

3.2 AESTHETICS

This section describes the existing visual characteristics of the project area and site, and evaluates the visual impacts of the proposed project. The visual impact analysis considers existing scenic resources and the potential visibility of the project site from surrounding areas, including both the physical characteristics of project development and changes in light and glare in the project area. The descriptions of the existing visual setting are accompanied by photographs depicting representative views, which were taken during a site visit in June 2018. Figure 3.2-1 provides an overview of the locations of viewpoints evaluated for effects on visual resources, referred to in this section as key observation points (KOPs).

The visual resource assessment is based on the visual resource inventory methodologies presented in the Federal Highway Administration (FHWA) *Guidelines for the Visual Impact Assessment for Highway Projects* (FHWA 1988, 2015¹), described in Section 3.2.3, “Regulatory Setting.” These methodologies are commonly used for analysis of a wide variety of project types.

3.2.1 ENVIRONMENTAL SETTING

EXISTING VIEWER GROUPS AND VIEWER SENSITIVITY

Based on FHWA’s definitions of neighbors and travelers (FHWA 2015), potential viewers of the project include residents, recreationists, and tourists, who are assumed to have moderately high to high sensitivity to visual change from the project, based on the context of specific views; and workers and commuters, who are assumed to have more moderate sensitivity to visual change.

Residents of Nearby Communities

Residential neighbors live within viewing distance of the project area. Residents are assumed to tend toward a desire to maintain the existing landscape as it is. Depending on their locations, residential neighbors are often interested in cultural order and natural harmony, with less emphasis on coherence unless it affects their ability to appreciate the other two aspects of visual quality. Coherence is defined as the quality of forming a unified whole.

Recreationists

The visual preferences of recreationists tend to be focused on and associated with their recreational activity. Recreational viewers are assumed to have a high sensitivity to change in visual quality that would affect recreation setting characteristics. The region contains many notable recreation areas and resources, such as Humboldt Redwoods State Park along U.S. Highway 101 (U.S. 101), the King Range National Conservation Area/Lost Coast, and the Humboldt Bay National Wildlife Refuge. Many smaller state and Humboldt County (County) parks are located throughout the county. These parks provide a variety of recreational opportunities, including camping, hiking, mountain biking, fishing, sightseeing, and nature appreciation. Recreationists include both nearby residents and visitors to the area.

¹ The FHWA Guidelines for Highway Projects were updated in 2015. These updated guidelines revised the recommended method for visual impact analyses for highway projects, but they remained generally consistent regarding the definitions of concepts incorporated into this analysis. Those concepts were more fully defined in the 1988 method; thus, this analysis cites both the 1988 and 2015 FHWA guidelines as appropriate.

Roadway Travelers

Travelers can include tourists and commuters. Tourist trips tend to be more adventuresome, cover longer distances, and take more time than commuting trips. The main viewer group having potential views of the project area from public places would be travelers on U.S. 101, State Route (SR) 254, SR 36, and streets in nearby communities. Tourists frequently travel in groups with both a driver and passengers, all equally interested in visual coherence, cultural order, and natural harmony. Commuters, like all travelers, are particularly interested in coherence. They are also interested in cultural order and natural harmony, to the extent that it contributes to wayfinding.

Other Viewers

In agricultural areas, viewers can include agricultural neighbors who are crop or dairy farmers and often work in fields and pastures. Agricultural neighbors regard cultural order and natural harmony as critical components of the landscape. They are less interested in coherence.

REGIONAL AND LOCAL LANDSCAPE

Regional Landscape

The project area is in Humboldt County, California. Humboldt County is within the Klamath/North Coast bioregion and features a rocky coastline, montane forests, and small and sparsely populated settlements. To date, the county's scenic resources have not been mapped (Humboldt County 2017). Humboldt County is among the counties with the wettest and foggiest weather in California. A cool, moist climate is typical on the coast; the climate becomes progressively drier, warmer, and more variable inland but remains mild.

Humboldt County features several biological communities; the most abundant is coniferous forest, which includes Douglas fir, redwood, and pine forests, as well as oak woodlands and grasslands. Nearly 400,000 acres of the county's undeveloped forests and coastlines are designated as parks or forests. This area is characterized by forested mountains and ridges, and by river valleys such as the Eel River Valley, which meet the ocean in estuaries and bays. Cities, towns, roadways, and other built environment features are scattered throughout the region, and natural scenic resources of the north coast that have a high degree of aesthetic value are visible from many roadways and communities in the region. The region includes many recreation areas and resources notable for their scenic qualities, including Humboldt Redwoods State Park, Riverwalk Park in Fortuna, and Table Bluff County Park.

Most of Humboldt County's land area is rural, without urban development (e.g., streetlights, nightlights, interior lighting, and paved areas) that create skyglow and light trespass, commonly referred to as light pollution. Skyglow is defined as the added sky brightness caused by the scattering of light into the atmosphere.

Local Landscape

The project area is in Humboldt County on lands bisected by U.S. 101, roughly 12 miles southeast of the city of Fortuna and 22 miles north of the community of Garberville. The community of Scotia is adjacent to the northern edge of the project site.

The project site includes coniferous and deciduous woodlands, with elevations ranging from nearly sea level to just above 3,000 feet above sea level. The western end of the project site also includes grasslands used for grazing. A portion of the generation transmission line (gen-tie) would cross the Eel River; this portion would be constructed underground. The project's point of interconnection with the Pacific Gas and Electric Company (PG&E) transmission grid would be PG&E's Bridgeville Substation. The majority of the project site is owned and managed by Humboldt Redwood Company (HRC), while the eastern and western portions are privately owned.

Lands that would be crossed by the project are zoned primarily as Agriculture Exclusive (AE) and Timber Production Zone (TPZ). Except for limited intermittent segments of the gen-tie that are rural residential in nature, the majority of lands are currently used primarily for timber production.

