

**APPENDIX L**  
*Visual Impact Assessment*



**DRAFT**

**Visual Impact Assessment  
for the  
Campo Wind Project with Boulder Brush Facilities**

*Lead Agency:*

**Bureau of Indian Affairs**  
Pacific Regional Office  
2800 Cottage Way  
Sacramento, California 95825  
*Contact: Dan Hall*

*Prepared by:*

**DUDEK**  
605 Third Street  
Encinitas, California 92024  
*Contact: Josh Saunders, AICP*  
*Phone: 760.479.4283*

**MAY 2019**



# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

## TABLE OF CONTENTS

<b><u>Section</u></b>	<b><u>Page No.</u></b>
<b>ACRONYMS AND ABBREVIATIONS.....</b>	<b>V</b>
<b>1 INTRODUCTION.....</b>	<b>1</b>
<b>2 PROJECT DESCRIPTION .....</b>	<b>3</b>
2.1 Project Components .....	3
2.1.1 Boulder Brush Facilities .....	4
2.1.2 Construction.....	4
2.1.3 Operations and Maintenance.....	4
2.1.4 Decommissioning and Restoration .....	5
2.1.5 Land Use Designations and Zoning.....	5
<b>3 VISUAL ENVIRONMENT OF THE PROJECT .....</b>	<b>7</b>
3.1 Project Area .....	7
3.2 Surrounding Area.....	8
3.3 Scenic Vistas.....	9
3.4 Scenic Highways.....	9
3.5 Recreation Areas.....	10
<b>4 AFFECTED ENVIRONMENT .....</b>	<b>13</b>
4.1 Regional and Local Landscape Setting.....	13
4.2 Project Viewshed .....	13
4.3 Visual Resources Components .....	15
4.3.1 Visual Quality .....	15
4.3.2 Landscape Character Units .....	16
4.3.3 Viewer Groups and Sensitivity .....	17
4.3.4 Key Observation Points .....	18
<b>5 REGULATORY ENVIRONMENT .....</b>	<b>23</b>
5.1 Federal.....	23
5.1.1 National Environmental Policy Act.....	23
5.1.2 Federal Highway Administration Visual Resource Guidelines .....	23
5.1.3 Federal Land Policy and Management Act.....	24
5.1.4 Bureau of Land Management Visual Resource Management and Contrast Rating.....	25
5.1.5 Bureau of Land Management Wind Energy Development Policy Instructional Memorandum (IM 2009-043).....	25
5.1.6 National Trails .....	26

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

## TABLE OF CONTENTS (CONTINUED)

<b><u>Section</u></b>	<b><u>Page No.</u></b>
5.1.7 Federal Aviation Administration .....	26
5.2 State.....	28
5.2.1 California Scenic Highway System .....	28
5.3 Local .....	28
5.3.1 San Diego County General Plan .....	29
5.3.2 Mountain Empire Subregional Plan.....	29
5.3.3 Boulevard Community Plan.....	29
5.3.4 Boulevard Community Trails and Pathways Plan .....	29
5.3.5 Campo/Lake Mornea General Plan.....	30
5.3.6 Campo/Lake Morena Community Trails and Pathways Plan.....	31
<b>6 IMPACT ASSESSMENT .....</b>	<b>33</b>
6.1 Introduction.....	33
6.2 Assessment Process .....	34
6.3 Environmental Consequences.....	37
6.3.1 Impact Indicators .....	37
6.3.2 Proposed Project (Alternative 1).....	39
6.3.3 Effects to Visual Resources from the Reduced Intensity Alternative (Alternative 2).....	64
6.4 Cumulative Projects .....	65
6.4.1 Cumulative Effects.....	68
6.4.2 Residual Effects .....	69
6.4.3 Irreversible and Irrecoverable Commitment of Resources.....	70
<b>7 RECOMMENDATIONS AND MITIGATION MEASURES .....</b>	<b>71</b>
7.1 Mitigation Measures .....	71
7.2 Effectiveness of Recommended Mitigation.....	72
<b>8 REFERENCES.....</b>	<b>73</b>
<b>9 REPORT PREPARERS.....</b>	<b>75</b>

**Visual Impact Assessment for the  
Campo Wind Project with Boulder Brush Facilities**

---

**TABLE OF CONTENTS (CONTINUED)**

**Page No.**

**TABLES**

1	Visual Resources Classification Summary .....	16
2	Key Observation Points .....	19
3	Contrast Ratings Criteria.....	38
4	Visual Impact Significance Matrix – Sensitive Viewing Areas .....	38
5	Mountain Empire Subregional Plan Consistency Analysis .....	59
6	Boulevard Community Plan Consistency Analysis .....	61
7	Campo/Lake Morena Community Plan Consistency Analysis.....	63

**FIGURES**

1	Project Location .....	77
2	Project Layout.....	79
3	Viewshed.....	81
4	Scenic Quality Rating Units.....	83
5a	Existing Conditions: Key Observation Points 1 and 2.....	85
5b	Existing Conditions: Key Observation Points 3 and 4.....	87
5c	Existing Conditions: Key Observation Points 5 and 6.....	89
5d	Existing Conditions: Key Observation Point 7 and 8 .....	91
5e	Existing Conditions: Key Observation Point 9.....	93
6a	Alternative 1 Visual Simulation: Key Observation Points 1 and 2 .....	95
6b	Alternative 1 Visual Simulation: Key Observation Points 3 and 4 .....	97
6c	Alternative 1 Visual Simulation: Key Observation Points 5 and 6 .....	99
6d	Alternative 1 Visual Simulation: Key Observation Points 7 and 8 .....	101
6e	Alternative 1 Visual Simulation: Key Observation Point 9.....	103

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

INTENTIONALLY LEFT BLANK

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

## ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
Tribe	Campo Band of Diegueño Mission Indians
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
County	County of San Diego
I	Interstate
kV	kilovolt
LCU	Landscape Character Unit
MW	megawatt
Project	Campo Wind Project with Boulder Brush Facilities
Reservation	Campo Indian Reservation
SR	State Route

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

INTENTIONALLY LEFT BLANK

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

## 1 INTRODUCTION

This Visual Impact Assessment (VIA) has been prepared in accordance with the National Environmental Policy Act (NEPA) (42 USC, Section 4321 et seq. and 40 CFR 1500–1508) with background information from planning and environmental documents prepared by or for the Bureau of Indian Affairs (BIA), Bureau of Land Management (BLM), State of California, and the County of San Diego (County), to address the potential visual impacts associated with the proposed Campo Wind Project with Boulder Brush Facilities (Project) in eastern San Diego County, California. The Project consists of two elements: the Campo Wind Project, consisting of the Campo Wind Facilities, which would be on leased lands within the Campo Band of Diegueño Mission Indians Reservation (Reservation), and the Boulder Brush Facilities, which would be located on private lands and would therefore be subject to County land use jurisdiction.

While the BLM, the state, and the County have no land use authority over the On-Reservation portion of the Project, the land use plans of these entities are discussed to provide context to the existing visual environment and regulatory setting. The Boulder Brush Facilities are subject to one or more Major Use Permits (MUP) from the County. Therefore, state and County regulations are applicable to the Boulder Brush Facilities.

Because the Project would be primarily located on Reservation land under the jurisdiction of the BIA, this VIA has been prepared using a hybrid analysis methodology, composed of federally-adopted assessment guidelines adapted from the BLM Visual Resource Management (VRM) system and the Federal Highway Administration (FHWA) VIA handbook. Because the County has land use jurisdiction over the Boulder Brush Facilities, the County of San Diego Report Format and Content Requirements for Visual Resources (County of San Diego 2007) was reviewed during preparation of this report.

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

INTENTIONALLY LEFT BLANK

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

## 2 PROJECT DESCRIPTION

The proposed action consists of Bureau of Indian Affairs (BIA) approval of a 25-year lease of land (with the possibility of a 13-year extension) between the Campo Band of Diegueño Mission Indians (Tribe) and Terra-Gen Development Company LLC (Terra-Gen), the developer, on the Reservation (Campo Lease). The proposed action would authorize the Campo Lease, allowing Terra-Gen to develop, construct, operate, maintain and ultimately decommission a renewable energy generation facility (Campo Wind Facilities) on land within the Reservation. The “Campo Wind Project with Boulder Brush Facilities” or “Project” for short, consists of both the Campo Wind Facilities on land within the Reservation (Campo Wind Project) and the Boulder Brush Facilities which are located on adjacent private lands. This VIA evaluates the potential effects, or impacts, of the Project on visual resources and views. The terms *effects* and *impacts* are synonymous for the purposes of this document.

The Campo Wind Facilities, which include the construction and operation of 60 wind turbines and associated infrastructure, would be located within a corridor of approximately 2,200 acres of land (Campo Corridor) within the approximately 16,000 acres under the jurisdiction of the Reservation. The Boulder Brush Facilities, which would consist of the portion of the gen-tie line and related facilities to connect energy generated by the Project to the existing San Diego Gas & Electric Company (SDG&E) Sunrise Powerlink, would be located within a corridor of approximately 500 acres of land (Boulder Brush Corridor) within the approximately 2,000 acres of private leased parcels adjacent to the northeast portion of the Reservation. These private parcels are under the land use and permitting jurisdiction of the County. The Reservation and the private parcels containing the Boulder Brush Facilities comprise the Project Area (see Figure 1, Project Location). Collectively, the Campo Corridor and the Boulder Brush Corridor comprise the approximately 2,700-acre Project Site (see Figure 2, Site Layout).

The Project Area (i.e., the Reservation Boundary and the Boulder Brush Boundary) is located in southeastern San Diego County, approximately 60 miles east of San Diego, California, near the unincorporated communities of Campo, Boulevard, and Live Oak Springs (see Figure 1, Location Map). The Reservation Boundary extends north and south of Interstate (I) 8 along the Tecate Divide, from the southern boundary of the Manzanita Indian Reservation to the north, and south to approximately 0.25 miles north of the U.S. international border with Mexico. The Boulder Brush Boundary is located north of I-8 and east of the Tecate Divide and encompasses private lands under the jurisdiction of the County of San Diego.

### 2.1 Project Components

Detailed Project components are located within Appendix B of the Draft EIS.

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

## 2.1.1 Boulder Brush Facilities

Detailed Project components are located within Appendix B of the Draft EIS.

## 2.1.2 Construction

A detailed discussion of Project construction is located within Appendix B of the Draft EIS.

## 2.1.3 Operations and Maintenance

The Project, with the exception of the 500 kV switchyard and associated in and out lines, would be operated by the developer in accordance with an operating plan, which would be tailored to meet the requirements of all Project agreements, permitting requirements, and prudent industry practices. All turbines, Electrical Collection and Communication System cables, substations, and transmission lines would be operated in a safe manner according to standard industry procedures. Routine maintenance of the turbines would be necessary to maximize performance and detect potential inefficiencies. The developer and the turbine supplier would control, monitor, operate, and maintain the Project by means of a SCADA system and regularly scheduled on-site inspections. Any problems would be promptly reported to on-site O&M personnel, who would perform routine maintenance and most major repairs. Most servicing would be performed up-tower (i.e., O&M personnel climb the towers and perform maintenance within the tower or nacelle and access the towers using pick-up trucks), without using a crane to remove the turbine from the tower. Additionally, all roads, turbine bases, and trenched areas would be regularly inspected and maintained to minimize erosion. The developer anticipates that approximately 10 O&M staff would be employed at a time throughout the life of Project. Hours of operation would be from 7 a.m. to 4 p.m. with at least one on-call emergency staff at all times. Major holidays would lessen staff to only three full-time personnel.

All scheduled maintenance activities would occur within areas previously disturbed by construction, so no new ground disturbance would occur during O&M of the Project. Access roads would be maintained during O&M to prevent off-road detours due to ruts, mud holes, or other deterrents. All fuels and hazardous materials would be properly stored during transportation and while at the job site. Workers would be instructed to keep all job sites in a sanitary and safe condition. For vegetation control purposes, mowing or weed-eating would occur along Project roads, and around the substations, O&M facility, and turbines.

Gen-tie and substation inspections would occur weekly and consists of visual inspection of batteries, charger, backup generator breaker, etc. A line patrol would be conducted monthly with binoculars for the first year. After the first year of the line and substation install, all fasteners and equipment would be re-torqued. After the first year, re-torque is conducted every 5 years.

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

## 2.1.4 Decommissioning and Restoration

If built, the Project would operate, at a minimum, for the life of the lease. Decommissioning refers to the dismantling of Project elements and restoration of the site upon expiration of the lease and the operating life of the Project. Whether the 500 kV switchyard and in and out legs are decommissioned is outside of the developer's control, as this infrastructure will be owned and operated by SDG&E.

The aboveground dismantle of the turbines would take approximately 8 weeks and would include cranes, flatbed trucks, rough terrain forklifts, 12 workers, four vendor trucks, and approximately 390 haul trips. Pad removal would take approximately 12 weeks with 24 workers, 4 vendor trucks, and 1,125 haul trips. All underground utilities would take approximately 8 weeks to remove and would include 16 workers, 6 vendor trucks, and approximately 100 haul trips. Demolition and removal of the O&M building would take approximately 8 weeks and would involve 12 workers and 4 vendor trucks.

Turbines would be refurbished and resold or recycled as scrap material. All material that could not be salvaged would be appropriately disposed of at an authorized site in accordance with laws and regulations. Reclamation of the Campo Wind Facilities Disturbance Limits following decommission would be based on Tribal requirements and may include regrading, replacement of topsoil, and revegetation. Decommissioning of the Project would minimize new site disturbance and removal of native vegetation to the extent practicable. To the extent practicable, topsoil removed during decommissioning would be stockpiled and used as topsoil during restoration efforts. Soil would be stabilized and revegetated with plant species characteristic of native species within adjacent habitats. Local seed sources would be used where feasible. All decommissioning activities would take place in accordance with all applicable laws and regulations.

## 2.1.5 Land Use Designations and Zoning

The Project Area encompasses mostly federal Tribal lands on the Campo Reservation. A portion of the Project Area, the Boulder Brush Boundary, encompasses privately owned lands in the McCain Valley area of unincorporated San Diego County, north of the community of Boulevard and I-8. The Project Area is largely undeveloped land surrounded by rural residential homes and ranches scattered throughout the region. The Campo Land Use Plan Land Designation Map identifies the portions of the Project Area that is part of the Reservation as designated for Wilderness, Commercial, Residential, Industrial, and Civic uses. While the Campo Land Use Code and Plan is not applicable under the terms of the lease, they are discussed herein for reference.

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

The portions of the Project Area not located within the Campo Reservation is located within the Boulevard Subregional Planning Area, which is part of the larger Mountain Empire Subregional Plan planning area. The Boulevard Subregional Planning Area land use map (County of San Diego 2017a) identifies the non-Tribal portion of the Project Area (i.e., the area traversed by the Boulder Brush Facilities) as Rural Lands 80 (RL-80), which translates to one dwelling unit per 80 gross acres and is zoned General Rural (S92).

Surrounding the Project Area are privately owned lands, public agency lands managed by the Bureau of Land Management (BLM), and federal Native American reservation lands (BLM 2018a). Privately owned lands are located immediately adjacent to the Project Area to the west and south and are zoned S92 and designated RL-80. BLM-managed public agency lands are located immediately adjacent to the west, north, and east. Public agency lands are zoned Open Space (S80) by the County of San Diego (County) but are managed by BLM according to the Eastern San Diego County Resource Management Plan (BLM 2008). Manzanita Reservation lands are located approximately 1 mile west of the Project Area.

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

## 3 VISUAL ENVIRONMENT OF THE PROJECT

### 3.1 Project Area

As depicted on Figure 2, the Project Area primarily encompasses the approximately 16,000-acre Reservation.

The Project Area consists of moderate to steep terrain atop a semiarid plateau, which is adjacent to the Laguna Mountains on the west and slopes descending to valleys to the east. Consisting of largely undeveloped high desert rolling hills, the Project Area lies within a transitional region between the California Peninsular Ranges physiographic province (to the west) and the westernmost reach of the Colorado Desert (to the east). Project Area elevations range from approximately 3,030 to 4,320 feet above mean sea level (amsl).

Lands within the Project Area (See Figure 1) support a variety of habitat types and vegetation communities. For example, the valley terrain on the Reservation is dominated by coast live oak woodland, nonnative grassland, and southern willow scrub vegetation. Despite the diversity of vegetation within valleys, chamise chaparral and mixed chaparral that populate hilly and mountainous terrain dominate the Project Area. Additionally, red shank chaparral, big sagebrush scrub, and upper Sonoran subshrub scrub is distributed throughout the Reservation. Various large rock outcrops of light-colored boulders are also scattered throughout the Reservation and are regularly distributed along ridgelines.

Existing development on the Reservation includes the Kumeyaay Wind Farm, the Golden Acorn Casino, rural residences, Tribal facilities, and paved and dirt access roads. The Kumeyaay Wind Farm is located on the Reservation, just north of I-8. This development consists of 25 regularly spaced wind turbines installed atop the Tecate Divide and a nearby electrical substation located north of I-8 and off Williams Road. Located immediately south of I-8 and west of the Tecate Divide, the Golden Acorn Casino and Travel Center occupies an approximately 40-acre site that includes separate large surface parking lots for passenger vehicles and semi-trailer trucks and a tall, single-story peach and off-white colored building (approximately 40 feet high) featuring an attached travel center/filling station. A tall, LED advertisement sign for the casino is installed to the south of I-8 and Caltrans ROW. Rural residences are scattered throughout the Reservation, both north and south of I-8, but tend to be concentrated within narrow valleys along Campo Road/SR-94 and Church Road. A collection of Tribal facilities including a two-story education center, single-story church, and health center housed in a tan concrete-masonry unity and red-tiled roof structure are located off Church Road to the north of SR-94.

Regarding the Boulder Brush Facilities, the proposed alignment traverses largely undeveloped ranch lands within McCain Valley that includes active cattle grazing areas and terrain traversed by

## Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

dirt bike trails and access roads. The valley landscape includes chaparral and boulder covered hills as well as rural residential development, existing nearby wind turbine facilities (Tule Wind Project), transmission infrastructure (Sunrise Powerlink) and undeveloped open space. The 500 kV Sunrise Powerlink traverses the northeast portion of the SDG&E switchyard/substation site.

### 3.2 Surrounding Area

In addition to Manzanita Indian Reservation lands to north, the Reservation is bordered by private lands to the east and south and La Posta Reservation, private lands, and public lands managed by the Bureau of Land Management (BLM) on the west. The private lands to the east of the Reservation (north of I-8) include primarily undeveloped terrain on which the Boulder Brush Facilities and a wind energy project currently under consideration by the County (i.e., Torrey Wind Project) are proposed.

The surrounding area, which includes the communities of Boulevard, Manzanita, and Live Oak Springs, encompasses a predominantly rural landscape featuring large-lot ranches and single-family homes with a mixture of recreational opportunities and vast areas of undeveloped lands. Old Highway 80 runs through these communities and functions as the main street. Single-family residences and limited commercial businesses dot the oak-tree lined Old Highway 80 corridor from Boulevard north to Live Oak Springs. Boulevard is located as close as two miles from the eastern boundary of the Reservation. Live Oak Springs occupies a small valley surrounded by rocky, mountainous terrain to the west, north and east. The community is located approximately 0.65 mile south of I-8 and is surrounded by Reservation lands to the west, north and east.

Single-family homes are scattered amid the valley and mountain landscape surrounding the Project Area; however, recent developments have resulted in a variable physical setting that includes rural and major infrastructure elements, including the 500-kilovolt (kV) Sunrise Powerlink, the Tule Wind Farm, and the Kumeyaay Wind Farm (located on the Reservation). The SDG&E Sunrise Powerlink runs through the north end of the Project Area (i.e., the Boulder Brush Boundary) and is supported by large steel lattice towers that dot the landscape. Three approximately 170-foot tall lattice steel towers are located on County lands that would be traversed by the Off-Reservation gen-tie line. Located on lands managed by the BLM, the 57-wind turbine Tule Wind Project is situated to the east, north and northwest of County lands on which the Off-Reservation gen-tie and another nearby wind energy project currently under consideration by the County (i.e., Torrey Wind Project) are proposed.

Public lands managed by BLM are located immediately west, north, and east of the Boulder Brush Boundary. Similar to lands within the Reservation boundary, the local terrain within the Boulder Brush Boundary is composed of scrub and chaparral shrub, and granitic boulder clustered valleys, slopes, and ridges that are marked by narrow dirt trails and, occasionally, drainages. Unlike County lands within the Boulder Brush Boundary, BLM lands are developed with multiple strings of wind

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

turbines and ancillary facilities, a developed campground, an OHV area, and limited rural residential and ranch development. The Lark Canyon OHV Area staging area is accessible off McCain Valley Road and is located 2.5 miles east of the Reservation's eastern boundary. Numerous narrow dirt trails (primarily designed for motorcycles) branch and extend to the north, west, and south of the staging area; traverse nearby slopes and ridges; and connect to several loop trails that traverse the local ridge and valley terrain. The Lower and Upper Lark Canyon Campgrounds are located north of the Lark Canyon OHV Area and feature developed campsites with picnic tables and fire rings that are located at the base of exposed slopes; near oak trees; and among desert scrub, chaparral, and boulder-strewn terrain. An additional BLM campground, Cottonwood Campground, is located off McCain Valley Road and approximately 4.5 miles north of the Reservation. BLM lands are largely unprogrammed (i.e., formal trails and other facilities are not provided) and managed to support multi-recreational activities, including hiking, camping, off-highway-vehicle riding, hunting, and horseback riding.

### **3.3 Scenic Vistas**

Although there are no designated scenic vistas or lookouts on the Reservation or in the immediate surrounding area, the local landscape is bordered by the In-Ko-Pah Mountains, Cuyamaca Mountains, and Laguna Mountains to the west; In-Ko-Pah Mountains and Tierra Blanca Mountains to the north; and the In-Ko-Pah and Jacumba Mountains to the east. Prominent peaks in these ranges include Monument Peak (Laguna Mountains; 11.3 miles northwest of the Reservation), Sombrero Peak (Tierra Blanca Mountains; 7 miles north of the Reservation), and Mount Tule (In-Ko-Pah Mountains; 5 miles east of the Reservation). With the exception of the Monument Peak Trail (an approximately 2.8-mile moderately trafficked trail on United States Forest Service lands and accessible off Sunrise Highway), trails to these peaks experience a low volume of foot traffic due to their remote locations, and lack of formal trailheads, staging areas, and information signage on nearby roads.

