and Attachment J: Visual Simulation of Transmission Line from Jacumba are visual simulations that respectively show the transmission line with implementation of this Plan as seen from Old Highway 80 and from the Jacumba community, respectively.

4.2.2 Schedule

Project structures will be delivered to the job site, complete with recommended surface treatment because all colors and finishes will be factory- or manufacturer-applied. Table 4: Project Component Installation Schedule summarizes the general timeframe for completing installation of Project structures.

Table 3: Summary of Structure Surface Treatment – Transmission Poles

Pole Number Structure Type	Approximate Height	Predominant Visual Backdrop	Recommended Surface Treatment Finish/color
SD-1 SWPL Loop-In	101 feet	Landscape	Dulled metal finish transmission structure
SD-2 SWPL Loop-In	125 feet	Landscape	Dulled metal finish transmission structure
SD-3 SWPL Loop-In	118 feet, 11 inches	Landscape	Dulled metal finish transmission structure
SD-4 SWPL Loop-In	65 feet	Landscape	Dulled metal finish transmission structure
SD-5 SWPL Loop-In	115 feet	Landscape	Dulled metal finish transmission structure
SD-6 SWPL Loop-In	100 feet	Landscape	Dulled metal finish transmission structure
SP-38 Riser	110 feet	Landscape/sky	Dulled metal finish transmission structure
SP-39 Deadend	125 feet	Landscape/sky	Dulled metal finish transmission structure
SP-40 Tangent	130 feet	Landscape/sky	Dulled metal finish transmission structure
SP-41 Tangent	140 feet	Landscape/sky	Dulled metal finish transmission structure
SP-42 Tangent	150 feet	Landscape/sky	Dulled metal finish transmission structure
SP-43 Tangent	135 feet	Landscape/sky	Dulled metal finish transmission structure
SP-44 Tangent	150 feet	Landscape/sky	Dulled metal finish transmission structure
SP-45 Tangent	130 feet	Landscape/sky	Dulled metal finish transmission structure
SP-46 Tangent	150 feet	Landscape/sky	Dulled metal finish transmission structure
SP-47 Tangent	110 feet	Landscape/sky	Dulled metal finish transmission structure
SP-48 Tangent	135 feet	Landscape/sky	Dulled metal finish transmission structure
SP-49 Tangent	145 feet	Landscape/sky	Dulled metal finish transmission structure
SP-50 Tangent	150 feet	Landscape/sky	Dulled metal finish transmission structure

Pole Number Structure Type	Approximate Height	Predominant Visual Backdrop	Recommended Surface Treatment Finish/color
SP-51 Tangent	125 feet	Landscape/sky	Dulled metal finish transmission structure
SP-52 Tangent	130 feet	Landscape/sky	Dulled metal finish transmission structure
SP-53 Tangent	125 feet	Landscape/sky	Dulled metal finish transmission structure
SP-54 Tangent	140 feet	Landscape/sky	Dulled metal finish transmission structure
SP-55 Tangent	120 feet	Landscape/sky	Dulled metal finish transmission structure
SP-56 Tangent	130 feet	Landscape/sky	Dulled metal finish transmission structure
SP-57 Tangent	125 feet	Landscape/sky	Dulled metal finish transmission structure
SP-59 Tangent	120 feet	Landscape/sky	Dulled metal finish transmission structure
SP-60 Tangent	135 feet	Landscape/sky	Dulled metal finish transmission structure
SP-61 Tangent	110 feet	Sky	Dulled metal finish transmission structure
SP-62 Tangent	135 feet	Landscape/sky	Dulled metal finish transmission structure
SP-63 Tangent	85 feet	Landscape	Dulled metal finish transmission structure
SP-64 Tangent	100 feet	Landscape	Dulled metal finish transmission structure
SP-65 Tangent	130 feet	Landscape	Dulled metal finish transmission structure
SP-66 Tangent	120 feet	Sky	Dulled metal finish transmission structure
SP-67 Tangent	120 feet	Sky	Dulled metal finish transmission structure
SP-69 Tangent	145 feet	Sky	Dulled metal finish transmission structure
SP-70 Tangent	125 feet	Sky	Dulled metal finish transmission structure
SP-71 Tangent	120 feet	Sky	Dulled metal finish transmission structure
SP-72 Tangent	120 feet	Sky	Dulled metal finish transmission structure