The visibility of the Eel River Valley is affected by prevailing atmospheric conditions, which can vary from clear skies to slightly hazy conditions, or to thick fog that completely obscures the ridge. Foggy conditions often persist in the valleys, with the ridges exposed to the bright sun.

Representative Viewpoints

To frame the analysis of visual effects from the project, the viewshed is divided into landscape units. Landscape units are spatially enclosed and/or visually bounded areas with distinct landscape character and interrelated visual elements. Five landscape units are defined and described below.

KOPs were selected to illustrate the range of visual settings and visual sensitivity within each landscape unit. These represent the most likely locations from which the project site would be viewed. The KOPs were used as standard locations from which to evaluate the existing landscapes and potential impacts on visual resources. Figure 3.2-1 presents an overview of the locations of KOPs, showing the areas of potential project visibility in shaded grey to indicate where the terrain inhibits views of the project site. A KOP from south of the project site was not selected because mountainous terrain blocks views of the project site in that direction. Figures 3.2-2 through 3.2-10 show views from each KOP.

It is important to note that the KOPs are not protected scenic vistas. They are locations selected to illustrate an average view from that area. The selection of a location as a KOP does not mean that it is the best viewpoint in the area, or that other locations in the area would not have different views. A range of locations was chosen for the KOPs to attain an understanding of the region and the project's potential impacts on the region.

Eel River Corridor Landscape Unit

The Eel River Corridor Landscape Unit includes land centered on the Eel River. The Eel River is a meandering, braided channel bounded by forested ridgelines to the west, east, north, and south, which form the boundaries of this landscape unit. The southern portion is sparsely populated, with small pockets of rural communities. The combination of mountainous terrain and mixed conifer forests provides enclosure to the landscape and limits long-distance views. A mix of land uses occurs in the central and northern portions of the Eel River corridor, including residential and commercial uses, agricultural operations, and industrial uses related primarily to timber management. There are intermittent views of the surrounding ridgelines, which rise above the valley floor and appear as a backdrop to suburban development.

Five KOPs were identified in the Eel River Corridor Landscape Unit:

- ▶ **KOP 1** is located 3 miles east-northeast of the project area in Shively, a rural, unincorporated community. KOP 1 was selected to represent the view experienced by rural residents who live relatively close to the project area; residential viewers are assumed to have moderately high to high sensitivity to visual changes.
- ▶ **KOP 2** is located in the town of Scotia, about 3 miles northeast of the project area, and was selected to represent views of the project by Scotia residents, who also are assumed to have a moderately high to high degree of sensitivity to visual changes.
- ▶ **KOP 3** is located on Main Street in Scotia, about 4 miles north of the project area. This viewpoint was selected to represent views of the project by Scotia residents and visitors to the downtown area, including tourists, all of whom are assumed to have a moderately high to high degree of sensitivity to visual changes.
- ▶ **KOP 4** is located at the U.S. 101 Davis Street off-ramp in the city of Rio Dell, about 5 miles north of the project area. This viewpoint was selected to represent views experienced by motorists driving southbound on U.S. 101 and by residents of this community. Motorists are assumed to have moderate sensitivity to visual changes because U.S. 101 is an eligible state scenic highway, and residential viewers are assumed to have a moderately high to high sensitivity to visual changes.
- ▶ **KOP 5** is located along the Fortuna Riverwalk in the city of Fortuna, about 12 miles north of the project area. This viewpoint was selected because it provides recreationists with an unobstructed elevated view of the river valley and the surrounding forested ridgelines and hillsides, including the project site. Recreational viewers are assumed to have moderately high to high sensitivity to visual changes.

State Route 36 Landscape Unit

The State Route 36 Landscape Unit is centered along the agricultural plains that are east of U.S. 101, along SR 36, an eligible state scenic highway. This landscape unit is characterized visually by a patchwork of pastures and row crops, and rolling terrain with mixed conifer forest and private timberlands. Several rural unincorporated communities are set within these areas, concentrated along the highway. State and local parks are located along the Van Duzen River. Dense forest vegetation and topography obscure visibility of the project site from these locations. Viewers in this area include residents, commuters, and recreationists. Thus, viewers in this landscape unit are generally assumed to have moderate to high sensitivity to visual changes.

One KOP was identified in this landscape unit. KOP 6 is located along SR 36, south of the unincorporated community of Hydesville, and approximately 8.5 miles north of the project area. This viewpoint was selected because it represents views toward the project site from the communities assumed to have a high degree of sensitivity to visual change. This viewpoint is also representative for motorists driving along scenic SR 36 who may be traveling to or returning from recreational destinations east of the KOP. These viewers are assumed to have a moderate to moderately high degree of visual sensitivity to visual changes.



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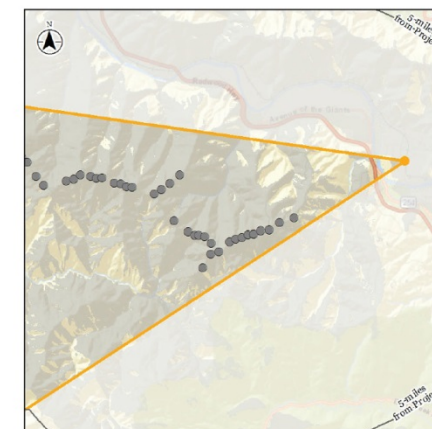
View to the west from Shively, a rural unincorporated community located east of the Eel River within 3 miles of the Project.



View from KOP 1 with the Project. The nearest WTG is 2.8 miles away.



Existing view from KOP 1 (outlined in orange) within broader context.



Approximate location of all WTGs within the 40-degree horizontal field of vision in the above view.