Long and broad views toward the McCain Valley area and surrounding mountainous terrain are available from I-8 but are regularly interrupted by roads and rising terrain located to the north of I-8. Scenic views of local valleys and nearby chaparral and boulder covered terrain are also available from SR-94 on the Reservation.

### **3.4 Scenic Highways**

While state and local regulations pertaining to scenic highways are not applicable to Tribal lands and the Reservation, they are applicable to private lands traversed by the Boulder Brush Facilities.

There are no official state designated highways in the Project viewshed. However, the majority of I-8 through San Diego County (including the segment east of the Tecate Divide to the San

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

Diego/Imperial County border) and SR-94 (from SR-125 east to I-8 near Jacumba) are eligible state scenic highways and are components of the County Scenic Highway System (Caltrans 2018; County of San Diego 2011a). The Off-Reservation gen-tie alignment spans I-8 near the Tecate Divide and the segment of the alignment on County lands is located approximately 2 miles north of I-8. The interstate also traverses the Reservation (see Figure 2) and the closest proposed wind turbines on the Reservation are located within 500 feet and 800 feet, respectively, of I-8.

Views to the north from the interstate near the Reservation are limited in length by mountain terrain that tends to rise abruptly to the north of the interstate; views to the south are typically long and occasionally extend to distant mountain terrain in Mexico.

From SR-79 in Pine Valley and I-8 in Jacumba, Old Highway 80 is included on the County Scenic Highway System (County of San Diego 2011a). This segment of the highway traverses the Reservation and would be spanned by the On-Reservation gen-tie (see Figure 2). Proposed wind turbines would also be visible from the highway as it traverses the Reservation. The segment of the Off-Reservation gen-tie alignment is screened from view of highway motorists by intervening terrain and vegetation.

### **3.5 Recreation Areas**

Please refer to Section 3.2, above, that includes a discussion of the recreational opportunities available on BLM-managed lands located to the east of the Reservation in the McCain Valley area.

While local regulations pertaining to scenic views available from state and local trail systems are not applicable to the Reservation, state and local trail systems are discussed herein due to the inclusion of the Boulder Brush Facilities. No state trail systems are located near the Reservation. The nearest segment of the California Riding and Hiking Trail is located west of SR-79 and in Cuyamaca Rancho State Park, more than 18 miles northwest of the Reservation. Trail segments between Pine Valley and Mt Laguna and separated from the Reservation and McCain Valley by the Laguna and Cuyamaca Mountains.

Two proposed trail facilities identified in the Boulevard Community Trails and Pathways Plan (County of San Diego 2005) are located north of I-8. Users of these trails would be provided views to the Boulder Brush Facilities and proposed wind turbines on the Reservation. Aligned on Ribbonwood Road, the Ribbonwood Road Pathway would extend north from the I-8 underpass for approximately 2 miles. This segment of Ribbonwood Road is bordered by the U.S. Customs and Border Protection Boulevard Station (located approximately 0.15 miles north of I-8); scattered rural residential development; and primarily vacant, desert-shrub and occasionally oak-tree-dotted, undeveloped land. The Ribbonwood Road Trail would extend north of the terminus of the

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

Ribbonwood Road Pathway alignment and traverse existing dirt access roads and Lost Valley Road for approximately 4.4 miles. The trail alignment (and existing access roads) traverses the majority of the Boulder Brush Boundary from north to south, and links to McCain Valley Road near the northeastern corner of the County lands. The northernmost section of the Ribbonwood Road Pathway is located 1.1 mile east of the Reservation boundary and the Ribbonwood Road Trail (located entirely on private land) is spanned by the Off-Reservation gen-tie alignment. Additional trails alignments depicted as crossing the southern portion of the Reservation include San Diego & Arizona Eastern Railway, Shockley Truck Trail Trail, and Shockley Loop Trail. The Tribe is not required to dedicated ROW for public trail use to the County or provide public access across the Reservation via trails. This information is provided for informational purposes only.

Several proposed trails and pathway identified in the Campo/Lake Morena Community Trails and Pathways Plan are located west of the Reservation. Due to proximity and the height of proposed wind turbines, future users of these trails (if public ROW is established) would be provided views to proposed wind turbines on the Reservation. Nearby proposed trails and pathways include the Shockey Truck Trail Trail/San Diego & Arizona Eastern Connector Trail, Shockey Truck Trail Pathway, SR-94 Pathway, and San Diego & Arizona Eastern Rail Road Trail.

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

INTENTIONALLY LEFT BLANK

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

## 4 AFFECTED ENVIRONMENT

### 4.1 Regional and Local Landscape Setting

The regional landscape setting is described above in Section 3.2, Surrounding Area.

The character elements of the mountain and interning valley terrain (including the form and line of the various creeks and channels) that comprises a majority of the landform in the viewshed add visual diversity and appeal to the area. In addition to higher elevation ridges, landforms on the Reservation include rugged and undulating hills, flat and broad mesas, low and narrow valleys, and steep slopes. A relatively long and narrow valley bisects the southern portion of the Reservation generally follows the alignment of Church Road/BIA Road 10 and is traverse from east to west by SR-94. Moderate to steep slopes border the valley and rural residential and Tribal government development is scattered along Church Road/BIA Road 10. Residential development tends to be clustered in small groupings along Church Road/BIA Road 10 and SR-94. Vegetation on the Reservation and private County lands to the east is dominated by low and scrubby, gray-green chaparral and shrub communities (colors become gray-brown in fall and winter months). In addition to serpentine lines of oak and riparian vegetation, low grasses cover the On- and Off-Reservation valleys. Exposed granitic boulder outcrops are commonplace on slopes and atop ridges.

### 4.2 Project Viewshed

The Project viewshed is defined by the presence of steep mountainous terrain to the northwest, north, and northeast more moderate hilly and valley terrain to the east and west of the Reservation, and by the scale of proposed wind turbines (approximately 586 feet tall from tower base to fully extended blade tip). Wind turbines are proposed throughout the Reservation but are concentrated in linear strings on higher-elevation slopes and ridges. A topographic viewshed of the Project (Alternative 1) is presented in Figure 3, Viewshed. The figure illustrates the approximate viewshed of the Project and is solely based on topography and the height of proposed wind turbines. The figure represents the potential extent of the available views to prominent Project components (i.e., wind turbines) from the surrounding area. Potential screening effects at specific locations or viewpoints due to vegetation and/or structures is not considered or reflected in Figure 3.

Generally, the presence of valley and hilly terrain bordered by mountains and ridges within the Project Area provides opportunities for elevated vantage points and long and broad views from I-8, state highways, and local roads. The Project Area is bound by the Laguna Mountains to the west, the Tecate Divide to the immediate east and the more distant In-Ko-Pah and Jacumba Mountains to the east and north. Long and broad views to the east and west are available from the Tecate Divide

## Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

Summit on I-8, however, hilly and mountainous terrain to the north and south of the interstate tends to somewhat limit the length of available views to the north and occasionally, to the south.

Due to the presence of prominent ridgelines, hilly and mountainous terrain, and typically low desert shrub vegetation, vertical structures (especially existing wind turbines and transmission line support structures) above the horizon line are visible from long distances. In these instances, viewer groups can readily discern features that rise above the horizon line and are silhouetted against the sky (i.e., “skylined”) for distances approaching 5 miles or greater in clear visual conditions. Vertical features that do not extend the horizon line are generally not visually prominent and are better able to blend into the landscape due to the similarities in color or semi-transparent forms.

Existing visible development in the viewshed includes wind turbines (Kumeyaay Wind and Tule Wind Project), I-8, state highways, and local roads, rural residential development, high-voltage transmission infrastructure and electrical substations, commercial and gaming development (Golden Acorn Casino, ranch lands, and abandoned homes and structures). As depicted on Figure 3, available views from more distant locations to the east of the Reservation are not available. More specifically, views to the Reservation from more distant locations to the east and north of the Jacumba Valley are obscured by the In-Ko-Pah and Jacumba Mountains. Terrain to the north (In-Ko-Pah Mountains) and northeast (Laguna Mountains) defines the topographical extent of the viewshed to these areas. A 10-mile radius area on the Reservation is depicted in Figure 3 as views in excess of 10 miles are considered distant and specific visual elements are in the “seldom seen” zone. Elements within the seldom seen zone are outside of the foreground (0 to 0.5 mile), middleground (0.5 to 5 mile), or background (5 miles to horizon) zones.

The mapped viewshed approximates the maximum potential area for views to Project components (primarily wind turbines) and significant impacts. Varying levels of visibility to Project components occurs within the viewshed and Project components would be most visible when viewed by a stationary viewer located immediately adjacent to a Project component on the Reservation, or on adjacent private lands, and with no intervening screening elements. On the other hand, the lowest level of Project component visibility exists where (1) Project components are entirely screened from viewed; (2) the viewer is located far from the Project Area; and (3) Project components are partially to fully screened by intervening elements. If the viewer is travelling at a high rate of speed (such as an interstate or state route motorist) and is located far from Project elements, visibility may also be reduced. Lastly, other variables such as landscaping or vegetation, orientation of the viewer to Project components, atmospheric conditions, wind-blown dust or pollution, and/or lighting conditions may affect the visibility of Project components within the viewshed.

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

## 4.3 Visual Resources Components

Visual Resources Components includes those elements used in the assessment of potential impacts. Visual Resources Components are listed below:

- Existing visual quality
- Established landscape character rating units (LCUs)
- Viewer Groups
- Key Observation Points (KOPs)

### 4.3.1 Visual Quality

The topography of the Project Area and surrounding area consists of moderate to steep terrain atop a semiarid plateau, which is adjacent to the Laguna Mountains on the west and slopes descending to valleys to the east. Consisting of largely undeveloped high desert rolling hills, the Project Area lies within a transitional region between the California Peninsular Ranges physiographic province (to the west) and the westernmost reach of the Colorado Desert (to the east). Broad desert plains, alluvial fans, and shallow valleys, including McCain Valley and Jewel Valley, separate local mountains and prominent topography in the Project Area. Valleys are dominated by coast live oak woodland, nonnative grassland, and southern willow scrub vegetation. The Project Area supports a variety of habitat types and vegetation communities however, the area is dominated by chamise chaparral and mixed chaparral. Additionally, red shank chaparral, big sagebrush scrub, and upper Sonoran subshrub scrub is distributed throughout the Project Area. Various large rock-outcrops of light-colored boulders are scattered throughout the Project Area and regularly distributed along ridgelines.

Existing and highly visible development on the Reservation and public lands managed by the BLM result in a visual pattern of moderate integrity and moderate intactness. Existing wind turbines of the Kumeyaay Wind Project and the Golden Acorn Casino are located adjacent to and north of the I-8 corridor and are highly visible. Wind turbines of the Tule Wind Project are setback over three miles from I-8 but are generally visible to motorists east of the Tecate Divide and west of Walker Canyon (a distance of approximately 6 miles). The southern portion of the Reservation largely consists of scattered rural residential development, Tribal governmental and public service offices, and linear transmission lines. Lands that would be traversed by Boulder Brush Facilities are primarily undeveloped and consists of hilly and valley terrain covered with characteristic vegetation of the region.

## Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

### 4.3.2 Landscape Character Units

The Reservation was classified into four distinct Landscape Character Units (LCUs) and Scenic Quality Rating Units (SQRUs) in the draft Visual Impact Assessment for the Shu’luuk Wind Project (AECOM 2012). Dudek has reviewed the draft Visual Impact Assessment prepared for the previously proposed project and concurs with the characterization of the Reservation, the delineation of LCUs/SQRUs, and assignment of visual quality. As indicated in Table 1 below and illustrated on Figure 4, Scenic Quality Rating Units, the Reservation was classified as either Type B or Type C. While private County lands that would be traversed by the Boulder Brush Facilities were not inventoried as part of the previously proposed project, these lands display similar terrain and vegetation characteristics as nearby lands on the Reservation. Therefore, lands traversed by the Off-Reservation gen-tie display High/Medium sensitivity and B scenic quality.

**Table 1**  
**Visual Resources Classification Summary**

LCU/SQRU ID <sup>1</sup>	Visual Quality Rating	Sensitivity Rating
001	B	High/Medium
002	C	Low/Medium
003	B	Medium
004	C	Low/Medium

**Source:** AECOM 2012.

**Notes:** LCU and SQRU boundaries are the same and are displayed on Figure 3, Scenic Quality Rating Units.

**Type A:** Areas have outstanding diversity or interest; characteristic features of landform, water, and vegetation are distinctive or unique in relation to the surrounding region. These areas contain considerable variety in form, line, color, and texture.

**Type B:** Areas have above-average diversity or interest, providing some variety in form, line, color, and texture. The natural features are not considered rare in the surrounding region but provide adequate visual diversity to be considered valuable.

**Type C:** Areas have minimal diversity or interest; representative natural features have limited variation in form, line, color, or texture in the context of the surrounding region. Discordant cultural modifications (e.g., substation, transmission lines, and other cultural modifications) can be highly noticeable, which can reduce the inherent value of the natural setting.

Prominent ridgelines, intermediate valleys abutted by moderate to densely vegetated hillsides featuring occasional granitic boulder outcrops, and chaparral and scrub plant communities are typical features in each of the four LCUs identified in Table 1, above. Of the four identified LCUs, LCU 001 is the least developed and is not traversed by paved roads. However, LCU 001 is traversed by a defunct railway line and has been altered by dirt access road and scattered rural residential development. As such, LCU 001 (and similarly sparsely developed LCU 003) were assigned a Type “B” Visual Quality rating. Type B areas have above-average diversity or interest, providing some variety in form, line, color, and texture. Further, the natural features are not considered rare in the surrounding region but provide adequate visual diversity to be considered valuable.

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

### **4.3.3 Viewer Groups and Sensitivity**

The primary viewer groups provided views to the Project Area consist of motorists (interstate, state highway, and local roads), residents, and recreationists.

Regarding visual sensitivity of viewer groups, areas seen and used by large numbers of people are potentially more sensitive than moderately or scantily visited locations. In addition, viewers with longer duration views are generally considered to have a higher sensitivity to change to visual resources compared to viewer groups passing through an area and provided fleeting or short-duration views of the surrounding landscape.

#### **Motorists**

Motorists would represent the largest viewer group by volume provided views to the Project Area. Included in this group are east- and westbound motorists on I-8, SR-94 and Old Highway 80 as each of these facilities traverses the Reservation. In 2016, I-8 and SR-94, and Old Highway 80 experienced annual average daily traffic (AADT) of approximately 12,450 vehicles, 830 vehicles, and 700 vehicles (Caltrans 2018a, 2018b, SANDAG 2018). Numerous local roads located to the east and west of the Campo Indian Reservation also provided motorists potential views extending to higher elevation ridges on the Reservation atop which new wind turbine facilities would be constructed. Depending on specific location, motorists would have direct unobscured foreground to middleground to indirect and obscured foreground to middleground views, short-duration exposure, and moderate awareness of the proposed changes to existing conditions. The expectation of motorists for scenic views would generally be consistent with the expectations of a highway corridor possessing existing wind turbine facilities atop the Tecate Divide and through McCain Valley. Due to the shorter durations of exposure, viewer sensitivity within this group is generally low to moderate.

#### **Residents**

Scattered rural residential development is located on the Reservation and in unincorporated County of San Diego communities to the east and west of the Reservation. These communities include Campo (southwest of the Reservation) and Live Oak Springs, Tierra Del Sol, and Boulevard (east and southeast of the Reservation). In addition, rural residences are located north of I-8 and along Ribbonwood Road (technically within Boulevard) and approximately 8 miles to the east in Jacumba. While the volume of viewers in the communities to the immediate west and east of the Reservation would be a fraction of the total population, the Mountain Empire subregion (comprised of Tecate, Potrero, Boulevard, Campo/Lake Morena, Jacumba and the Mountain Empire balance) had an estimated population of approximately 8,078 person in 2016 (SANDAG

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

2017). Depending on proximity, some nearby residents may have direct, unobscured views to new turbine locations. However, the majority of views to the Reservation and lands traversed by the Off-Reservation gen-tie from developed residential land uses in the surrounding area would be partially obstructed by intermediate vegetation, landscaping or development. Due to the long-term duration of views to Project components (where available) and high awareness to visual change in the environment, viewer sensitivity within this group is generally moderate to high.

### **Recreationists**

Recreation areas and facilities are located to the east and west, northeast and northwest of the Reservation. For example, public lands managed by the BLM in the McCain Valley and proposed trails identified in the Boulevard and Lake Morena/Campground Trails and Pathways Plans, are located to the to the northwest, north, east, and west of the Reservation, respectively. Recreational activities, such as backpacking, camping, OHV use, geologic and nature study, photography, and hiking are available on public lands and along recreational facilities in the surrounding area. Recreationists on public lands in the McCain Valley managed by BLM and future users of trails and pathways identified in local trails and pathway plans would be provided clear to partially obscured views to Project components (primarily wind turbines and the Boulder Brush Facilities). The duration of views is temporary and short, and viewer sensitivity is moderate to high for trail-based recreationists (hikers and equestrian riders and rock climbers). Due to their greater speeds, focus on trails, and generally reduced viewer awareness, OHV users are considered to have low viewer sensitivity.

#### **4.3.4 Key Observation Points**

The draft Visual Impact Assessment for the Shu'luuk Wind Project (AECOM 2012) identified eleven (11) key observation points from which to assess the visual impacts of the previously proposed project. KOPs were identified through review of land use data, federal and state agency contacts, and field observations. Because the Campo Wind Project proposes wind turbines in similar locations as the previous Shu'luuk Wind Project, and because the previous KOPs were identified in collaboration with federal and state agency contacts, the visual analysis presented in this report utilizes similar KOPs. However, the number of total KOPs was ultimately reduced from the original 11 due to Project component visibility from select vantage points (i.e., Project components would not be clearly visible from two of the original KOPs) and similarity of views and anticipated visual effects. In addition, two new KOPs that were not included in the Shu'luuk Wind Project's technical report have been included specifically to evaluate view effects associated with the Boulder Brush Facilities gen-tie line as experienced from I-8 and Ribbonwood Road.

## Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

KOPs are viewing locations that provide representative views of the Project Area landscape available to the various viewer groups in the viewshed. KOPs provide a range of viewing distances and angles to the Reservation and private County lands traversed by the Off-Reservation gen-tie and include surrounding context to further illustrate existing visual character. As shown in Table 2, Key Observation Points, KOPs were located on roads or areas of potential use where the visual effects of the Project would be clearly displayed and include existing visible development, populated areas, and natural vegetation and terrain. Existing conditions photographs at each Key View were collected using a location services enabled iPhone 6s in the “Photo” format. The photo format was used to show special views to the Project; individual photographs were not stitched together in an attempt to show the entire Project in one view.

**Table 2  
Key Observation Points**

KOP #	Location	View Orientation to Project Components
1	Eastbound I-8 (Off-Reservation)	E/SE
2	SR-94 at western Reservation Boundary	E
3	Church Road/BIA Road 10 (On-Reservation)	N/NW
4	Church Road/BIA Road 10 (On-Reservation)	S/SW
5	SR-94 at Live Oaks Springs Road (Off Reservation)	W/NW
6	Tierra Del Sol Road (Off-Reservation)	N/NW
7	Tierra Real Lane (Off-Reservation)	W/SW
8	I-8 near Tecate Divide (Off-Reservation)	NW
9	Ribbonwood Road	W

The location and orientation of each KOP (and Project components) is depicted on Figure 3. Photographs from each of the KOPs are included on Figures 5a through 5e and are representative of views available to the Reservation and Project components within the viewshed. The identified KOPs are described below

### **4.2.4.1 KOP 1 - Eastbound I-8 (Off-Reservation)**

KOP 1 was identified for eastbound motorists on I-8 and is situated approximately 0.7 mile west of the Campo Reservation Boundary and 0.8 mile west of Crestwood Road. Consistent vehicular traffic passes this KOP daily and existing Kumeyaay Wind turbines are visible from this KOP. While only one existing three-blade rotor wind turbine is visible in the east/southeast oriented view captured at KOP 1 (see Figure 5a), additional wind turbines atop the Tecate Divide and located to the north of the interstate are visible to motorists at KOP 1. The landscape to the southeast consists of rugged shrub and boulder-covered hill and valley terrain that supports scattered rural residential

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

development and ranches. In addition, electrical lines supported by thin and tall wood and steel poles climb the terrain. The view extends to a dark silhouette displayed by distant mountains in Mexico.

### **4.2.4.2 KOP 2 – SR-94 (On-Reservation)**

KOP 2 was identified for eastbound motorists on SR-94 and is located just within the western boundary of the Reservation. Intermittent vehicular traffic passes this KOP each day. View orientation is to the east towards a rugged, chaparral and boulder-covered slope that creates an elevated, slightly undulating ridgeline (see Figure 5a). In the foreground, asphalt surface of SR-94 creates a winding line that disappears behind terrain and vegetation and then cuts an ascending, diagonal line in the distance. In addition to the highway, visible development include simple post and rail fencing, highway signage, distribution line and poles, and a dirt access road/trail. The length the view is short, extending approximately 1.1 mile to the east to the visible ridgeline. The existing Kumeyaay Wind turbines are not visible from this KOP.