Pole Number Structure Type	Approximate Height	Predominant Visual Backdrop	Recommended Surface Treatment Finish/color
SP-73 Tangent	115 feet	Landscape/sky	Dulled metal finish transmission structure
SP-75 Tangent	130 feet	Sky	Dulled metal finish transmission structure
SP-76 Tangent	130 feet	Sky	Dulled metal finish transmission structure
SP-77 Tangent	140 feet	Sky	Dulled metal finish transmission structure
SP-78 Tangent	135 feet	Sky	Dulled metal finish transmission structure
SP-79 Tangent	140 feet	Sky	Dulled metal finish transmission structure
SP-80 Tangent	140 feet	Sky	Dulled metal finish transmission structure
SP-81 Tangent	140 feet	Sky	Dulled metal finish transmission structure
SP-82 Tangent	135 feet	Sky	Dulled metal finish transmission structure
SP-83 Tangent	125 feet	Landscape	Dulled metal finish transmission structure
SP-84 Tangent	135 feet	Landscape/sky	Dulled metal finish transmission structure
SP-85 Tangent	135 feet	Landscape/sky	Dulled metal finish transmission structure
SP-86 Tangent	120 feet	Landscape/sky	Dulled metal finish transmission structure
SP-87 Tangent	130 feet	Landscape/sky	Dulled metal finish transmission structure
SP-88 Deadend	125 feet	Landscape/sky	Dulled metal finish transmission structure
SP-90 Deadend	125 feet	Sky	Dulled metal finish transmission structure
Riser	115 feet	Sky	Dulled metal finish transmission structure
SP-105 Riser	110 feet	Sky	Dulled metal finish transmission structure
SP-106 Deadend	115 feet	Landscape/sky	Dulled metal finish transmission structure
SP-107 Tangent	110 feet	Landscape/sky	Dulled metal finish transmission structure

Pole Number Structure Type	Approximate Height	Predominant Visual Backdrop	Recommended Surface Treatment Finish/color
SP-108 Deadend	110 feet	Landscape/sky	Dulled metal finish transmission structure
SP-108A Deadend	115 feet	Landscape/sky	Dulled metal finish transmission structure

Table 4: Project Component Installation Schedule

Project Component	Activity	Approximate Duration (months)	Anticipated Start Date
ECO Substation	Above-Grade Construction	8	May 2013
SWPL Loop-In	Tower Installation and Conductor Stringing	2	September 2013
138 kV Transmission Line	Pole Installation	4	April 2013
	Conductor Stringing and Sagging	5	May 2013
Boulevard Substation Rebuild	Above-Grade Construction	5	March 2013

4.2.3 Maintenance Procedures

The factory-applied finishes on transmission poles and major substation equipment, including A-Frames, bus structures, capacitor banks and transformers, is considered permanent and will not deteriorate. The appearance of standard, pre-colored concrete material used for the control and maintenance shelters is durable and is not expect to deteriorate. Over a period of approximately two years, standard galvanized steel used for perimeter fencing at both substations will weather to become dull and slightly darker, but it will not deteriorate. SDG&E's substation maintenance protocols and programs include periodic inspections that would identify and resolve potential issues associated with any deterioration in finishes on Project structures.

4.2.4 Inspection

In accordance with requirements outlined in MM VIS-3g, within 30 days following the start of commercial operation, SDG&E will notify the California Public Utilities Commission (CPUC) that all buildings and structures are ready for inspection.

5 – REFERENCES

CPUC. East County Substation/Tule Wind/Energia Sierra Juarez Gen-Tie Projects Final Environmental Impact Report/Environmental Impact Statement. 2012. Online. http://www.cpuc.ca.gov/environment/info/dudek/ECOSUB/ECO_Final_EIR-EIS.htm.

SDG&E. 2009. ECO 500/230/138 kV Substation Project Proponent's Environmental Assessment.

ATTACHMENT A: PROJECT COMPONENT OVERVIEW – SURFACE TREATMENT PLAN

ATTACHMENT B: ECO SUBSTATION PLAN AND ELEVATION DRAWINGS

ATTACHMENT C: BLOCK/WALL COLOR SAMPLES

ATTACHMENT D: GRAY COLOR SAMPLES

ATTACHMENT E: VISUAL SIMULATION OF ECO SUBSTATION FROM OLD HIGHWAY 80

ATTACHMENT F: BOULEVARD SUBSTATION PLAN AND ELEVATION DRAWINGS

ATTACHMENT G: VISUAL SIMULATION OF BOULEVARD SUBSTATION FROM OLD HIGHWAY 80

ATTACHMENT H: TRANSMISSION POLE TYPICAL ELEVATION DRAWINGS

ATTACHMENT I: VISUAL SIMULATION OF TRANSMISSION LINE FROM OLD HIGHWAY 80

ATTACHMENT J: VISUAL SIMULATION OF TRANSMISSION LINE FROM JACUMBA