60580932 SAC GRX 008
01/07/2019 VMG INDD

Source: Stantec 2018

Figure 3.2-2. Key Observation Point 1—Shively

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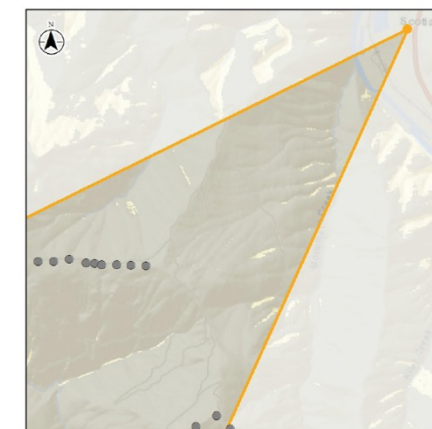
View to the southwest from the intersection of 4th Street and B Street in a residential section of the Town of Scotia.



View from KOP 2 with the Project. The nearest WTG is 3.2 miles away.



Existing view from KOP 2 (outlined in orange) within broader context.



Approximate location of all WTGs within the 40-degree horizontal field of vision in the above view.

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Source: Stantec 2018

Figure 3.2-3. Key Observation Point 2—Scotia 4th & B

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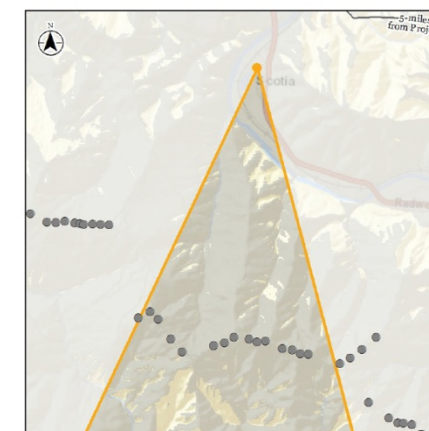
View to the southwest from Main Street in the town of Scotia, approximately 4 miles north of the Project.



View from KOP 3 with the Project. The nearest WTG is 4.2 miles away.



Existing view from KOP 3 (outlined in orange) within broader context.



Approximate location of all WTGs within the 40-degree horizontal field of vision in the above view.

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Source: Stantec 2018

Figure 3.2-4. Key Observation Point 3—Scotia Main Street

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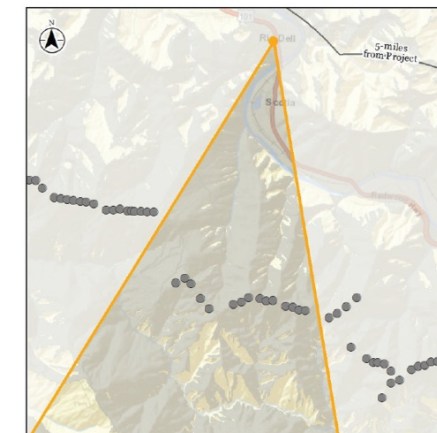
View to the south/southwest from US Highway 101, near the Davis Street southbound on-ramp, approximately 5 miles from the Project.



View from KOP 4 with the Project. The nearest WTG is 5.3 miles away.



Existing view from KOP 4 (outlined in orange) within broader context.



Approximate location of all WTGs within the 40-degree horizontal field of vision in the above view.

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Source: Stantec 2018

Figure 3.2-5. Key Observation Point 4—Rio Dell

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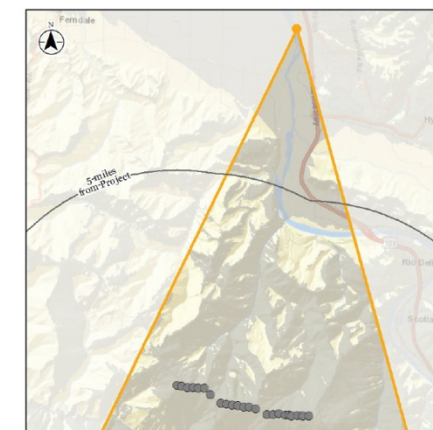
View to the south from along the Fortuna Riverwalk, approximately 12 miles from the Project.



View from KOP 5 with the Project. The nearest WTG is 8.7 miles away.



Existing view from KOP 5 (outlined in orange) within broader context.



Approximate location of all WTGs within the 40-degree horizontal field of vision in the above view.

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Source: Stantec 2018

Figure 3.2-6. Key Observation Point 5—Fortuna Riverwalk

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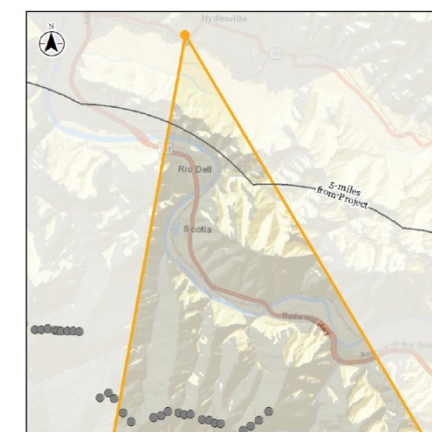
View to the southeast from along the northbound lane of State Route 36, approximately 8.5 miles from the Project.



View from KOP 6 with the Project. The nearest WTG is 8.5 miles away.



Existing view from KOP 6 (outlined in orange) within broader context.



Approximate location of all WTGs within the 40-degree horizontal field of vision in the above view.

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Source: Stantec 2018

Figure 3.2-7. Key Observation Point 6—Hydesville

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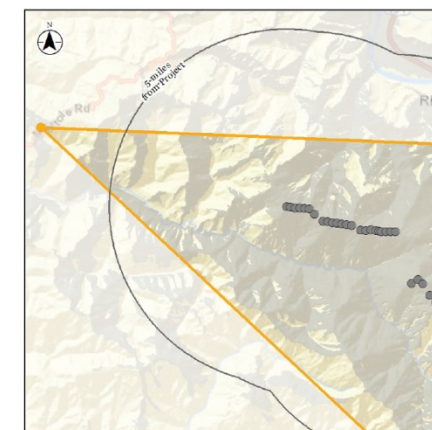
View to the south/southeast from along the northbound lane of Mattole Road, approximately 13 miles from the Project.