### **4.2.4.3 KOP 3 – Church Road/BIA Road 10 (On-Reservation)**

KOP 3 is located approximately 575 feet north of SR-94 and looks west/northwest from northbound Church Road towards the Tribal Administration Building (see Figure 5b). KOP 3 is representative of views available to Tribal members as they travel on Church Road, the primary SR-94/Old Highway 80 connector on the Reservation. In addition to the tan-red tones displayed by the administration center buildings, an existing greyish single-story structure is visible along the Church Road corridor and a distribution line support by thin wood poles spans the road. While not visible in the KOP 3 photograph, residences and additional Tribal facilities including a small church and tan concrete masonry unit health center are visible at KOP 3. As viewed in Figure 5b, the local terrain falls to the west of Church Road and is partially cleared/thinned of vegetation. A line of several large trees with green spherical crowns is located beyond the administration building. Oak trees are also present along the Church Road corridor. In the distance, the local terrain rises and forms a series of mounded hills that are covered with chaparral vegetation intermixed with lightly colored bounders. The existing Kumeyaay Wind turbines are not visible from this KOP.

### **4.2.4.4 KOP 4 – Church Road/BIA Road 10 (On-Reservation)**

KOP 4 is located in the same location as KOP 3 however; KOP 4 is oriented to the west/southwest. As viewed on Figure 5b, the view encompasses Church Road and the Church Road/SR-9 intersection and extends across a shrub and oak tree dotted valley landscape bordered towards a low, chaparral and boulder covered ridgeline. Visible vegetation displays the gold hues of grasses, the various drab tones of desert shrubs, and the smooth dark green tones of dense chaparral and clumped and isolated oak

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

trees. Two lightly colored, single-story structures are visible on the valley terrain to the south but these elements are easily overlooked. Existing Kumeyaay Wind turbines are not visible from this KOP.

### **4.2.4.5 KOP 5 – SR-94 at Live Oak Springs Road (Off-Reservation)**

KOP 5 is located on westbound SR-94 at the SR-94/Live Oak Springs intersection, approximately 0.6 mile from western boundary of the Reservation. As shown in Figure 5c, the view from KOP 5 looks west from the highway across private ranchlands towards partially cleared rising, rolling terrain along the eastern Reservation boundary. The north-south line of trees in the distance signifies a local drainage and higher elevation areas on the visible east-facing slope are covered with dense chaparral vegetation and clustered, lightly colored boulders. Intermittent vehicular traffic passes this KOP each day and existing Kumeyaay Wind turbines are not visible from this location.

### **4.2.4.6 KOP 6 – Tierra Del Sol Road (Off-Reservation)**

KOP 6 is located off Tierra Del Sol Road, approximately 0.15 mile south of Shasta Way on unincorporated County lands, and looks northwest towards the Tecate Divide, McCain Valley including wind turbines of the Tule Wind Farm, and distant mountain terrain including the In-Ko-Pah Mountain, Tierra Blanca Mountains, and Laguna Mountains (see Figure 5c). The existing view is wide and long, stretching across the hill and valley terrain of the foreground and middleground to dark, rugged mountains in the background. The visible terrain is covered with shrubby chaparral vegetation intermixed with cleared areas supporting rural residential and ranch development. Ridges are marked by the light color of grasses and boulders and north-south valley display the dark green tones of oak and other vegetation. In addition to several lightly colored residential structures in the foreground, existing Kumeyaay Wind Farm turbines installed atop the Tecate Divide and at the Golden Acorn Casino and Travel Center are visible from this KOP but are slightly (see Figure 5c).

### **4.2.4.7 KOP 7- Tierra Real Lane (Off-Reservation)**

KOP 7 is located at the intersection of Tierra Real Lane and Tierra Real Road, near scattered rural residential development in the unincorporated community of Tierra Del Sol. The view looks west down Tierra Real Lane and across private, primarily undeveloped ranchlands. The dense chaparral covered terrain of the southern portion of the Reservation is located approximately 1 mile away (see Figure 5d). Limited development is visible in the view and primarily consists of the tan, graded dirt surface of Tierra Real Lane, aged fencing in the foreground, and cylindrical metal silos on private property to the southwest. The view is long and stretches to distant, dark ridgelines of mountains in Mexico. No existing Kumeyaay Wind turbines are visible from this KOP.

## Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

### **4.2.4.8 KOP 8 – Westbound I-8 (Off-Reservation)**

KOP 8 is located off the westbound lanes of I-8, approximately 0.35 miles from the interstate crossing of Live Oak Trail/Manzanita Road. The view looks northwest along the I-8 corridor towards existing Kumeyaay Wind Project wind turbines atop the Tecate Divide (see Figure 5d). As shown in the figure, the local terrain generally falls to the east of the interstate and is densely covered with drab olive colored chaparral shrubs. Boulder outcrops are visible on slopes and ridges to the north. With the exception of distant mountains that are framed by mounded terrain and the extents of the photograph, the view is short and is limited to the foreground zone. The towers and/or blades of approximately 15 wind turbines atop the Tecate Divide are visible from KOP 8 and the prominence of these features increases with proximity. Lastly, as shown in the photograph, the westbound travel lanes are located at a lower elevation than the eastbound travel lanes and are separated by metallic highway guardrail and shrub-dotted slope (see Figure 5d).

### **4.2.4.9 KOP 9 – Ribbonwood Road (Off-Reservation)**

KOP 9 is located off the dirt segment of Ribbonwood Road, approximately 0.85 mile north of Opalocka Road, on unincorporated County lands (see Figure 3). KOP 9 is located 1.1 mile east of the Reservation boundary and looks west across a visibly modified McCain Valley lands and primarily horizontal ridgeline. Fencing and low shrubs dominate the immediate foreground of the view and the seemingly smooth, tan surface of cleared areas creates noticeable color contrast with adjacent olive and dark green tones. Isolate rural residential development is detectable in the view and displays light colors that stand out in the landscape. The boulder and chaparral covered ridgeline is topped by wind turbines of the Kumemaay Wind Farm. The lines displayed by towers and blades are visible but tend to be washed out in the KOP 9 photograph (see Figure 5e).

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

## **5 REGULATORY ENVIRONMENT**

### **5.1 Federal**

#### **5.1.1 National Environmental Policy Act**

42 United State Code (USC) Section 4231 declared a national policy (i.e., the National Environmental Policy Act) that “will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation.” In addition, 42 US Section 4231 established the Council on Environmental Quality within the Executive Office of the President to ensure that Federal agencies meet their obligations under NEPA. Signed into law on January 1, 1970, NEPA is the country’s basic national charter for the protection of the environment and the policy sets goals (Section 101) and provides means (Section 102) for carrying out the policy.

According to NEPA Section 101(b), it is the “continuous responsibility of the federal government to use all practicable means” to “assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings.” Further, Section 204 (42 USC Section 4344) establishes that the one of the central duties of the Council on Environmental Quality is to “conduct investigations, studies, surveys, research, and analyses relating to ecological systems and environmental quality” and “document and define changes in the natural environment, including the plant and animal systems.”

Visual and scenic resources are managed by federal agencies using various visual resource management programs and guidelines. For example, the Federal Highway Administration utilizes its Guidelines for the Visual Impact Assessment of Highway Projects (FHWA 2015) and the BLM established their Visual Resource Management system (BLM Manual 8400; BLM 1984). Also, the United State Department of Agriculture (USDA) and Forest Service rely on the guidelines and concepts described in their handbook titled “Landscape Aesthetics: A Handbook for Scenery Management” (USDA 1995).

#### **5.1.2 Federal Highway Administration Visual Resource Guidelines**

The Federal Highway Administration’s (FHWA) Guidelines for the Visual Impact Assessment for Highway Projects (FHWA 2015) represent the FHWA’s current thinking about best practices regarding the assessment and consideration of visual impacts of highway projects. The guidelines describe methods for determining the level of the Visual Impact Assessment (VIA) required that includes a questionnaire method and comparative matrix method. Once the appropriate VIA is

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

identified, the guidelines established a standard VIA process that consists of four phases: establishment, inventory, analysis, and mitigation (FHWA 2015). The primary purpose of the establishment phase is to define the area of visual effect or study area of the VIA. The inventory phase focuses on an examination of the study area as it relates to visual resources, visual quality and viewers. Visual resources include land, water, vegetation, animals, atmospheric conditions, cultural modifications (i.e., development), and visual quality is described in terms of natural harmony (i.e., harmonious or inharmonious) between visual resources, cultural order (order or disorder) and coherence (FHWA 2015). The analysis phase focuses on an evaluation of the compatibility of impacts and sensitivity of viewers to the impacts. Together, compatibility of the impacts and sensitivity of the impact yield the degree of the impact to visual quality.

### **5.1.3 Federal Land Policy and Management Act**

While the Project Area is primarily located on Reservation lands, lands adjacent to the Reservation are managed by the BLM and County of San Diego. In addition, lands managed by the USDA/USFS (i.e., the Cleveland National Forest) is located approximately 1.5 miles west of the western boundary of the Reservation.

The following sections of the Federal Land Policy and Management Act (FLPMA; BLM 2001) emphasize the protection of the quality of scenic resources on public land:

- Section 102 (a): “The public lands [shall] be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archaeological values.”
- Section 103 (c): Identifies “scenic values” as one of the resources for which public lands should be managed.
- Section 201 (a): “The Secretary shall prepare and maintain on a continuing basis and inventory of all public lands and their resources and other values (including...scenic values).”
- Section 505 (a): “Each right-of-way shall contain terms and conditions which will... minimize damage to the scenic and esthetic values.”

FLPMA objectives to protect the quality of scenic resources on public land are met through the BLM’s VRM system, previously described. The VRM system is implemented through the Resource Management Plan and the management framework process. While the Project is not under the land use jurisdiction of the BLM, the BLM’s VRM system is regularly adapted and combined with other federal methodologies to provide an unbiased framework through which a visual impact assessments subject to NEPA review can be prepared and review

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

### **5.1.4 Bureau of Land Management Visual Resource Management and Contrast Rating**

As described in BLM Manual 8400 – Visual Resource Management, the BLM is responsible for preparing and maintaining on a continuing basis an inventory of visual values on all public lands. Further, visual management objectives (classes) are developed for all public lands managed by the BLM through the Resource Management Plan process. The approved VRM objectives (classes) applied to public lands provide the visual management standards for the design and development of future projects and for rehabilitation of existing projects.

The contrast rating system (Manual Section 8431) provides a systematic means to evaluate proposed projects and determine whether these projects conform with the approved VRM objectives. It also provides a means to identify mitigating measures that can be taken to minimize adverse visual impacts. The VRM system, therefore, provides a means: to identify visual values; to establish objectives through the Resource Management Plan process for managing these values; and to provide timely inputs into proposed surface-disturbing projects to ensure that these objectives are met (BLM 1984). Further, the VRM system is designed to separate the existing landscape and the proposed project into their features and elements and to compare each part against the other in order to identify those parts that are not in harmony. Then, ways are sought to bring them back into harmony.

The BLM’s contrast rating system (Manual 8431) is a systematic process used by BLM to analyze potential visual impact of proposed projects and activities. The degree to which a management activity affects the visual quality of a landscape depends on the visual contrast created between a project and the existing landscape. The contrast can be measured by comparing the project features with the major features in the existing landscape. The basic design elements of form, line, color, and texture are used to make this comparison and to describe the visual contrast created by the project (BLM 1986). Manual 8431 describes the steps in the contrasting rating process and establishes general guidance for accessing contrast. Specifically, in determining whether VRM objectives are met, the level of contrast (i.e., none, weak, moderate and strong) is compared with the VRM objectives. For comparative purposes, the four levels of contrast (i.e., none, weak, moderate, and strong) roughly correspond with Classes I, II, III, and IV, respectively.

### **5.1.5 Bureau of Land Management Wind Energy Development Policy Instructional Memorandum (IM 2009-043)**

The December 2008 BLM instructional memorandum provides guidance on processing ROW applications for wind energy projects on BLM-managed lands (BLM 2008). The memorandum was created by the BLM to replace the Wind Energy Development Policy (IM 2006-216) issued August 24, 2006, and the Interim Wind Energy Development Policy (IM 2003-020) issued October 16, 2002. The memorandum includes policies regarding VRM and ACEC classifications to be

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

adhered to during the processing of ROW applications for wind energy projects. In addition, IM 2009-043 changed existing policy regarding the siting of wind energy development projects to clarify that ACECs are not universally excluded from wind energy site testing, monitoring, or development, but instead, that each ACEC should be managed consistent with the specific management prescriptions applicable to the ACEC (BLM 2008).

### **5.1.6 National Trails**

The National Trails System Act of 1968, as amended, calls for the establishment of urban and rural trails for people of all ages, interests, skills, and physical abilities. The National Trails System Act establishes four classes of trails: national scenic trails, national historic trails, national recreation trails, and side and connecting trails (NPS 2018).

Administered primarily by the USFS, the Pacific Crest National Scenic Trail (PCT) begins in southern California (San Diego County) at the Mexican border and travels a total distance of approximately 2,650 miles north to the Canadian border. The southernmost terminus of the PCT is located in the unincorporated community of Campo and the trail traverse the hill, valley, and mountainous terrain of eastern San Diego County. At its nearest location, the PCT is located approximately 4.4 miles west of the southwestern corner of the Reservation. Due to the intervening hill and mountain terrain, the Project Area is assumed to have limited visibility from segments of the PCT located south of I-8 through the Campo and Lake Morena area and north of I-8 through the Laguna Mountains.

### **5.1.7 Federal Aviation Administration**

FAA Advisory Circular 70/7460-1L (FAA 2016) states “any temporary or permanent structure, including all appurtenances, that exceeds an overall height of 200 feet above ground level (AGL) should be marked or lighted (FAA 2016). The tallest structure proposed on site (wind turbines measured from base to blade tip) would be over 200 feet and therefore, proposed wind turbines would require the installation of obstruction lighting atop wind turbine nacelles. Permanent meteorological towers greater than 200 feet AGL would also be installed on the Reservation. Based on site-specific information, the FAA may also recommend marking and/or lighting of a structure that does not exceed 200 feet AGL. Typically, preparation and submittal of an aeronautical study will determine whether structures will impair aviation safety.

According to the FAA, all structures that are above 499 feet AGL are designated as obstructions and must be evaluated by the FAA through an aeronautical study to determine the effects on navigable airspace.

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

Chapter 13 of FAA Advisory Circular 70/7460-1L is dedicated to marking and lighting wind turbine farms. Wind turbine farms are defined as wind turbine developments containing three or more turbines of heights over 200 feet aboveground level. Chapter 13.5, Lighting Standards, contains the following general standards established for wind turbine farm lighting:

- In most cases, not all wind turbine units within a wind turbine farm need to be lighted. Obstruction lights should be placed along the perimeter of the wind turbine farm so that there are no unlit separations or gaps more than 1/2 statute mile (sm) (804 m). Wind turbines within a grid or cluster should not have an unlighted separation or gap of more than 1 sm (1.6 km) across the interior of a grid or cluster of turbines. (Nighttime wind turbine obstruction lighting should consist of the preferred FAA L-864 aviation red flashing, strobe, or pulsed obstruction lights. Studies have shown that red lights provide the most conspicuity to pilots.
- Daytime lighting of wind turbine farms is not required.
- Light fixtures should be placed as high as possible on the turbine nacelle, so they are visible by a pilot approaching from any direction.
- For linear turbine configurations, lights should be placed on each turbine positioned at each end of the line or string of turbines. Lights should also be placed along the line of turbines so that there is no more than a 1/2-sm (2,640-foot (805-m)) gap between the lighted turbines. In the event the gap between lights on the last segment of turbines is significantly short, it may be appropriate to move the lights on the turbine string back toward the starting point to present a well-balanced string of lights. High concentrations of lights shall be avoided.

The following standards established in Chapter 13.6, Wind Turbines Above 499 Feet, are applicable to wind turbines above 499 feet but below 699 feet:

- In addition to the lighting standards established in Chapter 13.5, the top of the turbine's nacelle should be equipped with a second L-864 flashing red light.
- The two obstruction lights should be arranged horizontally, positioned on opposite sides of the nacelle, visible to a pilot approaching from any direction, and flash simultaneously. This lighting configuration ensures the turbines in this size category are always lighted.
- In the event one of the two obstruction lights fails, no light failure notification is required; however, the light should be restored to service as soon as possible.
- All turbines within this size category should be illuminated, regardless of their location within a wind turbine farm, and should be configured to flash simultaneously with the other turbines

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

in the same farm. This requirement ensures the pilots operating at 500 feet AGL have sufficient warning that a wind turbine obstruction may be within their flight path.

The following standard established in Chapter 13.8, Lighting of Wind Turbines During Construction Phase, are applicable to the Project:

- To ensure proper conspicuity of turbines at night during construction, all turbines should be lighted with temporary lighting once they reach a height of 200 feet (61 m) or greater until the permanent lighting configuration is turned on. As the structure's height continues to increase, the temporary lighting should be relocated to the structure's uppermost height. The temporary lighting may be turned off for short periods if they interfere with construction personnel. If practical, permanent obstruction lights should be installed and operated at each level as construction progresses. An L-810 steady burning red light shall be used to light the structure during the construction phase, if the permanent L-864 flashing-red lights are not in place. If power is not available, turbines should be lighted with a self-contained, solar-powered, LED, steady-burning red light that meets the photometric requirements of an FAA L-810 lighting system. The lights should be positioned to ensure a pilot has an unobstructed view of at least one light at each level. Using a NOTAM (D) to justify not lighting the turbines until the entire project is completed is prohibited.

### **5.2 State**

State regulations are not applicable on the Reservation but are included herein as the Boulder Brush Facilities are located Off-Reservation.

#### **5.2.1 California Scenic Highway System**

There are no officially designated state scenic highways in the immediate Project Area. The nearest scenic highway, I-8, is an eligible state scenic highway from SR-67 to the eastern San Diego County border (Caltrans 2018c). At its closest location, I-8 is located approximately 1.7 miles south of the proposed Off-Reservation gen-tie alignment on private lands. Also, SR-94 is an eligible state scenic highway from SR-125 east to I-8 near Jacumba (Caltrans 2018c). At its closest location, SR-94 is located approximately 3.8 miles south of the proposed Off-Reservation gen-tie alignment on private lands.

### **5.3 Local**

Local regulations are not applicable on the Reservation but are included herein as the Boulder Brush Facilities are located Off-Reservation on lands under the County's jurisdiction.

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

### **5.3.1 San Diego County General Plan**

The General Plan Conservation and Open Space Element establishes a County Scenic Highway System that is composed of scenic corridors that includes county roads state routes, and interstate freeways. Within the Project Area, I-8, SR-94, and Old Highway 80 are included within the County Scenic Highway System (County of San Diego 2011a).

In addition, the County General Plan contains policies concerning the protection of visual and scenic resources and views. Policies applicable to the Boulder Brush Facilities include (but are not limited to Policy M-4.5 (context sensitive road design), COS-11.1 (protection of scenic resources including scenic highways and regionally significant scenic vistas), COS-11.3 (minimization of visual impacts in sensitive areas through appropriately scaled materials and minimal disturbance of topography). Policy COS-11.7 require new development to place utilities underground to maintain viewshed) is also applicable.

### **5.3.2 Mountain Empire Subregional Plan**

Lands within the Boulder Brush Boundary are located within the Mountain Empire Subregion of the County of San Diego. The Mountain Empire Subregional Plan (County of San Diego 2011b) contains policies that concern the protection of visual resources and thus, are applicable to the Boulder Brush Facilities. Conservation – Environmental Resources Policy and Recommendation 5 is applicable to the Boulder Brush Facilities and states that development shall not adversely affect those areas of “significant scenic value” (County of San Diego 2011b).

### **5.3.3 Boulevard Community Plan**

The Mountain Empire Subregion is further separated into distinct community planning areas and lands within the Boulder Brush Boundary are located in the Boulevard Community Plan area (County of San Diego 2011c). Policies of the Boulevard Community Plan that are specifically applicable to visual resources and Boulder Brush Facilities include Policy LU1.1.2 (encourage development to protect visual resources), LU 1.1.3 (encourage development to respectfully incorporate existing views), and LU 3.1.1 (encourage development to preserve dark skies with reduced lighting and increased shading requirements).

### **5.3.4 Boulevard Community Trails and Pathways Plan**

According to the Boulevard Community Trails and Pathways Plan (County of San Diego 2009a), a community pathway is proposed on Ribbonwood Road and a community trail is proposed on a private road that extends north of Ribbonwood Road to the east of the Reservation and north of I-8. South of I-8 there are four proposed community trails that traverse or border the Reservation. While

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

these trails are proposed, they typically traverse private lands for which the County has yet to acquire public ROW to establish public use trails. The nearest community pathways and trails to the Reservation and Boulder Brush Facilities include:

- Proposed Ribbonwood Road Pathway (parallels Ribbonwood Road from I-8 north and is located east of the Reservation; approximately 2.2 miles in length)
- Proposed Ribbonwood Trail (extends from the terminus of the proposed Ribbonwood Road Pathway north across private lands in the McCain Valley (and is located east of the Reservation); approximately 4.4 miles in length and the Off-Reservation gen-tie alignment spans the proposed trail).
- Existing San Diego & Arizona Eastern Railway Trail (parallels the San Diego & Arizona Eastern railway ROW that is bordered by Reservation lands; approximately 13 miles in length)
- Existing Tierra Del Sol Trail (follows Tierra Del Sol Road and terminates the southeastern corner of the Reservation; approximately 4.8 miles in length)
- Existing Shockey Truck Trail Trail (parallels Tierra Del Sol Road which parallels the southern boundary of the Reservation; approximately 2.9 miles in length)

Existing Shockey Loop Trail (extends north and west from the Shockey Truck Trail Trail across two areas of the Reservation; approximately 2.55 miles in length)

### **5.3.5 Campo/Lake Mornea General Plan**

According to the Community Plan, preservation of natural areas including open spaces, long views, rugged natural ridgelines, night skies, and oak and chaparral woodlands, is a priority for the community (County of San Diego 2016). Further, the intent of the community plan is “to preserve, protect, and enhance the existing small town rural atmosphere and unique community character of the Campo/Lake Morena Planning Area.” Relevant goals and policies of the community plan that are specifically applicable to visual resources include Goal LU 3.1 (preservation of community character and scenic views), Policy LU 3.4.3 (use of low level, low angle, downcast outdoor lighting and fixtures), Goal LU 3.6 (protection of viewsheds and property values from impacts of wind farms and solar development), Policy LU 3.6.1 (locate wind and solar projects where landforms can hide them to the maximum extent feasible).

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

### **5.3.6 Campo/Lake Morena Community Trails and Pathways Plan**

The nearest community pathway and trails identified in the Campo/Lake Morena Community Trails and Pathways Plan are located south of the I-8 and west of the Reservation. These pathways and trails include:

- Proposed La Posta Creek/Old Highway 80 Pathway (generally parallels Old Highway 80 near the Golden Acorn Casino; approximately 5 miles in length)
- Existing Shockey Truck Trail/San Diego & Arizona Eastern Connector Trail (extends west from the Reservation and the San Diego & Arizona Eastern Railway Trail previously identified in Section 5.3.4, above; approximately 1.5 miles in length)
- Existing Shockey Truck Trail Trail (see Section 5.3.4, above).
- Proposed SR-94 Pathway (parallels SR-94; approximately 11.6 miles in length)
- San Diego & Arizona Eastern Rail Road Trail (see Section 5.3.4, above).

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

INTENTIONALLY LEFT BLANK

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

## 6 IMPACT ASSESSMENT

### 6.1 Introduction

The Project Area includes of sovereign Tribal Reservation lands administered under the jurisdiction of the BIA, the lead NEPA agency and private lands administered under the jurisdiction of the County. To be NEPA- and CEQA-compliant, a visual impact assessment must establish existing visual quality and character, viewer response, and the anticipated visual characteristics of the proposed project. The findings must then be comparatively evaluated, using an evaluation methodology to assess the level of change (contrast) between existing and proposed visual resources, and ultimately determine the level of significant impact, if any.

For the purposes of this VIA, inventory and analysis of visual resources was conducted using a hybrid evaluation methodology, combining elements of federally adopted guidelines including those provided by FHWA, the BLM VRM, and the USFS SMS. However, no jurisdictional authority beyond that of the BIA should be inferred for components of the Project included on the Reservation. As previously stated, the Boulder Brush Facilities are subject to one or more MUPs from the County. Therefore, this report and the analysis included herein was conducted with consideration of the County's Report Format and Content Requirements: Visual Resources and guidelines for determining significance for visual resources (and dark skies and glare).

A number of factors inform the overall visibility, change to visual quality or character, and ultimately any potentially significant impact resulting from implementation of the Project. The influencing factors used to create the composite analysis include the following elements:

- Existing visual character
- Existing visual quality
- Proposed visual character/visual quality
- Viewer response
- Severity of change to visual character/visual quality

The Reservation is composed of more than 16,000 acres situated along the western edge of the Tecate Divide. Proposed wind turbines would be located on higher-elevation terrain, including ridgelines, on the Reservation. Many of the ridgelines are accessible by road, although it is anticipated that many would require additional improvements to accommodate construction and operational needs.

The Boulder Brush Facilities traverse largely undeveloped ranch lands within the McCain Valley that include active cattle grazing areas and terrain traversed by dirt bike trails and access roads.

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

The valley landscape includes chaparral and boulder covered hills as well as rural residential development, existing nearby wind turbine facilities (Tule Wind Project), transmission infrastructure (Sunrise Powerlink), and undeveloped open space.

### **6.2 Assessment Process**

The assessment process begins with preparation of a project viewshed analysis. The limits of a viewshed are defined as the potential visual limits of available views to a particular project and is primarily based on topography and the height of prominent project features. Included within the viewshed are vantage points and the locations of viewers that are likely to be affected by visual changes brought about by specific project features referenced. The screening effects of intermediate vegetation and structures at specific vantage points are rarely referenced or included in viewshed analyses.

Visual resources within the Project Area are influenced by an assortment of elements including terrain, geology, vegetation, climate (i.e., dry conditions and lack of water), and hydrology. For the Project, the viewshed is largely defined by rugged ridgelines and moderately tall desert vegetation in the surrounding landscape. Much of the visual experience in the analysis area is typified by the desert transitional landscape of southeastern San Diego County. This is evidenced in the available views of dense to moderate, scrub and chaparral covered hillsides traversed by electrical transmission infrastructure, clusters or lines of oak woodlands along drainages and in grassland and meadow or riparian scrub valleys. In addition, boulder outcrops, scattered and modest single-family residential and ranch development surrounded by landscaping or cleared fuel management zones, paved and dirt roads and wood to simple metal post and wire fencing are common sights in the Project Area. Existing photographs of the Project Area are included on Figures 5a through 5e.

#### **Key Observation Points**

Key observation points were selected as representative vantage points in the landscape that offer sensitive receptors views to the Project Area. Nine key views were selected from which to evaluate changes to existing views, visual character, and visual quality resulting from implementation of the Project. The locations of selected key views are shown in Figure 3 and existing visual conditions at each KOP are presented on Figures 5a through 5e. The key observation points are representative of views to the Project Area from On- and Off-Reservation roads in the local area. Further, the key observation points were selected because they would most clearly illustrate the visual effects of the Project components.

Although key views were not established on private property, the key views are representative of the viewing angles and distances available to viewer groups (including private residences) in the Project Area. Key views were not established on mountain trails or peaks in the surrounding area

## Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

because these areas are assumed to receive low use. As stated previously, motorists represent the largest viewer group in the Project viewshed.

### Visual Simulations

Site photographs of views towards the Project Area were used to create 3d simulations of the proposed Project. True-scale 3d models were rendered onto the photographs that were taken during the July 2018 field investigation from the four selected key views.

Visual simulations were created to depict the anticipated visual change and characteristics associated with development and buildout of the Project. Using available topography maps or digital elevation maps, a 3d surface was created for the existing terrain and then imported into 3D Studio Max. This 3d surface was used to camera-match the background photos to the terrain model. 3D models were created for all proposed facilities that would be visible from the selected key views. These 3d models were then merged into the 3d scene at their finished grade elevations. Lighting was added to the scene to match the time of day the photos were taken and to cast realistic shadows. Each view was rendered onto a high-resolution image. The final product depicts a photorealistic before-and-after simulation. Upon completion of the visual simulations, the existing setting photographs were compared to the Project conditions to analyze the potential impacts of the Project and determine the significance of anticipated visual change.

### Scenic Quality and Visual Character

Scenic quality is best described as the overall perception of an individual for a particular location or landscape. Scenic and visual quality is typically evaluated by identifying the vividness, intactness and unity present in the viewshed and more specifically, landscape character units. An LCU is a portion of the regional landscape and can be thought of as an outdoor room that exhibits a distinct visual character. The Reservation is divided into LCUs for rating purposes and identifying similar visual patterns, textures, color, variety, and development (see Figure 4).

To assess scenic quality and visual character for On-Reservation Project components, this evaluation follows the methodology of the draft Visual Impact Assessment for the Shu'luuk Wind Project (AECOM 2012). Further, this evaluation utilizes the same LCUs identified for the Reservation in the draft Visual Impact Assessment for the Shu'luuk Wind Project. Four LCUs were identified on the Reservation and were assigned a visual quality rating of B or C. The boundaries of the four LCUs parallel those of the SQRUs depicted on Figure 3 of this report. Visual quality ratings are defined as follows:

- **Type A:** Areas have outstanding diversity or interest; characteristic features of landform, water, and vegetation are distinctive or unique in relation to the surrounding region. These areas contain considerable variety in form, line, color, and texture.

## Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

- **Type B:** Areas have above-average diversity or interest, providing some variety in form, line, color, and texture. The natural features are not considered rare in the surrounding region but provide adequate visual diversity to be considered valuable.
- **Type C:** Areas have minimal diversity or interest; representative natural features have limited variation in form, line, color, or texture in the context of the surrounding region. Discordant cultural modifications (e.g., substation, transmission lines, and other cultural modifications) can be highly noticeable, which can reduce the inherent value of the natural setting.

Visual character is descriptive and non-evaluative, which means it is based on defined attributes or pattern elements and character that are neither positive nor negative in themselves. Pattern elements include form, line, color and texture and pattern characteristics include dominance, scale, diversity and continuity. Projects that create a high level of contrast with the existing visual character are more likely to generate adverse visual impacts due to visual incompatibility. Conversely, projects that create a low level of contrast with the existing visual character are less likely to generate adverse visual impacts due to inherent visual compatibility. Project modifications are evaluated on this basis for impact analysis purposes. For on- and off-Reservation components, a comparative and descriptive analysis of existing and proposed visual conditions is provided to determine the severity of visual character impacts. The severity of visual character impacts is determined by the degree of anticipated element contrast that is further determined by a consideration of visual dominance (see Table 3, below).

### Scenic Vistas

Impacts to scenic vistas focus on the potential for construction and/or operational activities to interrupt or obstruct existing views to scenic features. For purposes of this analysis, scenic vistas include views from formally designated scenic locations including scenic highways, roads, or overlooks. In addition, consideration of scenic vistas includes long and broad views that include scenic landforms or water features such as mountains, hills or ocean, lakes, rivers, and waterfalls. Scenic vista locations are identified and at each location (i.e., highway, road, trails), the visibility of Project activities and features is described and potential for view blockage is evaluated. Factors considered in determining view blockage potential include distance, angle of observation, duration of Project visibility, scale of existing and proposed features, and presence of intervening features. For purposes of this analysis, consideration of scenic vistas included views from formally designated scenic highways and non-designated public roads.

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

## 6.3 Environmental Consequences

### 6.3.1 Impact Indicators

For purposes of this visual impact assessment, an adverse effect to visual resources would occur if:

1. Development would substantially alter the existing visual quality of a Type A scenic landscape.
2. The Project would be incompatible with existing visual quality designations (if applicable) or, for purposes of County review, the Project would introduce features that would detract from or contrast with the existing visual character and/or quality of a neighborhood, community, or localized area.
3. Development would have a substantial adverse effect on a scenic vista through substantial obstruction, interruption or detraction.
4. The Project would create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.
5. The Project would not comply with applicable goals, policies, or requirements of an applicable County Community Plan, Subregional Plan, or Historic District's zoning.

These impact indicators are consistent with those used in the draft Visual Impact Assessment for the Shu'luuk Wind Project (AECOM 2012). In addition, visual character and plan consistency indicators specific to the County's guidelines for determining significance for visual resource have been included. In addition, an evaluation of short-term effects associated with construction of the Project and long-term effects associated with Project operations presented in this assessment. Specifically, short-term visual impacts associated resulting from construction activities were assessed qualitatively and utilizing the hybrid assessment process and methodology outlined previously. Long-term visual impacts were also evaluated with the support of KOPs and visual simulations from KOPs.

The contrast rating process, adapted from the BLM VRM Contrast Rating System (Manual 8431), evaluated visual contrast created between a project and the existing landscape. More specifically, the assessment below evaluated alterations to the existing visual characteristics and visual quality of the Project Area and surrounding area resulting from the introduction of Project components. Visual contrast is described in terms of the pattern elements of form, line, color, and texture. In addition, motion is a characteristic of wind turbines due to rotating blades and was therefore considered a variable fact that can affect visual impact. The degree of contrast is evaluated according to the criteria shown in Table 3, Contrasts Rating Criteria and is identified as none, weak, moderate, and strong.

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

**Table 3  
Contrast Ratings Criteria**

Degree of Contrast	Criteria
None	Contrast is not visible or perceived
Weak	Contrast can be seen but does not attract attention
Moderate	Contrast begins to attract attention and begins to dominate the characteristic landscape
High	Contrast demands attention, will not be overlooked, and is dominate in the landscape

To enhance the contrast rating approach, the impact severity and susceptibility methodology employed by the Federal Highway Administration (FHWA) was considered as it evaluates viewer response to visual change associated with the Project. The visual impact significance matrix considers the susceptibility of KOPs to visual change and the degree of visual change experienced from a particular KOPs. As shown in Table 4, the significance matrix is also helpful in determining the significance of visual impacts.

**Table 4  
Visual Impact Significance Matrix – Sensitive Viewing Areas**

Visual Impact Severity	High Impact Susceptibility	Moderate Impact Susceptibility	Low Impact Susceptibility
High Visual Impact Severity	Significant	Less than Significant	Less than Significant
Moderate Visual Impact Severity	Less than Significant	Less than Significant	Less than Significant
Low Visual Impact Severity	Less than Significant	Less than Significant	No Impact

A viewshed analysis was prepared for the Project using GIS to illustrate the extent of potential views to Project components in the surrounding area. The viewshed map depicts the extent of available views to the extended blade tip of wind proposed turbines using a digital elevation model (DEM) out to a distance of 10 miles from the Project boundary.

For the Boulder Brush Facilities, County significance thresholds for visual resources were considered. Specifically, long-term impacts to scenic vistas from a public road, trails with an adopted County trail system, a scenic highway, or a recreational area are specifically addressed for the proposed gen-tie, high-voltage substation, and switchyard and for the Project as a whole. Compatibility with applicable policies from the Mountain Empire Subregional Plan and Boulevard Community Plan as it relates to the proposed gen-tie, high-voltage substation, and switchyard is also addressed.

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

### **6.3.2 Proposed Project (Alternative 1)**

This visual impact assessment considers the potential short- and long-term visual effects associated with construction and operation of the Project, described previously in Section 1.2, Project Description. KOPs and visual simulations are used as representative vantage points and support for the analysis of impacts to existing visual character, quality, and views.

As proposed, the Project includes both aboveground and underground components and visual effects would primarily occur due to the form, line, color, and scale of aboveground components. Viewer groups within the Reservation boundary (i.e., local residents, motorists) and in the surrounding area including residents on County jurisdictional lands, interstate, state highway, and local road motorists, and recreationists) would be provided views to and experience visual impacts associated with the installation of 60 new wind turbines and ancillary aboveground facilities. In addition to up to 60 new wind turbines, Project components located On-Reservation include a new 230 kV gen-tie line supported by 150-foot high steel poles, the Project would include an underground electrical collection system, up to three meteorological towers, collector substation and O&M facility, and new access roads. Also a component of the Project, the Off-Reservation Boulder Brush Facilities include a 230 kV gen-tie line, high-voltage substation, 500 kV switchyard and access roads. . In addition to permanent facilities, the Project would include temporary facilities consisting of a batch plant and staging and laydown yards.

This visual impact assessment evaluates direct and indirect effects to visual resources. Direct effects include noticeable alteration of existing views and disturbance of the Project Area landscape resulting from construction activities and the introduction of Project components. Direct effects can be experienced over the short-term (i.e., visibility of construction activities and vehicles) or the long-term. While direct effects are relatively clear and easy to discern, indirect effects generally occur after construction of the Project and may involve changes to local economies such as through reduced visitation to recreational areas or increases in local home sales due to the visibility of Project facilities and perceived degradation of visual quality.

Short-term and long-term effects are evaluated in this visual impact assessment. As previously described, short-term effects include alterations resulting from temporary disturbances such as construction of laydown or staging areas, the general visibility of construction activities, personnel, equipment and vehicles, and the progression of the Project Area from its current state to supporting Project components. Long-term effects encompass the introduction of permanent structures to the landscape that would remain visible during the operational phase of the Project. For the Project, proposed wind turbines would be highly visible due to their proposed scale, color, and motion and the most substantial long-term effects would occur from the addition of wind turbines to the southern portion of the Reservation. Further, the introduction of the On- and Off-Reservation

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

segments of the proposed 230 kV gen-tie line would be visible from local roads, I-8, residential and recreation lands due to the proposed scale of 150-foot high steel support poles.

### **6.3.2.1 Impacts to Existing Visual Quality of a Type A Scenic Landscape (Impact Indicator 1)**

While this assessment considered the entirety of the Project (i.e., On- and Off-Reservation components and facilities), the primary and most apparent effects to inventoried visual quality and sensitivity level rating units would occur from the construction of 586-foot tall wind turbines on Reservation lands. Due to the proposed maximum 150-foot high scale of steel poles and crossing of roads, Old Highway 80 and I-8, the proposed 230kV gen-tie line would also result in noticeable effects to existing views and the existing quality of the Project Area landscape. As Type A landscapes were not inventoried on the Project Area, (see Section 4.2.2, Landscape Character Units), there will be no impacts to a Type A Scenic Landscape. As such, Project effects to Type A scenic landscapes would not be adverse.

The majority of wind turbines, including wind turbines on steep slopes, are located in areas inventoried with a Type B, or moderate, visual quality. Adverse effects would also occur in areas of High or Moderate sensitivity. While the Project would affect the quality of inventoried LCUs on the Reservation, the visual quality and sensitivity of adjacent LCUs (including private lands traversed by the Boulder Brush Facilities) would also be impacted. Due to the presence of visually prominent wind turbines that would be visible throughout the surrounding area (see Figure 3, visual quality (as it relates to adjacent scenery) and sensitivity of adjacent LCUs would likely be reduced in future inventories.

### **6.3.2.2 Impacts to Visual Character (Impact Indicator 2)**

#### **Construction and Decommissioning (Short-Term Effects)**

During Project construction, construction vehicles, equipment, materials, and workers would be visible to On- and Off-Reservation viewers consisting of rural residents, motorists and recreationists.

Wind turbine components (i.e., nacelles, towers, and blades), transmission and substation infrastructure, MET towers, and components for the O&M station would be delivered to the Reservation on large trailers that would utilize I-8, Old Highway 80, SR-94, and local roads including Church Road. Vehicles and equipment would be visible to residences along the delivery routes and motorists on these roads. In addition, short-term effects to existing visual character and quality would occur from the construction of wind turbine pads and incremental installation of wind turbines with the use of tall cranes, installation of underground and overhead electrical collection lines and associated support poles (i.e., for the overhead line), a collector substation,

## Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

and the On-Reservation segment of the 230 kV overhead transmission line. Construction of the O&M building, batch plant, laydown and staging areas, and new access roads would also result in short-term effects to existing visual character associated with visibility of construction and alteration of the landscape.

Components for the Boulder Brush Facilities would be also be delivered on large trailers to Off-Reservation locations primarily via I-8 and Ribbonwood Road. Construction activity on private lands would be visible to residences along the delivery routes, motorists on delivery routes, and nearby recreationists on BLM-administered lands. Approximately 3.5-miles long and supported by thirty-eight 150-foot tall steel poles, the proposed gen-tie line would extend east from the adjacent Campo Reservation, spanning the Tule Creek corridor, and proceed to the north atop rugged, west-facing slopes to the proposed high-voltage substation. Construction of the gen-tie would temporarily effect visual character due to activity along the gen-tie corridor and alteration of the landscape for pole foundations and new access roads. Both the proposed high-voltage substation and 500 kV switchyard would be developed in the northernmost portion of the private lands that also coincide with the narrow, northern extent of the Boulevard Subregional Group area. Construction of the proposed substation and switchyard would result in short-term effects to the existing undeveloped character of the sites.

Construction is estimated to take approximately 57 weeks of active construction with 3 months of commissioning or testing of the facility extending another 2 months. As such, short-term effects to viewers at the identified viewpoints analyzed in this visual impact assessment would be experienced over an approximate 57-week duration. However, short-term visual effects at select viewpoints would be reduced by the sequential and phased approach of construction activities. For example, the construction of proposed wind turbines would generally be sequenced such that individual strings of wind turbines would be installed as opposed to all wind turbines installed at one time. Therefore, viewers would be incrementally exposed to views of wind turbines at individual viewpoints and at the majority of viewpoints, specific strings of wind turbines would be visible. In addition, construction activity along the gen-tie corridor (i.e., On- and Off-Reservation segments) would repeatedly shift as foundations are established and support poles are installed. As depicted in the visual simulations prepared for the Project, views to all Project components and associated construction activities would not be available from viewpoints in the surrounding area. Rather, views of Project components would be a factor of location, orientation, proximity to components, and the openness of the landscape. In addition, specific areas of disturbances within the Project footprint would be restored to their pre-construction conditions following the completion of construction, which would reduce the overall area of visible disturbance associated with construction activities.

## Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

The construction new access road, required widening of existing access roads, and clearing and grading of previously undeveloped areas for Project components and facilities to accommodate materials deliveries would be noticeable to viewer groups in the area. Where new roads are proposed or previously undisturbed locations would be altered, existing vegetative coverage and possibly, boulders, would be cleared and the tan color of underlying soils would be exposed. Linear and tan-colored banding adjacent to undisturbed terrain and desert scrub vegetation would create visible color, line, and texture contrasts on slopes and across flatter terrain. Similar color contrasts would result from cut and fill activities for roads and turbine pads that extend beyond ridgelines and onto adjacent sloping terrain. In these instances, the removal of vegetation from slopes would create visible line and color contrasts at viewpoints. However, because viewer groups are typically located at a lower elevation, the construction of new access roads, necessary widening of existing access roads, , wind turbine pads, and laydown areas may be partially obscured in views from private residences and public roads.

The following major short-term construction activities associated with the Project would affect visual character and quality:

- Influx of construction personnel in the Project Area and on nearby roads
- Vehicle traffic associated with construction workers and truck and heavy equipment deliveries
- Site preparation and clearing and grading for the Project facilities
- Assembly and installation of up to 60 wind turbines and three permanent and six temporary meteorological towers
- Construction of the On-Reservation collector substation, O&M facility, and overhead gen-tie line (On- and Off-Reservation segments)
- Construction of the Boulder Brush Facilities including the high-voltage substation and 500 kV switchyard

During the duration of construction activities, the increase in activity in the Project Area would be substantial and the influx of vehicles, equipment, and workers (up to 300 during peak construction) to the typically quiet and slow-paced area would be pronounced. On- and Off-Reservation residents and motorists (particularly those on I-8, Old Highway 80, SR-94, Church Road, and Ribbonwood Road) would experience the daily influx of activity and construction-related traffic and traffic would be heaviest prior to the start and immediately after the end of the normal working day (i.e., 7:00 a.m. to 7:00 p.m.). During the delivery of heavy equipment (excavators, graders, cranes, etc.) and Project components, residents and local area motorists would be temporarily inconvenienced by slow and oversize loaded trucks and trailers delivery heavy equipment and components including wind turbine tower sections and blades, gen-tie line poles, and substation

## Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

and switchyard equipment. Construction traffic and deliveries would use I-8 and access the Project Area via Old Highway 80, SR-94, Church Road, and Ribbonwood Road. While the influx of activity and increased vehicle traffic (and associated nuisance) would be experienced daily over the 57-week duration of construction activities and would contrast with the existing quiet, slow-paced character of the area, visual effects associated with construction personnel and increased traffic are considered temporary and would not be adverse.