View from KOP 7 with the Project. The nearest WTG is 7.2 miles away.



Existing view from KOP 7 (outlined in orange) within broader context.



Approximate location of all WTGs within the 40-degree horizontal field of vision in the above view.

60580932 SAC GRX 014
01/07/2019 VMG INDD

Source: Stantec 2018

Figure 3.2-8. Key Observation Point 7—Mattole Road

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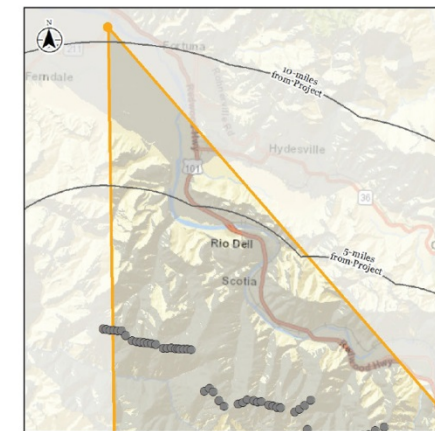
View to the south/southeast from along the southbound lane of Highway 211, approximately 17 miles from the Project.



View from KOP 8 with the Project. The nearest WTG is 10.5 miles away.



Existing view from KOP 8 (outlined in orange) within broader context.



Approximate location of all WTGs within the 40-degree horizontal field of vision in the above view.

60580932 SAC GRX 015
01/07/2019 VMG INDD

Source: Stantec 2018

Figure 3.2-9. Key Observation Point 8—State Route 211

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View to the south/southeast from along the southbound lane of Table Bluff Road, approximately 23 miles from the Project.



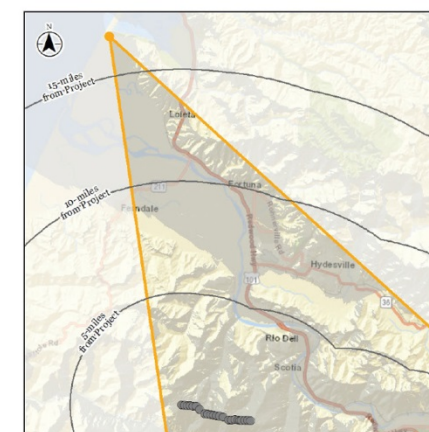
View from KOP 9 with the Project. The nearest WTG is 16.8 miles away.



Existing view from KOP 9 (outlined in orange) within broader context.

60580932 SAC GRX 016
01/07/2019 VMG INDD

Source: Stantec 2018



Approximate location of all WTGs within the 40-degree horizontal field of vision in the above view.

Figure 3.2-10. Key Observation Point 9—Table Bluff County Park

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West Humboldt Landscape Unit

The West Humboldt Landscape Unit consists of the lands west of Bear River Ridge and Monument Ridge. It is characterized visually by the densely forested, mountainous terrain between the county's coastal and inland areas. This part of the county is predominantly undeveloped, although isolated rural residences are visible intermittently throughout the area. The mountainous terrain and dense redwood forests limit most long-distance views in this part of the county, but low, sloped hillsides and open patches of grassland and oak woodland forest allow intermittent views of the elevated ridgelines to the east. Viewer types are primarily residents and motorists who are commuting, sightseeing, or traveling to recreational coastal areas. Thus, visual sensitivity is generally assumed to be moderate to high.

One KOP was identified in this landscape unit. KOP 7 is along the eastbound lane of Mattole Road, approximately 13 miles west of the project area. Mattole Road is the primary route traversing this portion of Humboldt County, extending to the low, sparsely vegetated shoreline from the more mountainous and more heavily forested land to the east. It therefore has higher volumes of travelers than other local roads in the vicinity. Viewers at this KOP include rural residences and recreationists returning to central Humboldt County from its remote coastline, where northern access exists to the Lost Coast and the King Range National Conservation Area. Rural residents and motorists driving on Mattole Road are assumed to have moderate to moderately high sensitivity to visual change.

Ferndale Plains Landscape Unit

The Ferndale Plains Landscape Unit includes the broad tracts of pastures and cropland visible to the north and south of SR 211, which extends west from U.S. 101 to the city of Ferndale. This landscape unit is delineated by the North Fork of the Eel River to the north boundary and the densely forested ridgelines and lower elevated hillsides to the south. Views along SR 211 are expansive and include both rural residences and active farming operations, dispersed throughout the landscape. These land uses characterize the landscape unit, along with the mountain backdrop that includes Monument Ridge and Bear River Ridge in long-distance views. Because of the presence of residences in a working, agricultural landscape, viewer sensitivity in the area is assumed to range from moderately low to high.

One KOP was identified in this landscape unit. KOP 8 is located along SR 211, approximately 17 miles north of the project area. This viewpoint was selected because it provides an unobstructed view toward the project site from the Ferndale Plains area and approximates the view of westbound travelers who have just crossed the Ferndale Bridge. Visual sensitivity of viewers from the roadway in this location is assumed to be moderate, while residents in the vicinity are assumed to have moderately high to high degrees of sensitivity.

Humboldt Bay Landscape Unit

The Humboldt Bay Landscape Unit consists of an expansive view of the flat tidal marshes and sloughs south of Humboldt Bay. The marsh lands provide a transition between the coastline and inland area. The coastline provides opportunities for recreation activities, whereas the inland area includes clusters of rural residential uses. The North Fork of the Eel River and surrounding delta form the southern boundary of this landscape unit and separate this landscape unit from the Ferndale Plains. Primary viewers in this area include residents and recreationists. Therefore, viewer sensitivity is assumed to range from moderately high to high.

One KOP was identified in this landscape unit. KOP 9 is located at Table Bluff County Park, approximately 23 miles north of the project area. This location provides an expansive view of the flat tidal marsh lands south of the park and the ridgelines beyond. This KOP was selected to represent long-distance views of the project site from the north, including more populated lands near Eureka. Viewers at this location are departing the park, where views are oriented toward Humboldt Bay and the Pacific Ocean. Because of the recreational rural residential land uses, viewer sensitivity is assumed to be moderately high to high. From this location, depending on the time of day and season, the visibility of the ridgelines, including the project site, can be limited because of the marine fog layer that encroaches on the inland areas.