The majority of the proposed wind turbines would be situated at a higher elevation than roads, private residences, Tribal facilities and other public vantage points at which receptors would be provided views to Project components. To access proposed wind turbine locations, new access roads or temporarily widened access roads would be needed to accommodate Project personnel, construction equipment, and materials/component deliveries. Visual effects resulting from the clearing and grading activities for new access roads, widening of existing access roads, wind turbine foundations and pads, gen-tie pole foundations, the collector substation, high-voltage substation, 500 kV switchyard, O&M facility, MET towers (permanent and temporary), temporary staging and laydown areas, and batch plant would generally be similar. Specifically, the removal of existing vegetation and disturbance of soils would create linear bands and straight, geometric swaths of light tan exposed soils. When viewed in the context of adjacent hillside areas that are typically covered with dark, undisturbed vegetation and rock outcroppings, the lightly colored bands and swaths would create line, color, and texture contrasts in the landscape that would be experienced by local receptors. Further, necessary excavation and cut and fill activities on hillsides to stabilize wind turbine foundations, pads, and access roads between wind turbines and from existing access roads would create angular and straight areas of vegetation and terrain disturbance that would result in visible color, line, and texture contrasts. In addition, clearing and grading activities (and general construction traffic and deliveries on dirt and gravel access roads) would generate airborne dust that would be visible to local receptors surrounding the Project Area. When viewed from public vantage points that are primarily located at a lower elevation, these clearing and grading disturbances would create moderate to strong contrasts. Following construction, areas of temporary disturbance would be restored and the proposed reintroduction of vegetative materials to these areas would reduce the initial visual impacts however, restoring the landscaping to pre-Project conditions may be difficult to achieve in the desert environment.

Following the clearing of vegetation and grading at each turbine base, a permanent turbine foundation would be constructed and crane pads would be installed. Clearing and grading associated with the construction of crane pads would create visible form, line, and color contrasts where visible to local receptors (ridgeline locations may somewhat screen select crane pad locations from view). The pads would be constructed to support cranes that are instrumental in the erection of wind turbine components (i.e., towers, nacelles, and rotors). Cranes would be on site

## Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

(and would be visible from the surrounding area) during turbine assembly and installation and the presence of tall cranes and the relatively slow rise of wind turbine tower sections and other components from hillsides and ridgelines would introduce new massing and vertical scale to the Reservation. These components would tower over the immediate area and would create strong form, line, and color contrast with the characteristic landscape. Due to their vertical scale, cranes and wind turbine components would be visible throughout the Reservation and surrounding area. During the wind turbine assembly and installation period, the hillsides and ridgelines of the Reservation would begin to take on similar vertical and visually prominent attributes as the Kumeyaay Wind project site.

Once areas are prepared, cleared, and graded, construction of Project facilities and components (i.e., the collector and high-voltage substations, 500 kV switchyard, O&M building and adjacent parking area, and overhead transmission line (On- and Off-Reservation segments) would commence. Temporary visual effects associated with the construction of these vertical Project components would generally be experienced by a limited volume of local receptors near these components. For example, the installation of collector substation equipment and facilities and the resulting form, line, and color contrast displayed by the site would be apparent to local receptors in the area but would be obscured from a wider audience by intervening terrain and vegetation on the Reservation. Construction of the single-story O&M building and gravel parking lot and transformation of the site to an O&M facility would similarly be experienced by a limited volume of local receptors. The form and line contrasts associated with construction of the overhead gen-tie line would be experienced by a slightly wider On- and Off-Reservation audience due to the linear nature of this Project component. In addition, the proposed gen-tie alignment follows existing roads on the Reservation, spans I-8 near the Tecate Divide, and traversed the characteristic hill and valley landscape of McCain Valley. Therefore, the installation of new, approximately 150-foot high poles and the presence of construction equipment and vehicles along the alignment would create noticeable form and line contrasts throughout the duration of gen-tie related construction activities.

When the operational lifespan of the Project concludes, decommissioning activities would begin. All aboveground facilities of the Project that are under the ownership of the developer would be removed and the visual effects associated with decommissioning would be similar to those described above for construction. A similar assortment of equipment and vehicles would be required to disassembly aboveground Project components and hauled off site for reuse, recycling, or to a permitted and appropriate landfill. In addition to component removal, decommissioning would include regrading, spreading of topsoil and restored suitable for vegetation to recolonize.

Following the operational lifespan of the Project, decommissioning activities would commence and would create visible short-term effects to views and the landscape. Comprised of activities that would dismantle wind turbine components and all other Project facilities and structures, decommissioning

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

activities would utilize a similar assortment of construction vehicles, equipment and staff as construction. In addition, the decommissioning team is likely to work from string to string and may involve further breakdown of Project components (such as turbine towers) for easier and more efficient hauling and off-site transport. In general, viewers would experience similar short-term visual effects during decommissioning as during construction.

### **Summary of Short-Term Construction Effects**

As detailed above, vegetation clearing, grading, occupancy, facility construction, nighttime lighting, and revegetation of the Project phases would result in areas of disturbed soil surface, human activity, and dust would result in strong color, line, and texture contrast that would be prominent, especially when viewed from higher elevations. Effects of vegetation clearing, grading, construction of facilities and structures, increased activity in the area, and restoration activities would be apparent when viewed against areas of undisturbed vegetation. Further, the visual effects of these activities would not repeat the basic form, line, color, or texture of existing elements in the surrounding landscape and would affect existing landscape intactness and unity. Lastly, line, color and texture contrasts created by hillside disturbances during construction would be heightened when viewed by receptors from lower elevation areas including KOPs 2 through 5, 8, and 9. As aboveground facilities are installed in phases, short-term changes would likely be most pronounced in specific development areas. Additionally, short-term direct effects also would include decommissioning activities following completion of the operating phase. The visual impacts from decommissioning activities would be similar to the construction-related impacts discussed above and viewers would experience similar short-term visual effects during decommissioning as during construction.

These short-term effects, together and individually, would represent strong a visual contrast as seen from KOPs, trails, recreational use areas, and residential areas. The visible effects of Project construction would not repeat the basic elements found in the predominant natural features of the characteristic landscape. When located within 1 mile of the viewer, or when viewed from an elevated position, construction activities would attract the attention of the casual observer. These activities and facilities would be a focus of viewer attention, and noticeable modifications would occur to existing landscape character. Project construction would result in adverse long-term effects and potentially substantial short-term effects to existing visual character.

### **Operations (Long-Term Effects)**

Direct, long-term direct effects to the landscape and existing views would result from On- and Off-Reservation Project elements. On-Reservation elements include wind turbines, an underground electrical collection system, overhead gen-tie line, collector substation, meteorological towers, and

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

an O&M facility. Off-Reservation elements (i.e., the Boulder Brush Facilities) include an overhead 230kV gen-tie, high-voltage substation, 500kV switchyard and access roads. These components and facilities would introduce new forms, scales, vertical massing, color, and building materials that would create clear contrasts with the form, line, color, and texture displayed by the existing hill and valley terrain of the Reservation and County jurisdictional lands traversed by the Boulder Brush Facilities. Project related contrasts would be moderate to strong and would be visible from identified KOPs and other public and private vantage points in the surrounding area.

The following major long-term activities associated with Project operations would affect visual character and quality:

- Visibility and contrasts created by the introduction of tall and distinct wind turbines from locations on the Reservation and in the surrounding Mountain Empire subregion;
- Line and color contrasts associated wind turbine pad and access road disturbance including clearing and grading and cut and fill activities on local area ridgelines and hillsides;
- Visibility and scale of the overhead gen-tie line (On- and Off-Reservation segments) that would be supported by approximately 150-foot- tall tubular steel monopoles or precast concrete posts;
- Installation of required FAA-obstruction lighting on specific wind turbines and MET towers and potential glare and lighting effects to nighttime views.

### ***Wind Turbines***

As proposed, the Project would construct and operate new wind turbines that would generate approximately 252 MW, with each wind turbine generating approximately 4.2 MW. Each wind turbine nacelle would be mounted on single tubular steel tower that would be anchor-bolted to a concrete foundation. Wind turbines would have a hub height of 374 feet, rotor diameter of approximately 460 feet, and blade length of approximately 230 feet. Total height of the wind turbines (as measured from ground to fully extended blade tip) would be approximately 586 feet. Each wind turbine would be painted a standard off-white matted color to minimize glint and glare potential and would match the color displayed by wind turbines of the existing Campo Kumeyaay Wind project atop the Tecate Divide.

Visual simulations of the Project (Alternative 1) as viewed from identified KOPs are presented in Figures 6a through 6e. The introduction of new wind turbines and related straight and angular vertical forms and distinct Y-shaped massing atop high elevation terrain across the Reservation would create strong visual contrast. Specifically, the 586-foot tall wind turbines would contrast with the undulating lines displayed by the hill and valley terrain. Further, the white colored

## Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

components (towers sections, nacelle, and rotor blades) would contrast with the typical green, golds, and brown tones displayed vegetation in the surrounding rural landscape. Both the scale and wide distribution of wind turbines on higher elevation terrain on the Reservation would increase visibility of and extent of views to the features from the surrounding areas. Wind turbines would be visually prominent and would dominate views within a foreground viewing distance. While the visual prominence and dominance of wind turbines would decrease with distance, the large scale, distinct massing, and white color of the features would create strong to moderate contrasts when viewed throughout the middleground viewing distance. At further distances of the middleground zone (i.e., 0.5 to 5 miles), proposed wind turbines would be viewed in the context of the surrounding landscape and the lines displayed by towers and rotor blades would appear narrower and less distinct. Views of wind turbines would be available in the background-viewing zone however; the visual prominence of wind turbines and associated scale, line, and color contrast would be diminished in typically wide and expansive landscape.

The “looming effect”, or the perception that a particularly tall wind turbine is “looming” over a receptor, is also a potential visual effect associated with the Project. The looming effect could theoretically cause a psychological reaction in receptors from feeling “enclosed” by a tall structure and could have negative effects on quality of life and being. However, there is currently little evidence supporting negative psychological effects from looming. While not a requirement under the lease, wind turbines on the Reservation would generally be located away from Reservation boundaries and off-Reservation residences. For example, wind turbines proposed in the southeastern area of the Reservation would be situated over 1,500 feet from the Reservation boundary (approximately) and approximately 2,300 feet from the nearest off Reservation residence. The siting of wind turbines away from the Reservation boundary and Off-Reservation residential structures would reduce potential opportunities for the “looming effect” to be experienced by local receptors.

Strings of new wind turbines on the Reservation would be visible from local roads, I-8, SR-94, Old Highway 80, communities, recreational facilities and public lands, and private residences. Anticipated visual change between proposed wind turbines and existing features in the landscape was evaluated from representative vantage points (i.e., KOPs) in the surrounding areas. As previously stated, installation and operation of proposed wind turbines would result in moderate to strong contrasts and wind turbines would dominate views at public vantage points within a foreground viewing distance. Refer to visual simulations prepared from KOP 2 (Figure 6a), KOPs 3 and 4 (Figure 6b), KOP 5 (Figure 6c) and KOP 7 (Figure 6d). In addition, the viewshed of Project wind turbines would be extensive throughout the Boulevard, Tierra del Sol, and McCain Valley areas (see Figure 3) as approximately 586-foot tall wind turbines would be located atop higher elevation terrain on the Reservation. Due to the prominent location of proposed wind turbines and

## Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

their large scale, the distinct y-shaped massing of three-blade rotors and thin turbine towers would often be viewed against the sky. See Figure 6a (KOP 2 simulation), 6b (KOP 3 and 4 simulations), 6c (KOP 5 simulation), 6d (KOP 7 simulation) and 6e (KOP 9 simulation). From these lower elevation areas (i.e., lower elevation in relation to wind turbine locations), the scale and massing of wind turbines would command attention, would be impossible to overlook, and would dominant the landscape. From these locations, wind turbines would create strong visual contrast.

In addition to turbine towers, nacelles, and blades, long-term effects to the landscape would result from the construction of wind turbine pads and foundations. Specifically, color, line and texture contrasts created by the removal of vegetation and grading of terrain in the immediate vicinity of wind turbine foundations would range in severity depending on overall visibility from KOPs and the density and tones of surrounding vegetation. Similar to permanent access roads, pad clearings would display rounded to linear lines and light-tan colors and would be viewed alongside areas of primarily undisturbed vegetation. The resulting color, line, and texture contrasts would be pronounced in foreground views but would tend to recede into the landscape when viewed from locations that are more distant. Perceptible contrasts would vary by season as the characteristic vegetation in the area tends to display drab earth tones most of year with the exception of during the spring months. Outside of spring, contrasts between exposed soils at areas of disturbance and surrounding vegetation may be somewhat muted. Further, cut-and fill activities (and resulting color and line contrasts) associated with wind turbine foundations and access roads would be heightened when located on elevated slopes visible from public vantage points. Pockets of straight to curving, light-tan disturbances would be displayed on slopes and would interrupt the typically moderate to dense vegetative coverage of local hillsides. These contrasts would persist until the areas could be successfully restored and revegetated.

Visual contrasts associated with construction of wind turbine pads and cut and fill activities would be reduced through grading activities that would follow existing contours to the extent feasible and restoration activities. The intent of restoration activities is to revegetate temporarily disturbed areas to replicate the basic form, line, color, texture, scale and location of existing vegetation such that these areas blend into the surrounding landscape. In addition, reclamation activities would help to restore disturbed terrain to replicate pre-construction landforms and would assist in the reduction of visual effects associated with disturbed soils. Reclamation of the Campo Wind Corridor following decommission would be based on Tribal requirements and may include regrading, replacement of topsoil, and revegetation.

### *Gen-Tie Line*

Up to 8.5 miles of 230 kV overhead transmission line would be constructed from the collector substation to the high-voltage substation and switchyard. Approximately 5 miles (42 poles) of the

## Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

gen-tie line would occur on the Reservation and 3.5 miles (38 poles) would be constructed on private lands as part of the Boulder Brush Facilities. A temporary corridor would be construction along the entire length of the alignment to accommodate equipment access and construction activities including pole installation, pulling, and tensioning of the transmission line. Approximately 80 tubular steel poles or precast concrete poles (up to 150 feet high each) would be installed to support the transmission line. The poles would be regularly spaced approximately 950 feet on center and a permanent maintenance road (narrower than the temporary construction corridor) would remain in place to accommodate as needed and regular maintenance during operations. The remainder of the construction corridor (i.e., the area outside of the extents of the permanent access road) would be restored and re-seeded with an appropriate seed mix.

When not viewed against a backdrop of drab olive and tan, chaparral shrubs and boulder-covered hillsides, the 150-foot tall poles would rise above the local hill and valley terrain. Due to their tall scale and vertical line, poles installed on higher elevation terrain would generally be visible throughout the Reservation, from adjacent Off-Reservation lands, and from I-8 near the Tecate Divide. On the Reservation, the vertical and straight form of the tubular steel or precast concrete poles would contrast with the typically rolling landforms and low, mounded to spreading form of chaparral shrubs in the area. Despite these visible contrasts, support poles would display a similar scale and form as existing vertical structures, including electrical infrastructure, present in the landscape. Specifically, the presence of existing electrical infrastructure (including a transmission line roughly paralleling Old Highway 80 near the proposed gen-tie crossing of Old Highway 80) and wind turbines in the landscape reduces expectations of receptors for views free of vertical obstructions. Further, receptors would be familiar with vertical structures of similar form and line and this familiarity would somewhat reduce visual effects. While the vertical scale and straight line of transmission line poles would create a distinct massing and dominate views within a foreground viewing distance, the visual contrast of the poles as viewed from most KOPs (i.e., greater than 0.5-mile from the transmission line) would be low to moderate. Where structures are silhouetted against the sky, form and line contrasts would be relatively strong, the features would typically be viewed against a backdrop of the expansive desert sky. A visual simulation of the proposed gen-tie line crossing of I-8 near the Tecate Divide is presented on Figure 6d (see KOP 8 visual simulation). While existing wind turbines are visually prominent at KOP 8, the introduction of multiple support poles (up to 150-feet high each) and several conductor lines to the landscape would be noticeable and create moderate color and line contrasts.

Off-Reservation, the gen-tie line would traverse the McCain Valley landscape and would span McCain Valley and the Tule Creek corridor. East of the creek, the alignment would turn to the north and follow west-facing sloping terrain to the high-voltage substation and switchyard. A visual simulation of the proposed gen-tie line (and new wind turbines proposed north of I-8) in the

## Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

McCain Valley area is presented on Figure 6e (see KOP 9 visual simulation). While the tall, vertical form and line of poles would rise above the creek corridor and would be silhouetted against the sky when viewed from an immediate foreground distance, poles and lines would be low in the landscape relative to existing and proposed wind turbines. While poles would contrast with the form, line and color of local terrain and vegetation, taller and visually dominant wind turbines, as well as existing steel lattice towers and steel poles of the Sunrise Powerlink and Tule Wind gen-tie, mark the existing landscape (see Figure 6e). The visual prominence of the proposed Off-Reservation gen-tie line would be further diminished by Project wind turbines that would be introduced north of I-8 (see Figure 6e). Existing vertical features, and proposed wind turbines, would reduce visual contrast associated with the proposed gen-tie line and would minimize opportunities for new view obstruction and interruption from the nearest public road (i.e., Ribbonwood Road; see Figure 6e), proposed trails and pathways envisioned in the Boulevard Community Trails and Pathways Plan, and recreation and non-programmed public lands managed by BLM in the McCain Valley. Further, locating poles where similar features exist and similar infrastructure is proposed reduces the potential for impacts to regionally significant scenic vistas and protects (to the extent feasible) existing visual resources and views. As such, the segment of the proposed gen-tie on private lands would be consistent with Policy and Recommendation 5 of the Mountain Empire Subregional Plan and Policies LU 1.1.2 and 1.1.3 of the Boulevard Community Plan.

### *Electrical Collection System*

As proposed, the long-term visual effects associated with installation of the underground, electrical collection system would wane over time. Line, color, and texture contrasts resulting from trenching (approximately 28 miles of 14-foot wide trenches) would be heightened following construction however, the construction disturbances are considered temporary effects. Following construction, the linear disturbances created by 14-foot wide trenches would be restored and reseeded with an appropriate seed mix for the climate. While plant establishment may be slow in the desert environment, the trench corridors would gradually display similar colors and textures as nearby vegetation. However, a perceptible contrast in vegetation density (as well as form and line contrasts) would occur when viewed alongside areas of undisturbed vegetation.

The applicant may elect to construct an aboveground electrical collection system. Long-term visual effects would occur due to vegetation removal and grading and leveling activities at support pole foundations, and the installation of numerous support poles on the Reservation. Support poles and line (and associated form and line contrasts) would be primarily visible from nearby roadways and residences. While vegetation removal and new poles and lines would be visible to local receptors and create new contrast, both the gen-tie and wind turbines would display a more prominent form and line in the landscape and would tower above electrical collection system components.

## Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

### *Other Aboveground Facilities*

While the collector substation and O&M facilities would be constructed in lower-lying areas of the Reservation, long-term visual effects would occur due to vegetation removal, grading and leveling activities, and installation of a new structure, parking area, and daily activity at the site. Line, form, color, and texture contrasts associated with these activities and facilities would be visible primarily from roadways but may also be observed from private on Reservation residences. The facilities (and associated visual effects) would be obscured from view at KOPs by intervening terrain and vegetation. Compared to visually prominent wind turbines, the O&M facility/building, vertical elements at the collector substation including transformer and switching equipment (up to 25 feet tall), and 8-foot-high chain-link perimeter fencing would be substantially lower in scale and accordingly would create less pronounced form and line contrasts. Although previous renewable energy development marks the Project Area landscape and has produced noticeable effects, ancillary operational facilities would result in long-term visual effects to the landscape, the moderate contrasts displayed by facilities when viewed alongside adjacent undisturbed areas would generally be obscured from public view due to location and screening elements.

In addition to the Off-Reservation gen-tie line, aboveground Boulder Brush Facilities include a high-voltage substation and 500 kV switchyard. The facilities would be located adjacent to one another on private lands, approximately 2.1 miles northeast of the Reservation, in the McCain Valley. The sites encompass a lower elevation area in the local terrain that is situated between nearby boulder-strewn hills to the north and south. Steel lattice towers supporting the Sunrise Powerlink are located approximately 200 feet to the north and 700 feet to the east of the sites. In addition, strings of tall wind turbines of the Tule Wind Project are located within approximately 0.6 miles to the northeast, north, and west of the high-voltage substation and switchyard sites. In addition to transformers and other typical equipment, the high-voltage substation would include a control house and parking area. Lighting would be installed at the facilities and would be kept to the minimum required for security and safety. All lighting would be hooded, directed downward, and turned off when not required. As proposed, the high-voltage substation and switchyard facilities would include typical substation features including metallic racks and bays, transformers, breakers, and a control house.

While the high-voltage substation and switchyard facilities would include vertical structures, these features would be visually submissive to taller towers and wind turbines that currently mark the McCain Valley Road corridor. Further, the proposed facilities would not be readily visible from a public road on County jurisdictional lands and I-8. Due to the presence of taller features that tend to dominate the visual landscape, the proposed facilities would not substantially obstruct or interrupt views available from nearby BLM-managed lands or from the general alignment of proposed trails and pathways envisioned in the Boulevard Community Trails and Pathways Plan.

## Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

Lastly, locating the proposed facilities in a landscape that has been noticeably altered by transmission line and wind turbine development would reduce potential for new view obstruction from regionally significant scenic vistas and would protect (to the extent feasible) existing visual resources and views. Therefore, the segment of the proposed gen-tie on private lands would be consistent with Policy and Recommendation 5 of the Mountain Empire Subregional Plan and Policies LU 1.1.2 and 1.1.3 of the Boulevard Community Plan.

Lastly, a 1-mile long segment of Ribbonwood Road located north of Opalocka Road would be widened (from approximately 20 feet to 30 feet) and paved. The most apparent visual change associated with the proposed improvement would be the resulting color contrast associated with the installation of the grey/black asphalt over the currently dirt road surface. Color contrast would be moderate and difficult to overlook however, the presence of existing paved roads in the immediate area would reduce the severity of visual effects. Further, proposed improvements would be experienced by a small volume of viewers consisting primarily of private viewers on residential properties located off Ribbonwood Road (i.e., north of Opalocka Road). Lastly, improvements are proposed to an existing roadway that has created existing (and visible) linear disturbance in the local landscape.

As roadway improvements would not entail the introduction of new roads and would primarily consist of horizontal features (i.e., pavement), proposed improvements to existing roads on private lands would not substantially degrade existing visual character or substantially affect existing views. Specifically, the paved surface of Ribbonwood Road north of Opalocka Road would not substantially obstruct or interrupt existing scenic views from local roads or regionally significant scenic vistas. Lastly, proposed improvements would not adversely affect the existing visual quality of the McCain Valley landscape and would protect existing visual resources and views by concentrating work along an existing corridor of linear disturbance. Therefore, proposed roadway improvements would be consistent with applicable visual resource policies of the Mountain Empire Subregional Plan and the Boulevard Community Plan.

### *Indirect Long-Term Effects*

Implementation of the Project could result in indirect long-term effects such as reduced visitation to the surrounding area from tourists, recreationists, and astronomy enthusiasts due to reduced visual quality and the addition of red pulsing obstruction lights atop wind turbines. Reduced visitation could result in loss of tourist or recreation-related revenues to local businesses. Alternatively, individuals may be drawn to the area due to an interest in renewable energy infrastructure and for opportunities to observe an operable wind turbine development.

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

## Operations (Long-Term Effects) Summary

Wind turbines, combined with all other aboveground facilities, including the transmission line, collector substation, and the O&M facility, and would result in moderate to strong degrees of contrast with the existing environment. The angular, vertical forms and straight edges of the wind turbines would dominate the horizontal lines of the landscape as seen within the foreground-middleground distance range. While transmission poles (approximately 150 feet tall) would be visually subordinate to wind turbines, the installation of up to 42 tubular steel or precast concrete poles would contribute tall forms and straight lines that would contrast with the undulating line of the local hill and valley terrain. The addition of 42 tall and straight, vertical lines (in addition to up to 60 new wind turbines) would also create visual clutter in the landscape that would reduce existing intactness and unity. Additionally, the scale and distribution of numerous facilities and features of the Project would not repeat the elements of form, line, color, and texture of found within the existing Tribal rural landscape located south of I-8. Elements located north of I-8 including wind turbines, On- and Off-Reservation segments of the 230kV gen-tie line, high-voltage substation, and 500kV switchyard would similarly not repeat the elements of form, line, color, and texture of found within the natural rural landscape. However, the close proximity of similar elements including wind turbines, high-voltage transmission infrastructure, and a substation facility would result in a somewhat subdued visual effect when these components are experienced alongside existing renewable energy and electrical infrastructure development.

The level of change associated with the Project would be high because the number, size, and spatial extent of proposed components in the alternative area would be visible from large portions of the area, and would dominate the landscape as seen from KOPs and other locations within the alternative area. While some natural to rural landscape characteristics of the area would be partially retained, the majority of the area would have a strong industrial component. In general, where visible outside of the Project Area for approximately 5 miles, the Project would dominate the view of the casual observer and would result in moderate to high levels of contrast in the landscape. While the Project would select structure colors and materials corresponding to similar wind turbine development in the surrounding area to minimize contrasts, long-term effects to visual quality and viewer sensitivity throughout the viewshed would be moderate to strong. As such, the operation of the Project would result in a potentially significant impact to visual character (Impact Indicator 2).

### **6.3.2.3 Substantial Adverse Effect on a Scenic Vista (Impact Indicator 3)**

Views of wind turbines would be visible generally from the Campo area on the west and the Jacumba Valley area on the east. Less visually prominent Project components including the 230kV gen-tie line, collector substation, high-voltage substation, and 500kV switchyard would have a narrower viewshed and would generally be visible from On-Reservation and Off-Reservation

## Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

locations to the east in the McCain Valley. Specific to scenic vistas, views of the Project would be available from local roads including Ribbonwood Road, Opalocka Road, McCain Valley Road and Church Road; highways on the County Scenic Highway System including I-8, SR-94, Old Highway 80; existing and proposed pathways and trails in the Boulevard and Campo/Lake Morena Community Pathways and Trails Plan; and public lands in the McCain Valley area managed by the BLM. In addition, the Project Area landscape is bordered by mountains to the north, east, and northwest however, trails to most peaks are assumed to experience a low volume of foot traffic due to their remote locations, and lack of formal trailheads, staging areas, and information signage on nearby roads.

Views of Project components (primarily wind turbines and steel poles associated with On- and Off-Reservation segments of the 230kV line) would be persistent from I-8 between the Tecate Divide and Walker Canyon, SR-94, , and proposed trails and pathways identified in the County's Boulevard Community Trails and Pathways Plan. For example, between Old Highway 80 and Crestwood Summit (a distance of approximately 0.95 mile), southward views offered to westbound I-8 motorists are generally long and extend to distant mountain terrain located more than 20 miles away in Mexico. These specific views are scenic and would be substantially interrupted by new wind turbines proposed atop a ridge located approximately 1.5 miles away in the western extent of the Reservation. Proposed wind turbines, the 230kV gen-tie and On-Reservation facilities would be visible from County identified trails and pathways. However, the County does not have land use jurisdiction over Project Facilities on the Campo Reservation and therefore, adverse effects to views from proposed trails and pathways associated with the introduction of On-Reservation project components are not analyzed herein. Regarding SR-94, On-Reservation project components would be visible to east- and westbound motorists however, the landscape visible from the state highway generally lacks focal features and ridges routinely shorten the available views. As such, views from SR\_94 are not considered scenic vistas for purposes of this assessment. At its intersection with Old Highway 80, SR-94 is located over 3.75 miles from the nearest Boulder Brush Facilities component. Due to distance and intervening terrain and vegetation, the Boulder Brush Facilities would be blocked from view of motorists on SR-94.

The Boulder Brush Facilities would be noticeable in views from I-8, Ribbonwood Road, McCain Valley Road and trails in the Lark Canyon ORV Area. Regarding the high-voltage substation and switchyard, views to these facilities would primarily be available to nearby motorists on McCain Valley Road. From I-8, the majority of Boulder Brush Facilities would not be visible and the exposure of motorists to views of the proposed gen-tie line crossing of the interstate would be limited. Further and due to the presence of existing wind turbines in the landscape near the proposed gen-tie line crossing, effects to scenic vistas from I-8 would not be adverse. As viewed from Ribbonwood Road near Opalocka Road, the introduction of the proposed gen-tie line would

## Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

interrupt the remaining openness of views across the McCain Valley from Ribbonwood Road and Opalocka Road. Effects to existing views from Ribbonwood Road due to the introduction of the gen-tie line in the McCain Valley would be adverse. Given the close proximity of visually prominent features and the limitations of the view associated with backing terrain, introduction of the switchyard and substation would not adversely affect a scenic vista from McCain Valley Road. Lastly, as viewed from trails in the Lark Canyon ORV Area, effects on a scenic vista would not be adverse. Viewer groups on the trails are limited to ORV users (motorcycles/dirt bikes and ATVs less than 40 inches wide) that are not generally considered particularly sensitive viewers due to their focus on the trail and higher speed of travel. Further and due to the presence of existing wind turbines in the immediate area, the sensitivity of ORV users to visual changes in the landscape is considered low.

Anticipated visual change between prominent Project components (i.e., primarily proposed wind turbines and the 230kV gen-tie line) and existing features in the landscape was evaluated from representative vantage points (i.e., KOPs) in the surrounding areas. Proposed wind turbines would be the primary visible component of the Project, although the overhead transmission lines and associated tubular steel poles would also be notably visible at the I-8 and Old Highway 80 crossings, and roads within the McCain Valley area (including McCain Valley Road). In addition and as described above, other Project facilities including the collector substation, O&M facility, high-voltage substation and switchyard would be visible primarily from local roads. Regarding wind turbines, the tall, prominent features would rise from the hill and valley terrain and would contrast with the typical green, golds, and brown tones displayed vegetation in the surrounding rural landscape. Proposed wind turbines and gen-tie line equipment would not substantially obstruct a focal point or significant feature from view. However, the introduction of approximately wind turbines and 150-foot high steel support poles would interrupt and detract from the remaining openness of existing scenic and/or long views that stretch across the local area landscape (see KOPs 6 and 7 (Figures 6c and 6d). Additionally and when combined with existing wind turbines in the area, the assortment of overlapping vertical lines, and linear and disk-shaped grading disturbances associated with proposed wind turbine and gen-tie line development would present a more complex and jumbled scene when compared to existing conditions (see KOPs 6, 8 and 9 (Figures 5c through 5e; 6c through 6e). Overall, the installation and operation of proposed wind turbines would result in moderate to strong contrasts and wind turbines would dominate views at public vantage points within a foreground viewing distance. In addition, the introduction of wind turbines and other prominent Project components including On- and Off-Reservation segments of

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

the 230kV gen-tie line would interrupt and detract from long and seemingly open views across the local hill and valley landscape available from local roads, highways, and recreational areas.

As such, view effects to scenic vistas are considered adverse (Impact Indicator 3).

### **6.3.2.4 Lighting, Glint/Glare, Shadow Flicker (Impact Indicator 4)**

Construction activities would generally occur during daytime hours (7 a.m. to 7 p.m.) but could involve extended hours to complete certain tasks. When activities must occur at night, all temporary sources of Project lighting would be directed downward and away from natural vegetation communities. However, given the typically dark sky environment of the local area, some lighting would still be visible at specific KOPs, along Project Area roadways, and at private properties in the immediate surrounding area. The severity of nighttime lighting received by local receptors would depend on proximity to mobile source of lighting, elevation of lighting source relative to local receptors (if located low in the landscape, lighting could be intercepted by intervening terrain and vegetation), the intensity of lighting and presence of existing sources of nighttime lighting in the surrounding area. Mobile Project lighting may be received by local receptors in the surrounding area; however, the frequency of construction activities requiring nighttime lighting would be low and would be use for a limited duration. Any impacts to nighttime visual quality and views resulting from use of construction lighting would be temporary and would not be adverse. For similar reasons, impacts to existing nighttime views from sporadic use of mobile lighting during the duration of construction would be less than significant.

Upon implementation of the Project, wind turbine and non-wind turbine related lighting would be added to the Project Area. As wind turbines and meteorological towers would exceed a height of 200 feet aboveground level, marking and lighting of a portion of these components would be required by the FAA to ensure the safety of aircraft pilots and the efficient use of navigable airspace. While the FAA has the final authority to review and approve lighting plans for wind projects (FAA determines the number, location, and type of lighting to be installed atop wind turbines), installation of single- or double-lamp fixtures with red or white cover lenses and adjustable-rate flashing beacons (or steadily burning lights) is assumed. The obstruction light would be top-mounted well above the surface of the nacelle to enhance visibility. The flashing beacons would be synchronized to clearly define the limits of the periphery of wind turbine development on the Reservation.

During evening, nighttime, and morning hours, simultaneously flashing beacons installed atop proposed wind turbines could be visible throughout the viewshed. The presence of existing wind turbine development and associated obstruction lighting atop the Tecate Divide (i.e., the 25-wind turbine Kumeyaay Wind Project) and public lands to the east (the 57-wind turbine Tule Project)

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

has altered the nighttime environment in the area. However, proposed wind turbines on the Reservation would be primarily located south of I-8 (several wind turbines would be installed north of I-8) where existing prominent nighttime lighting is generally not installed. For example, very few (if any) particularly bright and obtrusive sources of nighttime lighting operate in the rural residential community of Tierra Del Sol (located east of the Reservation and southeast of SR-94). Due to the visibility of simultaneously flashing red obstruction lights and the general lack of bright night lighting installed On- and Off-Reservation to the south of I-8, the operation of obstruction lights would result in adverse effects to existing nighttime views. (Impact Indicator 4).

Non-wind turbine related lighting would be associated with substations and other Project facilities. For example, on the Reservation, outdoor night lighting would be installed at the collector substation and the O&M facility. Off the Reservation, permanent sources of lighting would be limited to fixtures installed at the high-voltage substation and potentially, at the adjacent switchyard. No lighting would be installed on gen-tie support poles. New sources of nighttime lighting at the collector substation and high-voltage substation would be kept to the minimum required to ensure adequate lighting for O&M staff to perform as-needed and/or emergency maintenance. Similarly, lighting installed at the switchyard would be limited and would ensure adequate visibility if needed for unanticipated maintenance by SDG&E personnel. Lighting would be installed at the O&M facility site near the parking area and on the O&M building exterior for safety/illumination purposes. The total amount of facility (i.e., non-wind turbine and meteorological tower) related lighting operating in the Project Area would be relatively low. Further, all facility related lighting would be hooded, directed downward, and turned off when not required. While the County has no land use jurisdiction over the Project, facility lighting installed in the Project Area would be fully compliant with the County's Light Pollution Code. Therefore, no adverse effects associated with nighttime lighting at facilities (i.e., collector substation, high-voltage substation, switchyard and O&M facility) are anticipated.

### **Glint/Glare**

Blade glint—the regular reflection of sun off rotating turbine blades—can be a temporary nuisance to motorists if roads are aligned toward turbines. The orientation of the nacelle, angle of the blade, and the angle of the sun are factors that in combination may result in the occurrence of blade glint. In addition, the reflectiveness of the surface of the blades is a factor and therefore, matte surface finishes are typically specified to minimize effects. As proposed, Project wind turbines would be painted a standard off-white matted color to minimize glint and glare potential. Further, with the exception of SR-94, roads in the Project Area tend not to be directly aligned or perpendicular to wind turbine locations. Wind turbines are proposed on a ridge to the west of SR-94 and would be aligned towards the roadway near Live Oak Spring Road however, the presence of existing oak trees in the area would generally block potential blade glint from view of motorists.

## Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

In addition to scale and distance, atmospheric conditions can affect the resulting aesthetic impacts of a wind turbine development including glint/glare effects. For example, in hazy or cloudy conditions, the potential for glint/glare is reduced due to an obscured sun. Further, in these conditions, line and color contrasts are reduced as the wind turbines (typically viewed against a background of blue desert sky) would be viewed against lightly colored clouds and greyish conditions. Further, morning and evening sun may increase the contrast of wind turbine forms and colors whereas at midday, these elements would be somewhat washed out in longer distance views.

Impacts associated with Project-generated glint and glare would not be adverse.

### **Shadow Flicker and Shading**

Shadow flicker refers to the alternative levels of lighting intensity produced when rotating blades cast shadows on nearby buildings and receptors. Shadow flicker may occur at sunrise or sunset where a wind turbine is installed in close proximity to a residence or roadway. New wind turbines on the Reservation would generally be setback from the Reservation boundaries and Off-Reservation residences. For example, wind turbines proposed in the southeastern area of the Reservation would be located over 1,500 feet from the Reservation boundary and over 2,300 feet from the nearest Off-Reservation residence. However, several On-Reservation residences (both north and south of I-8) are located within 0.25-mile of a proposed wind turbine and one residence located north of I-8 is located within approximately 110 feet of a proposed wind turbine (the residence is located within the proposed disturbance limits of the northwestern most wind turbine string). Atmospheric conditions also effect the potential for shadow flicker as the presence of clouds and obscuring of the sun creates faint shadows. Blade angle relative to the receptor is an additional factor affecting shadow flicker. Specifically, if the planes of the turbine blades are in a line between the receptor and the sun, the shadow will be thin and will have a reduced impact compared to if it were perpendicular. Due to the proximity of select wind turbines to On-Reservation residences, a limited number of On-Reservation receptors may experience shadow flicker during Project operations. Due to the distance between the nearest wind turbine and Off-Reservation residences, these receptors are not anticipated to be subjected to shadow flicker and shading during operation of the Project.

### ***Motion***

The installation of proposed wind turbines would introduce regular motion to the Reservation and local area views. Three rotating blades (approximately 230 feet long each) would be affixed to each nacelle and would be visible from the identified KOPs and other public (and private) vantage points in the Project viewshed. The regular motion of wind turbine rotors would attract the attention of receptors and may draw attention away from the characteristic landscape elements of

## Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

the surrounding area. While receptors are likely to be attracted to the rotating rotors of wind turbines (as compared to static towers), the Project would newer models that generally result in a lower volume of rotations per minute (RPMs). Compared to older models with higher RPMs, rotating blades of the proposed wind turbines would attract less attention. However, nearby wind turbines with slightly different RPMs could still attract the attention of receptors due to perceptible contrasts in speed. The severity of effects may be affected by factors including atmospheric conditions, time of day, and distance between receptor and wind turbine. Generally, receptors located in the foreground of wind turbines and rotating blades are more likely to fixate on the motion compared to receptors in the middleground and background distances. As viewed from these distances, blade motion may be faint or blurred and not overly noticeable within the context of the available wide view.

### 6.3.2.5 Plan Consistency (Impact Indicator 5)

Note: Consideration of plan consistency is provided solely for purposes of the County’s CEQA review of the Project. Plan consistency is not particularly applicable to the BIA’s NEPA review of the Project as the analysis pertains to local (i.e., County) planning documents including the Mountain Empire Subregional Plan, Boulevard Subregional Plan, and Campo/Lake Morena Community Plan. Local (i.e., County) plans are not applicable to the Reservation, as the County has no land use jurisdiction over Tribal lands. For Project components located on Tribal lands, their inclusion in Table 5 through Table 7 is provided for informational purposes only and no significance determinations are provided.

**Table 5  
Mountain Empire Subregional Plan Consistency Analysis**

Policy and Recommendation	Project Consistency with Policy
<p><b>2. Land Use – General Goal (Policy and Recommendation 1)</b></p> <p>The landforms of the Subregion are an important environmental resource that should be respected in new development. Hillside grading shall be minimized and designed to blend in with the existing natural contours.</p>	<p><b>Consistent.</b> The northern portion lands traversed by the Off-Reservation gen-tie line is located in an area with steep slopes and ridgelines. On-Reservation lands also include steep slopes and ridgelines and wind turbines are proposed on these areas to maximize energy generating potential. In addition to the installation of the gen-tie line and supporting facilities, such as access roads, high-voltage substation, and the 500 kV switchyard, site grading would be required for the installation of wind turbines. However, hillside grading would be minimal and would be designed to conform to the existing contours to the extent feasible.</p>
<p><b>2. Land Use – Industrial Goal (Policy and Recommendation 2)</b></p> <p>New industrial development should be clean, non-polluting, and complementary to a rural area.</p>	<p><b>Consistent.</b> The Project delivers renewable energy and is inherently clean and non-polluting. While the Project Area has been historically of rural character, there has been a recent increase in renewable energy development in the region that has changed the character to a mix of rural and non-rural uses. This Project being close to other renewable energy facilities, including the 25-wind turbine Kumeyaay Wind Project and the 57-wind</p>

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

**Table 5**  
**Mountain Empire Subregional Plan Consistency Analysis**

Policy and Recommendation	Project Consistency with Policy
	turbine Tule Wind Project, would conform to the scale, color, line, and massing displayed by existing renewable energy elements present in the immediate area. Further, wind energy generation is not considered an industrial use.
<p><b>2. Land Use – Industrial Goal (Policy and Recommendation 5)</b></p> <p>New industrial development should consider all views into the property from public streets, adjacent properties, and residences on nearby hills.</p>	<p><b>Consistent.</b> This Visual Impact Assessment includes an evaluation of impacts to existing views from highways (I-8 and SR-94), and local roads located on- and off-Reservation. The location of views evaluated in this report (i.e., KOPs) is presented on Figure 3.</p>
<p><b>6. Conservation – Environmental Resources (Policy and Recommendation 4)</b></p> <p>The dark night sky is a significant resource for the Subregion and appropriate steps shall be taken to preserve it.</p>	<p><b>Consistent.</b> Lighting installed in the Project Area for the operational phase of the Project would be hooded, directed downwards, and turned off when not required, and substation equipment would feature a low-reflectivity finish to minimize glare. Lighting for the Boulder Brush Facilities would be fully compliant with the County's Light Pollution Code. Additionally, lighting installed on tall vertical components (including wind turbines installed On-Reservation) would be restricted and would only include Federal Aviation Administration aviation warning lights.</p>
<p><b>6. Conservation – Environmental Resources (Policy and Recommendation 5)</b></p> <p>Development shall not adversely affect the habitat of sensitive plant and wildlife species or those areas of significant scenic value.</p>	<p><b>Consistent.</b> The Boulder Brush Facilities would result in impacts to sensitive vegetation communities. The Boulder Brush Facilities would result in potentially significant short-term and long-term direct and/or indirect impacts to special-status plants, special-status wildlife species, wildlife habitat, as well as short-term direct impacts to wildlife movement and migratory birds. Mitigation for the Boulder Brush Facilities includes off-site preservation of similar habitat types; pre-construction monitoring, flagging, and other best management practices; nesting bird surveys; avian and bat monitoring; fire protection; access control; and federal and state agency permits. All significant impacts would be reduced to less than significant with implementation of the mitigation measures.</p> <p>Similar effects to habitat would also occur due to development of wind turbines on Tribal lands.</p> <p>Regarding scenic value, the proposed Project has been designed to minimize impacts to the scenic value of the area to the extent practicable. As proposed, wind turbines would be up to 586-feet tall each and would be visually compatible with existing wind turbines in the area. Potential impacts were analyzed against the existing conditions that includes an existing On-Reservation, 25-wind turbine generation facility (i.e., Kumeyaay Wind Project) and the 57-wind turbine Tule Wind Project (located as close as 1.5 miles east of the Reservation and adjacent to private lands traversed by the proposed Off-Reservation gen-tie).</p>