Table 3.2-1 shows the five landscape units identified within the project viewshed and the existing visual conditions and visual quality within each landscape unit as viewed from each KOP. A discussion of how these ratings were identified is presented under “Analysis Methodology” in Section 3.2.3, “Environmental Impacts and Mitigation Measures.”

Table 3.2-1. Visual Quality Rating by Landscape Unit/Key Observation Point

Landscape Unit/KOP	Vividness	Intactness	Unity	Overall Visual Quality
Eel River Corridor				
KOP 1—Shively	Moderately High	Moderately High	High	Moderately High
KOP 2—Scotia 4th & B	Moderately High	Moderately High	High	Moderately High
KOP 3—Scotia Main Street	Moderately High	Moderate	Moderately High	Moderately High
KOP 4—Rio Dell	Moderately High	Moderate	Moderately High	Moderately High
KOP 5—Fortuna Riverwalk	Moderately High	High	High	High
State Route 36				
KOP 6—Hydesville	Moderate	Moderate	Moderately High	Moderate
West Humboldt				
KOP 7—Mattole Road	High	High	High	High
Ferndale Plains				
KOP 8—State Route 211	Moderately High	Moderate	Moderately High	Moderately High
Humboldt Bay Landscape Unit				
KOP 9—Table Bluff County Park	Moderately High	Moderate	Moderate	Moderate
Note: KOP = Key Observation Point Source: Stantec 2018				

3.2.2 REGULATORY SETTING

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

Federal Aviation Administration

The Federal Aviation Administration (FAA) has strict notification policies and standards for marking and lighting structures to promote aviation safety. Chapter 13 of FAA Advisory Circular 70/7460-1K (FAA 2007) 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 more than 200 feet above ground level). Chapter 13 lists the following general standards established for wind turbine farm lighting:

- Not all wind turbine units within an installation or farm need to be lighted.

- ▶ Obstruction lights within a group of wind turbines should have unlighted separations or gaps of not more than ½ statute mile of the integrity of the group appearance is to be maintained. This is especially critical if the arrangement of objects is essentially linear.
- ▶ Nighttime wind turbine obstruction lighting should consist of the preferred FAA L-864 aviation red-colored flashing lights (20–40 flashes per minute is the standard flashing range for this lighting type).
- ▶ Daytime lighting of wind turbine farms is not required as long as the turbine structures are painted in a bright white color or light off-white color most often found on wind turbines.
- ▶ Light fixtures should be placed as high as possible on the turbine nacelle, so as to be visible from 360 degrees.
- ▶ (For wind turbine farms in a linear turbine configuration) place a light on each turbine positioned at each end of the line or string of turbines. In the event that the last segment is significantly short, push the lit turbine back toward the starting point to present a well-balanced string of lights. High concentrations of lights should be avoided.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

California Department of Transportation

The California Department of Transportation (Caltrans) manages the California Scenic Highway Program. The goal of the program is to preserve and protect scenic highway corridors from changes that would affect the aesthetic value of the land adjacent to designated highways. However, Humboldt County has no state-designated scenic highways (Caltrans 2018).

REGIONAL AND LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

Humboldt County General Plan

The Conservation and Open Space Element of the *Humboldt County General Plan* (General Plan) (Humboldt County 2017) includes the following goals, policies, and standards related to aesthetics and visual resources that would apply to the project.

Goal CO-G1: Conservation of Open Spaces. Open spaces that distinguish and showcase the county’s natural environment, including working resource lands while not impacting the ability to provide livelihoods, profitable economic returns and ecological values.

Goal CO-G6: Community Separation. Open space areas between urban development areas that separate and preserve unique identities of the county’s cities and communities.

Goal SR-G1: Conservation of Scenic Resources. Protect high-value scenic forest, agriculture, river, and coastal areas that contribute to the enjoyment of Humboldt County’s beauty and abundant natural resources.

- ▶ **Policy SR-P1: Working Landscapes.** Recognize the scenic value of resource production lands.
- ▶ **Policy SR-P3: Scenic Highway Protection.** Protect the scenic quality of designated Scenic Highways for the enjoyment of natural and scenic resources, coastal views, landmarks, or points of historic and cultural interest.

- **Standard SR-S2: Scenic Highway Standards.** The following standards apply to mapped Scenic Highways:
 - A. **Visual Buffer Width.** The width of the visual buffer along the road shall not exceed 200 feet from the edge of the traveled roadway.
 - B. **Permitted Uses.** Permitted uses shall be allowed except the construction of new off premise billboards is prohibited. Permitted uses that are within the visual buffer area measures may be required to protect scenic qualities of the site.
 - C. **Site Development.** Buildings and landscaping within the visual buffer shall be designed and located on the site to create a harmonious visual relationship with surrounding development and the natural terrain and vegetation.
 - 1. Existing topography, vegetation, and scenic features of the site shall be retained to the maximum extent possible and incorporated into the proposed development.
 - 2. Structures and signs shall be limited in height, bulk, and siting to be visually compatible with, and subordinate to, the character of surrounding areas.
 - D. **Consideration of Views.** Structures, signs, and plant materials within the visual buffer shall be constructed, installed, and planted to complement, enhance, and retain scenic views. Vegetative screening shall be used where needed to prevent significant intrusion or degradation of public views.
 - E. **Location and Screening of Unsightly Features.** Potentially unsightly features within the visual buffer area, such as parking lots etc., shall be located in areas not visible from the scenic highway. Where it is not feasible to locate such features out of view, features shall be screened from view by planting and/or fences, walls, or berms. Screening shall utilize primarily natural materials rather than solid fencing, preferably vegetation, in conjunction with low-earth berms.
 - F. **Site Grading.** Grading or earth-moving operations within the visual buffer area shall be planned and executed in such a manner that final contours appear to be consistent with the existing terrain both on, and adjacent to, the site.
 - 1. Vegetative cover shall be provided within a reasonable time after grading is completed to prevent visible scars remaining on the land from such operations.
 - 2. Contours altered by grading shall be restored by means of land sculpturing and a cover of topsoil in such a manner as to minimize runoff and erosion and prevent ponding of water.
 - 3. Finished contours shall be planted with native vegetation, so as to require minimum care and to be visually compatible with the existing landscaping.
 - G. **Access Roads.** The location and design of access roads within the visual buffer area shall not detract from the scenic quality of the road.