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

**Table 6**  
**Boulevard Community Plan Consistency Analysis**

Policy and Recommendation	Project Consistency with Policy
<p><b>Policy LU 1.1.2:</b> Encourage development to protect the quality and quantity of ground and surface water resources, air quality, dark skies, visual resources, and low ambient noise levels, as well as retain and protect the existing natural and historic features characteristic of the community's landscape and natural environment.</p>	<p><b>Consistent.</b> The Project would work to protect the quality and quantity of existing natural and historic features characteristic of the community's landscape and natural environment. Potential impacts associated dark skies and visual resources are analyzed and disclosed within this report. Mitigation measures have been provided when feasible to mitigate potential impacts.</p>
<p><b>Policy LU 1.1.3:</b> Encourage development to respectfully incorporate existing topography and landforms, watersheds, riparian areas, oaks, and other native vegetation and wildlife, ridgelines, historic and cultural resources, views, and sustainability design factors.</p>	<p><b>Consistent.</b> The Project has been designed to minimize impacts to existing topography, landforms, and views. Mitigation measures have been provided in order to reduce potential impacts to landforms and views to the extent feasible.</p>
<p><b>Policy LU 1.1.4:</b> Require commercial and public development along scenic and historic routes to apply designs standards that will blend the development in with the terrain and rustic south western nature of the community character, while keeping outdoor lighting to an absolute and well shielded minimum.</p>	<p><b>Consistent.</b> The Project is not considered a commercial or public development. The Project is located off a portion of I-8 that is an eligible state scenic highway, and included in the County's Scenic Highway System; however, the Project would be located adjacent to similar wind turbine and transmission development and would be compatible with the surrounding wind turbines and transmission lines off site.</p> <p>Additionally, outdoor lighting would be hooded, directed downwards, turned off when not required, and kept to a minimum for safety purposes.</p> <p>Moreover, consistent with Federal Aviation Administration rules established in Advisory Circular 70/7460-1L: Obstruction Marking and Lighting, all gen-tie components would be painted or finished using low-reflectivity, neutral colors. Exterior lighting installed on turbines would be restricted and would only include Federal Aviation Administration aviation warning lights.</p>
<p><b>Policy LU 3.1.1:</b> Encourage development to preserve dark skies with reduced lighting and increased shielding requirements</p>	<p><b>Consistent.</b> Lighting installed for the operational phase of the Project would be hooded, directed downwards, and turned off when not required, and substation equipment would feature a low-reflectivity finish to minimize glare. Lighting for the Boulder Brush Facilities would also be fully compliant with the County's Light Pollution Code. Additionally, lighting installed on transmission poles (and atop wind turbines on Tribal lands) would be restricted and would only include Federal Aviation Administration aviation warning lights.</p>

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

**Table 6**  
**Boulevard Community Plan Consistency Analysis**

Policy and Recommendation	Project Consistency with Policy
<p><b>Policy LU 6.1.1:</b> Require commercial, industrial development and large-scale energy generation projects to mitigate adverse impacts to the rural community character, charm, quiet ambiance and life-style, or the natural resources, wildlife, and dark skies of Boulevard, if feasible, in accordance with the California Environmental Quality Act.</p>	<p><b>Consistent.</b> The Project proposes a large-scale energy transmission facility evaluated in accordance with CEQA and the National Environmental Policy Act (NEPA). While the Project Area (both On- and Off-Reservation) has been historically of rural character, there has been a recent increase in renewable energy development in the region that has changed the character to a mix of rural and non-rural uses. This Project being close to other renewable energy facilities, including the 25-wind turbine Kumeyaay Wind Project and the 57-wind turbine Tule Wind Project, would conform to the scale, color, line, and massing displayed by existing renewable energy elements present in the immediate area. Further, wind energy generation is not considered an industrial use.</p> <p>Regarding lighting and potential impacts to dark skies, outdoor lighting would be hooded, directed downwards, turned off when not required, and kept to a minimum for safety purposes. Consistent with Federal Aviation Administration rules established in Advisory Circular 70/7460-1L: Obstruction Marking and Lighting, all transmission pole components would be painted or finished using low-reflectivity, neutral colors. Exterior lighting installed on transmission poles (and wind turbines on Tribal lands) would be restricted and would only include Federal Aviation Administration aviation warning lights. The FAA would determine the type and number of lights to be installed atop wind turbines.</p>
<p><b>Policy LU 6.1.2:</b> Encourage commercial, industrial development and large scale energy generation projects to create and maintain adequate buffers between residential areas and incompatible activities that create heavy traffic, noise, infrasonic vibrations, lighting, odors, dust and unsightly views and impacts to groundwater quality and quantity</p>	<p><b>Consistent.</b> The Project proposes a large-scale energy transmission facility and adequate buffers would be provided in order to shield residential areas from incompatible activities that could result in environmental impacts, including, but not limited to lighting and unsightly views. In addition, the Project proposes a wind energy generation facility and buffers would be provided to shield (to the extent feasible) residential areas from lighting and view impacts associated with wind turbines installed on Tribal lands.</p>
<p><b>Policy LU 6.1.3:</b> Encourage commercial, industrial development and large-scale energy generation projects to provide buffers from public roads, adjacent and surrounding properties and residences, recreational areas, and trails.</p>	<p><b>Consistent.</b> Buffers would be provided from public roads, surrounding properties, recreational areas, and trails. The Boulder Brush Facilities would comply with the setback regulations as indicated in the County's Municipal Code – Development Regulations Section 4800.</p>

## Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

**Table 7**  
**Campo/Lake Morena Community Plan Consistency Analysis**

Policy and Recommendation	Project Consistency with Policy
<b>Goal LU 3.1:</b> Preservation of community character and scenic views while accepting compatible development.	<b>Consistent:</b> The County does not have land use jurisdiction over wind turbine development on Tribal lands. The Project proposes a renewable energy generation facility that has been evaluated in accordance with NEPA. Connected transmission facilities on lands subject to County land use jurisdiction have been evaluated in accordance with CEQA. While the Project Area has been historically of rural character, there has been a recent increase in renewable energy development in the region that has changed the character to a mix of rural and non-rural uses. This Project being close to other renewable energy facilities, including the 25-wind turbine Kumeyaay Wind Project and the 57-wind turbine Tule Wind Project, would conform to the scale, color, line, and massing displayed by existing renewable energy elements present in the immediate area.
<b>Policy LU 3.4.3:</b> When lighting is necessary for safety, use low level, low angle, downcast outdoor lighting and fixtures that reflect the rural character of the area.	<b>Consistent.</b> Lighting installed for the operational phase of the Project would be hooded, directed downwards, and turned off when not required, and substation equipment would feature a low-reflectivity finish to minimize glare. Additionally, lighting installed on transmission poles (and atop wind turbines on Tribal lands) would be restricted and would only include Federal Aviation Administration aviation warning lights.
<b>Goal LU 3.6:</b> Protection of viewsheds and property values from the potential negative impacts of industrial scale wind and solar renewable energy installations for all residents.	<b>Consistent.</b> The County does not have land use jurisdiction over wind turbine development on Tribal lands. However, proposed wind turbine locations are situated over 2,000 feet from the nearest private Off-Reservation residence in the Campo/Lake Morena area. Despite the distance between proposed wind turbines and Off-Off-Reservation residences, existing views would be impacted by the introduction of wind turbines on Tribal lands south of I-8.
<b>Policy LU 3.6.1:</b> Seek to locate these projects in locations where landforms could hide them from view to the maximum extent feasible.	<b>Consistent.</b> Please refer to the Goal LU 3.6 consistency analysis, above. The provision of setbacks would help to reduce the apparent scale of wind turbines however; the features would be 586 feet tall and are not capable of fully hiding from view.
<b>Policy LU 3.6.3:</b> Seek placement of such installations away from ridgelines, flood plains, and highly sensitive habitat areas.	<b>Consistent.</b> The County does not have land use jurisdiction over wind turbine development on Tribal lands. As proposed, wind turbines would be located on higher elevation slopes and ridgelines on the Reservation. To the extent feasible, prominent ridgelines and landforms would be avoided however, these locations are often ideal for wind energy generation facilities.

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

## **6.3.3 Effects to Visual Resources from the Reduced Intensity Alternative (Alternative 2)**

Implementation of the Reduced Intensity Alternative (Alternative 2) would result in short- and long-term direct and indirect effects to the visual character of the Project Area and surrounding area. Up to 46 wind turbines would be developed under Alternative 2. As Alternative 2 entails a slightly reduced Project footprint compared to Alternative 1, overall ground disturbance and the volume of installed wind turbines on the Reservation would be slightly reduced. However, overall visual effects and visual change to the existing landscape resulting from implementation of Alternative 2 would be similar to the effects that would occur under Alternative 1. Therefore, the short- and long-term effects discussions below focuses on the effects that would be different from the short- and long-term effects associated with Alternative 1.

### **6.3.3.1 Short-Term Effects**

Under Alternative 2, fewer overall wind turbines would be installed on the Reservation. Due to a reduced number of wind turbines, there would be a related reduction in the overall mileage of access roads and underground electrical collection system required to access each wind turbine and deliver power to the Project collector substation. As such, implementation of Alternative 2 would resulting is less initial construction disturbance including the generation of dust that would be perceptible in the views of receptors in the surrounding area. Construction activities would be scattered over a smaller overall area than under Alternative 1 and as such, the visibility of construction activities would be slightly contracted. The reduced footprint of development and introduction of fewer wind turbines on the Reservation would decrease the extent of activities visible from the surrounding area such that wind turbines may not be visible from specific KOPs offering particularly narrow, foreground views to select areas of the Project Area (i.e., such as at KOPs 3, 4, and 5).

In addition to the visual effects from disturbances described above, there would be a minor reduction in the volume of construction workers, vehicles, and equipment under Alternative 2 compared to Alternative 1. However, the short-term effects to visual quality and character associated with a reduced workforce and fleet of vehicles and equipment would be altogether negligible as compared to the effects of Alternative 1.

### **6.3.3.2 Long-Term Effects**

#### **Effects to Inventoried Visual Quality and Viewer Sensitivity**

Similar to Alternative 1, wind turbines associated with Alternative 2 would not be installed on Type A landscapes. Due to an overall reduced Project footprint, visual effects to Types B and C

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

landscapes would be reduced and therefore, overall effects to visual quality and sensitivity, scenic views, and nighttime views would be reduced under Alternative 2 when compared to Alternative 1.

Views from private and public lands in the Project Area would be directly impacted by the introduction of wind turbines and other prominent components on Reservation lands. However, due to a reduced development footprint and less intense MW generating target, Alternative 2 would result in reduced visual clutter and a related reduced impact to the existing intactness and unity of the landscape. The overall visibility of wind turbine development and prominence of renewable energy development on Reservation lands would be slightly reduced as seen from specific KOPs, roadways, and residences in the surrounding area. The reduced footprint of Alternative 2 would be most apparent from KOPs in the immediate foreground viewing distance. Still, overall visual change associated with wind turbine development on Reservation lands would range from moderate to strong and would result in adverse visual effects to the existing landscape and views.

Due an overall reduction in the total miles of access roads, Alternative 2 would result in fewer long-term disturbance areas across the Project Area.

### **6.4 Cumulative Projects**

For visual effects, the cumulative impacts study area includes the I-8 viewshed located east of the Tecate Divide and west of the San Diego/Imperial County border serves as the physical boundary for determining cumulative visual effects. This viewshed encompasses the Project viewshed and the nearby Jacumba Valley landscape. This composite viewshed was determined to be an appropriate cumulative boundary based on the type and geographic extent of the Project's visual impacts, further described below. In addition, the composite viewshed would encompass projects resulting in similar visually prominent impacts as the Project that would have the potential to change the visual character along the I-8 corridor and other local roads traversing the Boulevard and Jacumba areas.

The vast majority of the public lands managed by the BLM in the cumulative study area (in particular, public lands in the McCain Valley adjacent to the Project Area) are managed according to VRM Class IV objectives. However, BLM lands in the Carrizo Gorge, Jacumba Mountains, Table Mountain, and Sawtooth Mountains areas are managed according to Class I to Class II VRM objectives. In addition to public lands, the surrounding area includes private lands under the jurisdiction of the County of San Diego and federal lands in the Cleveland National Forest managed by the United States Forest Service (USFS). Two designated wilderness areas are located within the Cleveland National Forest and the Pacific Crest National Scenic Trail traverses the area landscape along a meandering alignment from approximately Campo through the Mt Laguna area. Combined with the Project, reasonably foreseeable projects are anticipated to produce long-term cumulative

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

impacts within the study area to LCUs, SRLUs, visual quality and visual character, and scenic and nighttime views. Cumulative projects considered in the study area include wind energy development, utility-scale solar development, and transmission line and substation development. A figure depicting the location of cumulative projects considered in the study area is included as Figure 7.

The following renewable energy or related projects are constructed, have been approved, or have been proposed in the cumulative study area.

### **Avangrid Renewables Tule Wind Project (Phase I constructed; Phase II approved)**

Phase I of the Tule Wind Project is constructed and commercial operations of the approximately 186 MW project began in approximately September 2017. Phase I consists of 57 wind turbines, an underground collector cable system linking the wind turbines to the collector substation, a 5-acre collector substation site and adjacent 5-acre O&M facility site, and meteorological towers. In addition, Phase I includes new dirt access roads and a 138 kV transmission line that delivers power from the collector substation to the rebuilt SDG& Boulevard Substation. With the exception of segments of the 138 kV transmission line, components of the Phase I are located on public lands managed by the BLM.

In 2013, the Bureau of Indian Affairs approved a lease to Avangrid Renewables to construct Phase II of the Tule Wind Project. Similarly, in October 2016, Avangrid Renewables received approval from the California State Lands Commission to construct Phase II of the Tule Wind Project. Phase II would consist of an additional 24 wind turbines constructed on tribal and state lands in the area and would generate approximate 69 MW. The wind turbines of Phase II would be located atop a ridgeline to the west of Phase I on both state lands and Tribal lands of the Ewiiapaayp Band of Kumeyaay Indians. Seven wind turbines would be sited on lands managed by the California State Lands Commission and seventeen would be constructed on Tribal lands. Construction of Phase II is likely to take between 6 months to 1 year and would employ between 100 and 200 works per day during the peak construction period.

### **ECO Substation Project (Constructed)**

The project consisted of a new interconnection hub for renewable generation along SDG&E's existing Southwest Powerlink (SWPL) 500 kV transmission line. In addition to accommodating the region's planned renewable generation, the project also provides a second source for the southeastern 69 kV transmission system that avoids the vulnerability of common structure outages, which would increase the reliability of electrical service for Boulevard, Jacumba, and surrounding communities. The project provides interconnection capability at three voltage levels (500, 230,

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

and 138 kV), provides renewable generators the option to connect at a voltage level that is appropriately sized for their project.

The ECO Substation Project includes the following major components:

- A 500/230/138 kV substation in southeastern San Diego County;
- A short loop-in of the existing SWPL transmission line to the proposed ECO Substation;
- New 138 kV transmission line, approximately 13.3 miles in length, running between the proposed ECO Substation and the rebuilt Boulevard Substation; and
- Rebuilt Boulevard Substation.

### **Jacumba Solar (Constructed)**

The 20 MW solar facility covers approximately 108 acres and is located 3 miles east of Jacumba. The facility is set back an additional 90 feet from the 60-foot-wide strip of federal land along the U.S./Mexico border. The solar facility uses photovoltaic (PV) fixed-tilt rack electric generation system technology to produce solar energy at the utility scale, including inverters, and includes an on-site substation, and a battery storage facility capable of storing approximately 10 MW of energy.

### **Torrey Wind LLC Torrey Wind Project (Proposed)**

Proposed on private lands under the land use jurisdiction of the County of San Diego, the Torrey Wind Project would involve construction and operation of approximately 30 new wind turbines (rated up to 4.2 MW each), and an underground electrical collection system. In addition, a Project collector substation and switchyard, an operations and maintenance (O&M) building and associated parking areas, a temporary staging area, a batch plant, meteorological towers, and various access roads would be constructed. Eventual decommissioning would occur at the end of the Torrey Wind Project's useful life cycle. The Torrey Wind Project is proposed on hill and valley terrain of the McCain Valley located immediately west of Tule Wind Project Phase I wind turbine strings.

Construction of the Torrey Wind Project is anticipated to last approximately 9 to 12 months. As of October 2018, technical reports and an Environmental Impact Report are being prepared.

### **Jacumba Valley Ranch LLC Jacumba Valley Ranch Solar Project (Proposed)**

The Jacumba Valley Ranch (JVR) Solar Energy Project site consists of approximately 571 acres of development on 1,289 acres of privately owned property located immediately east of rural residential development in the in the unincorporated community of Jacumba. Approximately 571 acres would be disturbed to develop the facility and access roads. The Proposed Project would

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

produce up to 100 MW of alternating current (AC) generating capacity and would consist of approximately 346,202 PV modules fitted on single axis solar trackers. In addition to the panels and direct current (DC) to AC conversion equipment (i.e., inverter and transformer units), the JVR Solar Energy Project would include an on-site collector substation, a 138 kV overhead and underground transmission line, an approximately 20 MW battery energy storage system.

### **Rugged Solar Project (Proposed)**

As proposed, the Rugged Solar Project would include the construction and operation of a 74 MW solar energy system on an approximately 765-acre site located in the McCain Valley. A majority of the site is located west of McCain Valley Road and includes the central, northwest, and southern subareas. A smaller portion of the site is east of McCain Valley Road and comprises the eastern subarea. In addition to solar panels and inverter and transformer units, the Rugged Solar Project would include an on-site collector substation, a 138 kV overhead and underground transmission line, and an approximately 20 MW battery energy storage system.

### **Boulevard Solar (Proposed)**

A Major Use Permit for the construction and operation of a 60 MW solar energy system on an approximately 420-acre site.

### **Boulevard Energy Storage (Proposed)**

A Minor Use Permit for the construction and operation of a 100 MW energy storage facility on a 2-acre footprint.

## **6.4.1 Cumulative Effects**

Implementation of the Project and other projects considered in the cumulative scenario would result in visually modified landscape, diminished views, and reduced visual quality. Contrast and effects would be visible to a relatively large volume of viewers including motorists on federal and state highways, local road motorists and recreationists, and rural and Tribal communities within the cumulative study area. Cumulative effects of past, present and reasonably foreseeable projects would be dependent on the vertical scale of components and the presence (or lack) of intervening elements (terrain, structures, vegetation) to screen or obstruct specific components from view. Project proximity would also factor into whether the visual effect of one or more projects would be experienced from a given vantage point in the landscape.

Existing development in the cumulative study area displays a primarily rural residential and ranching/grazing character but also includes interstate and local road development, regional

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

electrical infrastructure and substations, and utility-scale solar and wind energy development. Regional electrical infrastructure and solar and wind development occurs along the I-8 corridor and power lines traverse the landscape along the U.S./Mexico international border and in the McCain Valley. Additional development in the study area includes the Golden Acorn Casino and Travel Center, limited commercial development along Old Highway 80, community services, a U.S. Customs and Border Protection facility, and private residences and ranches.

With the exception of developed sites supporting wind, electrical transmission, solar, or substation facilities, landscapes throughout the study area display moderate to high scenic integrity. In these areas, development and other modifications are not visible or do not attract the attention of receptors in the surrounding area due to their relatively unobtrusive characteristics. In addition to the Project, Phase II of the Tule Wind Project and the Torrey Wind Project would entail the addition of new and visually prominent wind turbines to valleys, hillsides, and ridges in the surrounding area. In addition, proposed solar and energy storage projects would entail the alteration and transformation of primarily undeveloped rural lands to vast repeating rows of darkly colored solar panels, vertical, angular and rectangular substation facilities, and boxy energy storage battery containers. As with the Project, proposed wind and solar energy projects would require the construction of gen-tie or transmission lines that would entail the addition of new vertical support poles to the surrounding area landscape. Cumulative wind turbine development would be visible for long distance from federal, state and local roads, recreational facilities, public lands and private residences. Further, these projects would be located in close proximity to one another and would be experienced together from elevated vantage points in the area. Due to their prominent scale, typically wide distribution throughout a site, and distinct massing, wind turbines are visible from long distance when compared to other projects considered in the cumulative scenario. Accordingly, mitigation and design strategies for tall vertical structures such as wind turbines and support poles for transmission lines are limited.

### **6.4.2 Residual Effects**

The implementation of the recommended mitigation measures discussed in Section 7 below would reduce adverse effects to the extent feasible. As described above, mitigation strategies to reduce scale and form contrasts of wind turbines and transmission line poles are limited. As such, residual impacts to visual resources and views would occur. The number and nature of effects resulting from the construction and operation of roads and facilities, and the scale and movement of wind turbines, would continue to attract the attention of receptors and dominate views within a foreground distance. Viewers in local communities, motorists on local, state and federal roads, and area recreationists would experience residual long-term visual effects throughout the operational lifespan of the Project and other energy-related development considered in the cumulative

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

scenario. In addition, visual effects would persist following completion of decommissioning activities until successful restoration of disturbance areas and reestablishment of plant materials.

### **6.4.3 Irreversible and Irretrievable Commitment of Resources**

Irreversible commitments are permanent or essentially permanent resource uses or losses; they cannot be reversed, except in the extreme long term. An irretrievable commitment of a resource is one in which the resource or its use is lost for a period.

Until disturbance areas on the Project Site are restored and successfully revegetated, the reduction in visual quality across the development footprint resulting from construction of all Project alternatives would be an irretrievable loss. Once the Project is constructed and operational, future visual resource inventories would likely document reduced visual quality and viewer sensitivity throughout the surrounding area. However, at the operational life of the Project, decommissioning would begin and all Project components would be disassembled and removed. Further, disturbed areas associated with Project components would be restored and reclaimed. As such, no irreversible commitment of visual resources is anticipated.

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

## 7 RECOMMENDATIONS AND MITIGATION MEASURES

The intent of the recommended mitigation measures is to minimize the adverse contrasts of Project components within the context of the existing landscape. As proposed, these measures should be applied to applicable Project components and activities. With the implementation of mitigation measures, Project components and activities would harmonize with existing features in the surrounding landscape, including adjacent public lands, to the extent feasible. Mitigation measures do not include Project design features, which are incorporated into design of the Project as proposed. In general, resource protection measures proposed for erosion control, road construction, rehabilitation and revegetation, and wildlife protection would also address short- and long-term effects to visual quality.

### 7.1 Mitigation Measures

As proposed, all alternatives would incorporate recommended measures and BMPs described below to reduce effects. The measures recommendations that consist of common or BMP measures intended to reduce overall effects to the extent practicable.

- VR-1:** If visible from nearby roads, residences, public gathering areas, recreational areas, or trails, stationary construction sites and staging areas shall be visually screened (to the extent feasible) using temporary screening fencing. Temporary screening fencing shall be of an appropriate design and color intended to compliment the surrounding landscape. Where practical, construction staging and storage shall be screened with opaque fencing.
- VR-2:** No paint or permanent discoloring agents shall be applied to rocks or vegetation to indicate survey or construction activity limits.
- VR-3:** Permanent access or spur roads shall be constructed at appropriate angles from the originating primary travel facilities to minimize extended in-line views of newly graded terrain, when feasible. Contour grading should be used where feasible to better blend graded surfaces with existing terrain.
- VR-4:** All graded roads and areas not required for ongoing operation, maintenance, or access shall be returned to preconstruction conditions.
- VR-5:** To the extent feasible and wherever the limits of grading areas are adjacent to sensitive vegetation communities or other biological resources, only the minimum amount of vegetation necessary for construction of structures and facilities shall be removed.
- VR-6:** Substation components and fencing shall be painted Shadow Gray from the BLM Standard Environmental Colors Chart CC-00, or similar gray color. Color treatment shall not be required on facilities that are treated in accordance with safety and engineering concerns.

## **Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities**

---

**VR-7:** All new transmission line conductors are to be non-specular in design to reduce conductor visibility and visual contrast.

**VR-8:** The developer would implement a lighting plan in accordance with current Federal Aviation Administration (FAA) standards. These lights would have the minimum number of flashes per minute and the briefest flash duration allowable per current FAA standards. The number of wind turbines that would be lit would be minimized to the extent allowable by the FAA

### **7.2 Effectiveness of Recommended Mitigation**

Implementation of Mitigation Measure (MM) VR-1 would have low to moderate effectiveness at screening construction sites from view and reducing landscape contrasts. However, as regular fencing itself would contrast with the form, color and texture of surrounding vegetation to remain in place, temporary contrasts would persist.

MM-VR-2 would be moderately effective in reducing color contrasts, as it would limit unnecessary application of paints and permanent discoloring agents in the landscape.

MM-VR-3 would be moderately effective at obscuring or reducing line contrasts associated with the construction of new access roads in the landscape on hillsides. Contour grading would help better integrate the Project (and Project disturbances) within the existing landscape and would more successfully tie graded slopes into existing terrain. Contour grading would also help to reduce erosion.

Implementation of MM-VR-4 would have low to moderate effectiveness in reducing line contrasts associated with vegetation removal and grading. However, reestablishment of vegetation in the Project Area climate may take decades to be realized.

MM-VR-5 would effectively limit impacts to existing vegetation and reduce resulting line, color, and texture contrasts.

MM-VR-6 would be effective at reducing conductor visibility along the transmission line alignment and associated structure and line contrasts.

MM-VR-7 would have low effectiveness at reducing nighttime view effects by limiting the number and duration of flashes associated with required obstruction lighting to the minimum allowable by FAA standards. MM-VR-7 would be effective in reducing visual contrasts in middleground and background distance zones where light or strong colors would otherwise increase color contrasts for great distances.

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

## 8 REFERENCES

- AECOM. 2012. *Draft Visual Impact Assessment, Shu'luuk Wind Project*. December 2012.
- BLM (Bureau of Land Management). 1984. *BLM Manual 8400 – Visual Resource Management*. April 5, 1984.
- BLM. 1986a. *Manual H-8410-1 - Visual Resource Inventory*. January 1986.
- BLM. 1986b. *Manual 8431 – Visual Contrast Rating*. January 1986.
- BLM. 2008. *Instruction Memorandum No. 2009-043*. December 19, 2008.
- Caltrans (California Department of Transportation). 2018a. “2016 Traffic Volumes for Interstate 8.” Accessed July 30, 2018. <http://www.dot.ca.gov/trafficops/census/volumes2016/Route7-10.html>.
- Caltrans. 2018b. “2016 Traffic Volumes for Route 94.” Accessed July 30, 2018. <http://www.dot.ca.gov/trafficops/census/volumes2016/Route92-98.html>.
- Caltrans. 2018c. “List of Eligible and Officially Designated State Scenic Highways.” Accessed July 30, 2018. <http://www.dot.ca.gov/design/lap/livability/scenic-highways/index.html>.
- County of San Diego. 2009. *Boulevard Community Trails Map*. Approved June 24, 2009.
- County of San Diego. 2011a. *San Diego County General Plan: A Plan for Growth, Conservation, and Sustainability*. Chapter 3, Land Use Element and Chapter 5, Conservation and Open Space Element. August 2011.
- County of San Diego. 2011b. *Mountain Empire Subregional Plan*. Adopted August 3, 2011. Last amended December 14, 2016.
- County of San Diego. 2011c. *Boulevard Community Plan*. August 2011.
- County of San Diego. 2016. *Campo/Lake Morena Community Plan*. Adopted December 14, 2016. <https://www.sandiegocounty.gov/content/dam/sdc/pds/docs/CP/Campo-LM-CP.pdf>
- County of San Diego. 2017a. *Zoning Ordinance of San Diego County*. Adopted October 18, 1978. Last updated April 2017. <https://www.sandiegocounty.gov/content/sdc/pds/zoning.html>.

## Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

FHWA (Federal Highway Administration). 2015. *Guidelines for the Visual Impact Assessment of Highway Projects*. Publication No. FHWA-HEP-15-029. January 2015.

NPS (National Park Service) 2018. “The National Trails Systems Act.” Accessed August 3, 2018. <https://www.nps.gov/subjects/nationaltrailssystem/index.htm>.

SANDAG (San Diego Association of Governments). 2017. “Demographic & Socio Economic Estimates.” Accessed July 30, 2018. [https://www.sandag.org/resources/demographics\\_and\\_other\\_data/demographics/estimates/index.asp](https://www.sandag.org/resources/demographics_and_other_data/demographics/estimates/index.asp).

SANDAG. 2018. “Demographics and Other Data – Transportation Data.” Unincorporated Area. Accessed July 30, 2018. [https://www.sandag.org/resources/demographics\\_and\\_other\\_data/transportation/adtv/index.asp/](https://www.sandag.org/resources/demographics_and_other_data/transportation/adtv/index.asp/).

USDA (U.S. Department of Agriculture). 1995. *Landscape Aesthetics: A Handbook for Scenery Management*. December 1995.

USDA. 2008. “National Forest Scenic Byway Program Partnership Success Stories.” October 2008.

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

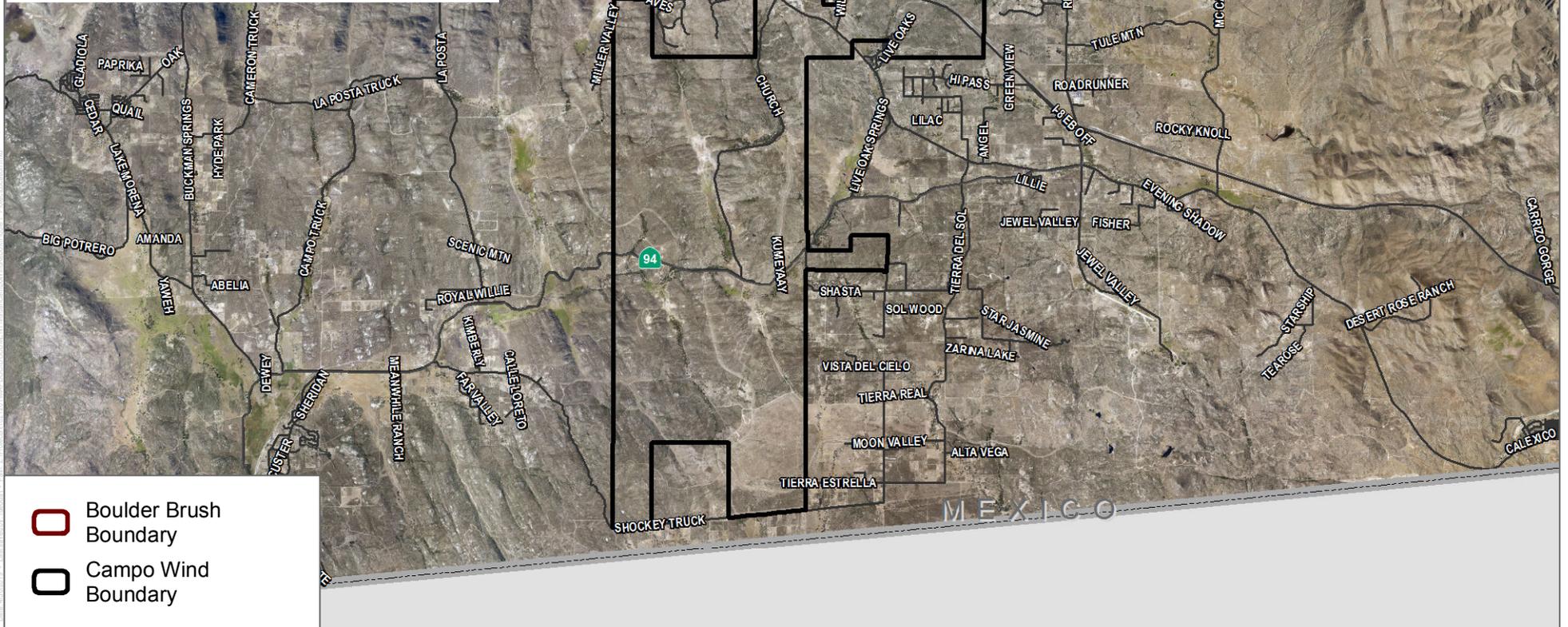
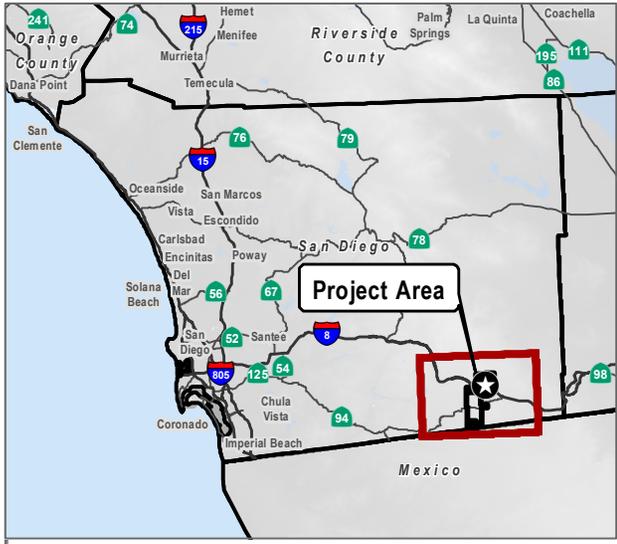
## 9 REPORT PREPARERS

Josh Saunders, AICP, County Approved Consultant for Visual Resources  
Curtis Battle, Geographic Information Systems (GIS)  
Paul Caligiuri, Visual Simulations

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

INTENTIONALLY LEFT BLANK



- Boulder Brush Boundary
- Campo Wind Boundary

SOURCE: SANGIS 2017

**FIGURE 1**  
**Project Location**  
 Campo Wind with Boulder Brush Facilities

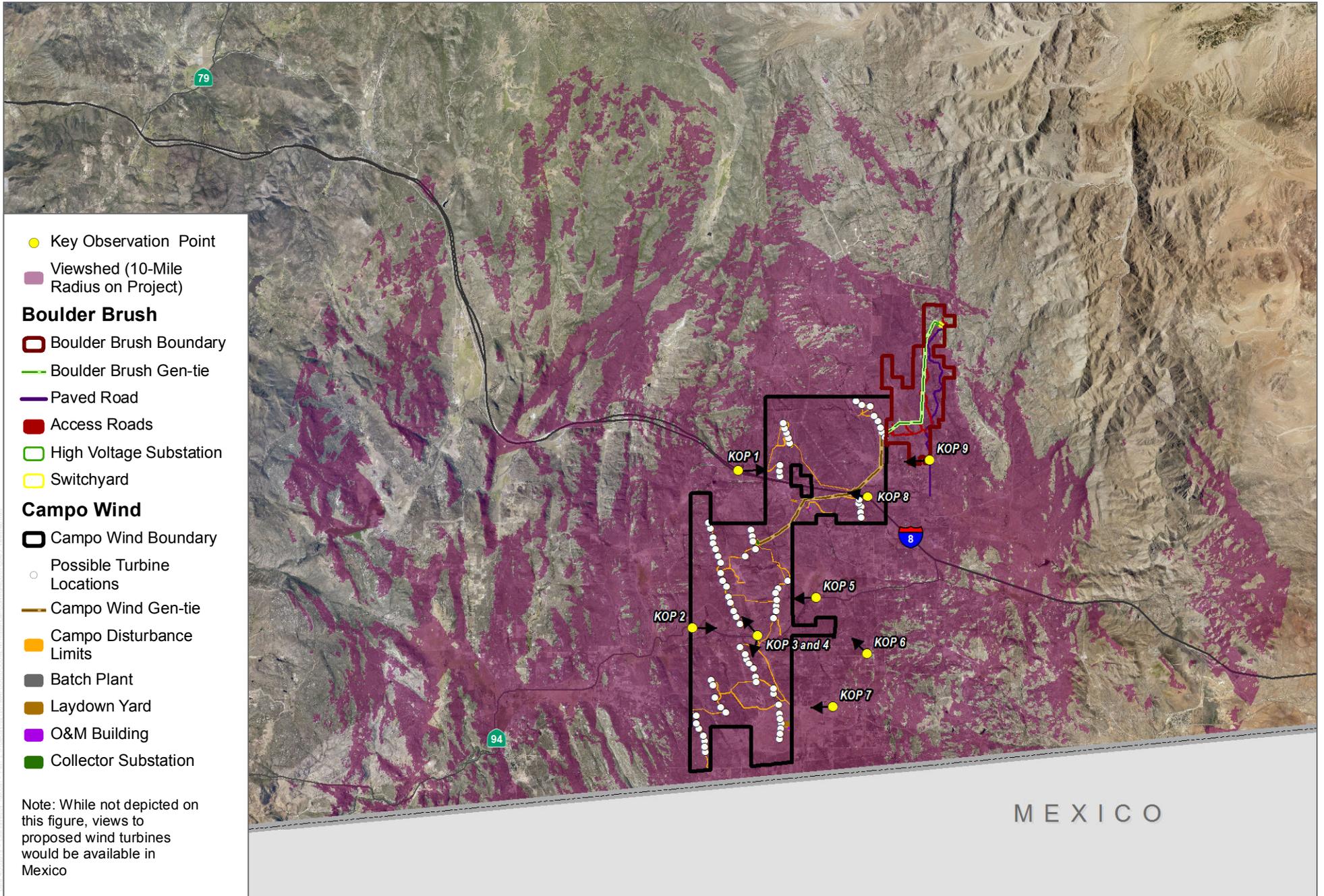
# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

INTENTIONALLY LEFT BLANK



INTENTIONALLY LEFT BLANK



SOURCE: SANGIS 2017

Note: While not depicted on this figure, views to proposed wind turbines would be available in Mexico

**FIGURE 3**

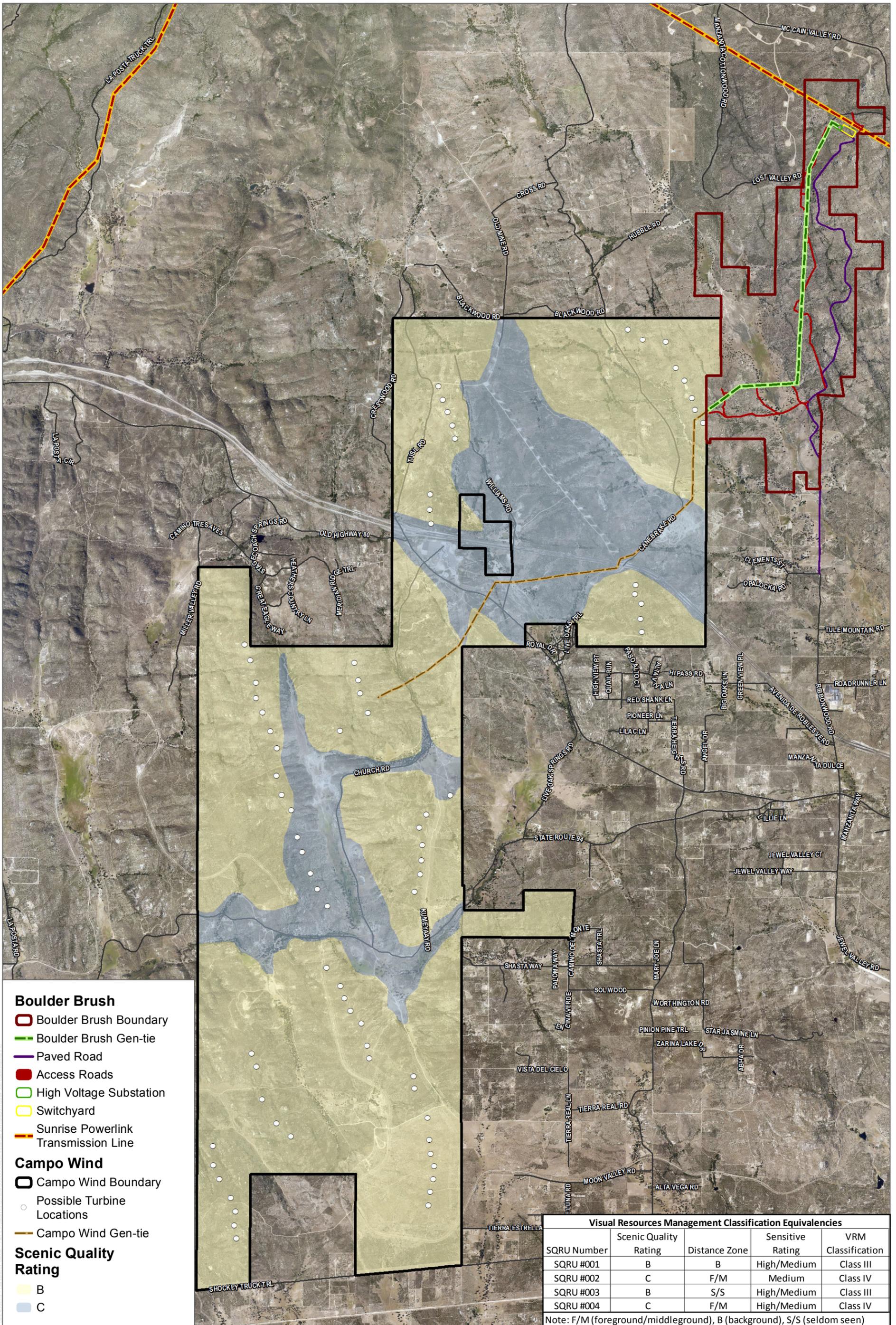
**Viewshed**

Campo Wind with Boulder Brush Facilities

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

INTENTIONALLY LEFT BLANK



SOURCE: AECOM 2012; SANGIS 2017

**FIGURE 4**  
Scenic Quality Rating Units  
Campo Wind with Boulder Brush Facilities

INTENTIONALLY LEFT BLANK



# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

INTENTIONALLY LEFT BLANK



KOP 3: Looking northwest from Church Road towards Campo Education Center



KOP 4: Looking southwest from Church Road towards SR-94 and Project site

Photo: 2/28/2013 11:52:00 AM P:\D\O\Images\Campo\KOP3.jpg

**FIGURE 5b**

Existing Conditions: Key Observation Points 3 and 4

Campo Wind with Boulder Brush Facilities

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

INTENTIONALLY LEFT BLANK



# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

INTENTIONALLY LEFT BLANK



# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

INTENTIONALLY LEFT BLANK



# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

INTENTIONALLY LEFT BLANK



KOP 1 Simulation: Looking east from Interstate 8 towards Golden Acom Casino and existing wind development



KOP 2 Simulation: Looking west from SR-94 near Live Oak Springs Road towards Project site

File: 2:\Projects\192201\192201\Docs\Visuals\CampoWindReport

**FIGURE 6a**

**Alternative 1 Visual Simulations: Key Observation Points 1 and 2**

Campo Wind with Boulder Brush Facilities

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

INTENTIONALLY LEFT BLANK



KOP 3 Simulation: Looking northwest from Church Road towards Campo Education Center



KOP 4 Simulation: Looking southwest from Church Road towards SR-94 and Project site

File: z:\projects\152201\152201\00\Images\Campo\KOP3.jpg

**FIGURE 6b**

**Alternative 1 Visual Simulations: Key Observation Points 3 and 4**

Campo Wind with Boulder Brush Facilities

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

INTENTIONALLY LEFT BLANK



KOP 5 Simulation: Looking west from SR-94 near Live Oak Springs Road towards Project site



KOP 6 Simulation: Looking northwest from Tierra del Sol Road towards existing wind development and local terrain

File: Z:\Projects\152210\152210\Docs\Images\CampoWindReport

**FIGURE 6c**

**Alternative 1 Visual Simulations: Key Observation Points 5 and 6**

Campo Wind with Boulder Brush Facilities

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

INTENTIONALLY LEFT BLANK



KOP 7 Simulation: Looking west from Tierra Real Lane towards Project site



KOP 8 Simulation: Looking northwest from I-8 towards Tecate Divide

File: Z:\Projects\152201\152201\00\Visuals\CampoWindReport

**FIGURE 6d**

Alternative 1 Visual Simulation:Key Observation Points 7 and 8

Campo Wind with Boulder Brush Facilities

# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

INTENTIONALLY LEFT BLANK



# Visual Impact Assessment for the Campo Wind Project with Boulder Brush Facilities

---

INTENTIONALLY LEFT BLANK