- H. Utilities. New, relocated, or existing utility distribution lines within the visual buffer area shall be placed underground whenever feasible. When it is not feasible to place lines underground, they shall be located so as to be inconspicuous from the scenic route wherever feasible. Combined or adjacent rights-of-way and common poles shall be used wherever feasible.
- I. Railroads and Public Facilities. Visual buffers shall exclude railroad rights-of-way and public facilities.
- **Standard SR-S4: Light and Glare.** New outdoor lighting shall be compatible with the existing setting. Exterior lighting fixtures and street standards (both for residential and commercial areas) shall be fully shielded, and designed and installed to minimize off-site lighting and direct light within the property boundaries.
 - **Standard SR-S6: Scenic Highway Map.** Until such time as a General Plan Scenic Highway Roadway Map is prepared and adopted, Humboldt County Highways listed in Sections 263.1 through 263.8 of the California Streets and Highways Code shall be considered to be Scenic Highways pursuant to Policy SR-P3, Scenic Highway Protection, and the County shall address the potential for significant impacts to scenic resources during ministerial and discretionary permit review.
 - **Standard E-S3: Wind Generating Facilities.**
 - A. Unless allowed by right pursuant to California Government Code, Section 65892.13(f) as amended, wind generating facilities shall be a conditionally permitted use in all land use designations except “resource dependent” (MR).
 - B. The following shall be considered in reviewing proposed wind generating facilities: parcel size, relationship to other structures, effect on potential down-wind sites, compliance with Uniform Building Code and national Electrical Code, rotor and tower safety, noise, electromagnetic interference, utility notification, height, liability insurance, and appearance and design.
 - C. Findings necessary for project approval shall be:
 - 1. The proposed use is not detrimental to the public health, convenience, safety, and welfare.
 - 2. That the use of the property for such purposes will not result in material damage or prejudice to other property in the vicinity.
 - 3. Within the Coastal Zone, the project will not have a significant adverse effect on coastal resources, including wildlife qualities.
 - **Standard E-S5: Electrical Transmission Lines.**
 - A. Transmission line rights-of-way shall be routed to minimize impacts on the viewshed in the coastal zone, especially in highly scenic areas, and to avoid locations that are on or near habitat, recreational, or archaeological resources, whenever feasible. Scarring, grading, or other vegetative removal shall be minimized and revegetated with plants similar to those in the area.

- B. Where above-ground transmission line placement would unavoidably affect views, underground placement shall be required where it is technically and economically feasible, unless it can be shown that other alternatives are less environmentally damaging. When above-ground facilities are necessary, design of the support towers shall be compatible with the surroundings to the extent safety and economic considerations allow.
- C. Above-ground transmission lines should be sited so as to minimize visual impacts.
- D. Siting of transmission lines should avoid the crests of roadways to minimize their visibility on distant views. Where visual impacts would be minimized, lines should cross the roadway at a downhill low elevation site or a curve in the road.
- E. New major steel tower electrical transmission facilities should be consolidated with existing electrical steel-tower transmission facilities unless there are social, aesthetic, or significant economic concerns.
- F. Existing rights-of-way should be utilized for other related utilities to provide consolidated corridors wherever such uses are compatible or feasible.
- G. Access and construction roads should be located to minimize landform alterations. Road grades and alignments should follow the contour of the land with smooth, gradual curves where possible.

Although no highways in Humboldt County are “officially designated” as California state scenic highways, several state highways are listed in Sections 263.1 through 263.8 of the California Streets and Highways Code as eligible for designation (specific California Streets and Highways Code references are listed below):

- ▶ SR 36 from U.S. 101 near Fortuna to the Trinity County line (Section 263.3)
- ▶ SR 96 from SR 299 at Willow Creek north to Siskiyou County (Section 263.1)
- ▶ U.S. 101 for its entire length in Humboldt County (Section 263.6)
- ▶ SR 254 in the Avenue of the Giants Community Plan Area (Section 263.1)
- ▶ SR 299 from Arcata to Willow Creek (Section 263.8)

Humboldt County Local Coastal Program

The General Plan also contains six county coastal planning areas for which area plans are adopted under the Local Coastal Program. These area plans identify land uses and standards for development within the Coastal Zone. The uses and standards are adopted by the County, and are certified by the California Coastal Commission in conformance with the coastal land use policies and requirements in the California Coastal Act of 1976 (Public Resources Code, Section 30000 et seq.).

The Fields Landing dock is within the Coastal Zone.

Wild, Scenic, and Recreational Rivers

The National Wild and Scenic Rivers Act was enacted in 1968, to maintain the natural beauty, biology, and wildness of designated “wild,” “scenic,” or “recreational” rivers that may be threatened by construction of dams, diversions, and canals. The act seeks to preserve these designated rivers in their free-flowing condition, and to protect their immediate environments for the benefit and enjoyment of present and future generations. In addition,

the California Legislature created a California Wild and Scenic Rivers System in 1972, administered by the California Resources Agency. In Humboldt County, the Klamath, Trinity, Eel, and Van Duzen rivers are classified as wild, scenic, or recreational under the federal and state Wild and Scenic Rivers acts.

3.2.3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

The following thresholds of significance are based on the environmental checklist in Appendix G of the State CEQA Guidelines, as amended in 2018. Implementing the project would result in a significant impact related to aesthetics if it would:

- ▶ have a substantial adverse effect on a scenic vista;
- ▶ substantially damage scenic resources, including trees, rock outcroppings, and historic buildings within a state scenic highway;
- ▶ in nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings (public views are those that are experienced from a publicly accessible vantage point), or in an urbanized area, conflict with applicable zoning and other regulations governing scenic quality; or
- ▶ create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

ANALYSIS METHODOLOGY

Although some aspects of a visual feature can be measured, classified, and analyzed with some degree of reliability and validity, any aesthetic analysis is subjective. Each viewer has perceptions formed by individual influences, such as cultural background, training, familiarity with local culture and geography, and personal values.

This assessment of potential effects of the proposed project on visual resources uses the FHWA View Impact Analysis for Highway Projects methodology (FHWA 1988, 2015), thereby incorporating a systematic and repeatable process to the assessment. This approach characterizes visual features, assesses their quality relative to the visual character of the surrounding area, and identifies their importance to the individuals viewing them. Thus, the analysis follows three steps to identify the visual resources and conditions of the project area:

1. An objective inventory of the visual features or visual resources that compose the landscape.
2. An assessment of the character and quality of the visual resources in the context of the overall regional visual landscape character.
3. A determination of the importance to viewers of, or viewers' sensitivity to, the identified visual resources in the landscape.

Visual Character

Both natural and created features in a landscape contribute to its visual character. Landscape characteristics influencing visual quality include geologic, hydrologic, botanical, wildlife, recreation, and urban features.

Urban features are those associated with the built environment, including landscaped areas, structures, and infrastructure such as roads, utilities, levees, dams, and water impoundments. The perception of visual character can be dependent on such seasonal or hourly changes as the angle of the sun, atmospheric conditions, and other factors that affect the viewshed change. The basic components of visual character are the elements of form, line, color, and texture of the landscape features (USFS 1995; FHWA 1988). The appearance of the landscape is described in terms of the dominance of each of these elements.

Visual Quality

This approach uses the concepts of vividness, intactness, and unity, as defined below. According to FHWA's approach to visual analysis, visual quality is evaluated on the basis of the relative degree of each of these factors, which must be considered in combination to determine the visual quality of a particular view.

- ▶ “Vividness” is the visual power or memorability of landscape components as they combine in striking and distinctive visual patterns.
- ▶ “Intactness” is the visual integrity of the natural and human-built landscape and its freedom from encroaching elements.
- ▶ “Unity” is the visual coherence and compositional harmony of the landscape considered as a whole. One aspect of unity can be the unity between natural and human-built elements.

Viewer Exposure and Sensitivity

Viewer sensitivity relates to the extent of the public's concern for a particular landscape. Viewer sensitivity is also considered in assessing the impacts of visual change and is a function of several factors. Viewer sensitivity or concern is based on the visibility of resources in the landscape, proximity of the viewers to the visual resource, elevation of the viewers relative to the visual resource, frequency and duration of views, numbers of viewers, and types and expectations of individuals and viewer groups.

The viewer's distance from landscape elements plays an important role in determining an area's visual quality. Visibility and visual dominance of landscape elements depend on their placement within a viewshed. A viewshed is defined as all of the surface area visible from a particular location (e.g., an overlook) or sequence of locations (e.g., a roadway or trail) (FHWA 1988). Landscape elements are considered higher or lower in visual importance, based on their proximity to the viewer. Generally, the closer a resource is to the viewer, the more dominant, and therefore the more visually important it is to the viewer.

Visual sensitivity depends on the number and type of viewers and the frequency and duration of views. Visual sensitivity is also affected by viewer activity, awareness, and expectations, in combination with the number of viewers and the duration of the view. Visual sensitivity is generally higher for views observed by people who are driving for pleasure or engaging in recreation activities (e.g., hiking, biking, and camping), or by residents. Sensitivity is lower for people who are engaged in work activities or commuting to work. Viewer response must be based on regional context. The same landform or landscape feature may be valued differently in different settings; a landscape feature that is common in one area may not be valued as highly as the same feature in a landscape that generally lacks similar features. For example, a small hill may be highly valued in a landscape that has little topographic variation, but it may have little visual value in a mountainous area.

ANALYSIS

This analysis is based on the *Humboldt Wind Energy Project Visual Resources Technical Report* (Stantec 2018), presented in Appendix C of this EIR. Using the criteria for determining significance described above, visual resources specialists:

- ▶ identified areas of potential project visibility and visual sensitivity;
- ▶ collected photographs of views toward the project site from publicly accessible locations throughout the surrounding landscape in June 2018;
- ▶ identified nine viewpoints for use in the analysis of the project's potential visual effects and assessed vividness, intactness, and unity for each view, assigning a visual quality rating ranging from "very low" to "very high"; and
- ▶ developed visual simulations that placed a photo-realistic model of the project into views.

Based on the visual simulations and the existing viewpoint visual quality ratings, the differences in visual quality between existing and proposed conditions were evaluated. The differences in visual quality ratings for each view between existing and proposed conditions established the degree of contrast in visual quality from the project.

Because of the topography of the project site and the surrounding region, along with the distance from which publicly accessible viewpoints toward the project site are located, the assessment of potential visual effects of the project focused on the introduction of wind turbine generators (WTGs) into the landscape. Other project components on the project site are not likely to be prominent or even visible in public views.

IMPACTS AND MITIGATION MEASURES

IMPACT 3.2-1	Project Impacts on Scenic Vistas and Potential for Substantial Degradation of Existing Visual Character or Quality of Public Views of the Site and Surroundings. <i>The Humboldt County General Plan does not identify specific scenic vistas. However, the project would introduce wind turbine generators, which would be noticeable at all viewing distances depending on atmospheric conditions. The introduction of these tall vertical structures would degrade visual quality. This impact would be significant.</i>
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Impacts on Scenic Vistas

The project would be located in unincorporated Humboldt County. The General Plan does not identify specific scenic vistas. Because the General Plan does not identify scenic vistas from which the project impacts could be assessed, construction, operation, or decommissioning of the project would result in **no impact** on scenic vistas as defined by the General Plan.

Permanent Visual Character and Quality Impacts

An urbanized area is defined as a central city or a group of contiguous cities with a population of 50,000 or more, together with adjacent densely populated areas having a population density of at least 1,000 persons per square mile. According to the 2010 U.S. Census, the project site is not located in an urbanized area. Therefore, the

relevant CEQA criterion is whether the proposed project would substantially degrade the existing visual character or quality of public views of the site and its surroundings.

The FHWA view impact analysis conducted for this project (Appendix C) identified areas of potential project visibility and visual sensitivity, collected photographs of views toward the project site from publicly accessible locations throughout the surrounding landscape, and identified nine viewpoints for use in analysis of the project's potential visual effects. Visualization specialists developed visual simulations that placed a photo-realistic model of the project into views, and then evaluated the difference in visual quality between existing and proposed conditions, applying the concepts of view vividness, intactness, and unity from the FHWA methodology.

Simulated views of the project from each KOP were compared to the existing views shown in Figures 3.2-2 through 3.2-10. Figures 3.2-11 through 3.2-19 show enlarged versions of the visual simulations. Table 3.2-2 presents a comparison between existing visual quality and project conditions for each KOP. Introducing WTGs to Monument and Bear River ridges would generally reduce visual quality from most locations with views of the project site. The WTGs would be visible from the set of publicly accessible representative views discussed here, although the degree to which they would be prominent would vary, and their presence would be restricted to horizons.

Table 3.2-2. Existing and Simulated Visual Quality by Landscape Unit

Landscape Unit/KOP	Vividness	Intactness	Unity	Overall Visual Quality
Eel River Corridor				
KOP 1—Shively	Moderately High	Moderately High	High	Moderately High
<i>With project</i>	<i>Moderately High</i>	<i>Moderate</i>	<i>Moderately High</i>	<i>Moderately High</i>
KOP 2—Scotia 4th & B	Moderately High	Moderately High	High	Moderately High
<i>With project</i>	<i>Moderately High</i>	<i>Moderate</i>	<i>Moderately High</i>	<i>Moderately High</i>
KOP 3—Scotia Main Street	Moderately High	Moderate	Moderately High	Moderately High
<i>With project</i>	<i>Moderately High</i>	<i>Moderately Low</i>	<i>Moderate</i>	<i>Moderate</i>
KOP 4—Rio Dell	Moderately High	Moderate	Moderately High	Moderately High
<i>With project</i>	<i>High</i>	<i>Moderate</i>	<i>Moderate</i>	<i>Moderately High</i>
KOP 5—Fortuna Riverwalk	Moderately High	High	High	High
<i>With project</i>	<i>High</i>	<i>Moderately High</i>	<i>Moderately High</i>	<i>Moderately High</i>
State Route 36				
KOP 6—Hydesville	Moderate	Moderate	Moderately High	Moderate
<i>With project</i>	<i>Moderately High</i>	<i>Moderately Low</i>	<i>Moderately High</i>	<i>Moderate</i>
West Humboldt				
KOP 7—Mattole Road	High	High	High	High
<i>With project</i>	<i>High</i>	<i>Moderately High</i>	<i>Moderately High</i>	<i>Moderately High</i>
Ferndale Plains				
KOP 8—State Route 211	Moderately High	Moderate	Moderately High	Moderately High
<i>With project</i>	<i>Moderately High</i>	<i>Moderately Low</i>	<i>Moderate</i>	<i>Moderate</i>
Humboldt Bay Landscape Unit				
KOP 9—Table Bluff County Park	Moderately High	Moderate	Moderate	Moderate
<i>With project</i>	<i>Moderately High</i>	<i>Moderately Low</i>	<i>Moderate</i>	<i>Moderate</i>
Note: KOP = key observation point Source: Stantec 2018				



View from KOP 1 with the Project.
The nearest WTG
is 2.8 miles away.

60580932 SAC GRX 017
01/08/2019 VMG INDD

Source: Stantec 2018

Figure 3.2-11. Simulated View from Key Observation Point 1—Shively

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View from KOP 2 with the Project.
The nearest WTG
is 3.2 miles away.

60580932 SAC GRX 018
01/08/2019 VMG INDD

Source: Stantec 2018

Figure 3.2-12. Simulated View from Key Observation Point 2—Scotia 4th & B

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View from KOP 3 with the Project.
The nearest WTG
is 4.2 miles away.

60580932 SAC GRX 019
01/08/2019 VMG INDD

Source: Stantec 2018

Figure 3.2-13. Simulated View from Key Observation Point 3—Scotia Main Street

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View from KOP 4 with the Project.
The nearest WTG
is 5.3 miles away.

60580932 SAC GRX 020
01/08/2019 VMG INDD

Source: Stantec 2018

Figure 3.2-14. Simulated View from Key Observation Point 4—Rio Dell

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View from KOP 5 with the Project.
The nearest WTG
is 8.7 miles away.

60580932 SAC GRX 021
01/08/2019 VMG INDD

Source: Stantec 2018

Figure 3.2-15. Simulated View from Key Observation Point 5—Fortuna Riverwalk

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View from KOP 6 with the Project.
The nearest WTG
is 8.5 miles away.

60580932 SAC GRX 022
01/08/2019 VMG INDD

Source: Stantec 2018

Figure 3.2-16. Simulated View from Key Observation Point 6—Hydesville

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Source: Stantec 2018

Figure 3.2-17. Simulated View from Key Observation Point 7—Mattole Road

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Source: Stantec 2018

Figure 3.2-18. Simulated View from Key Observation Point 8—State Route 211

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View from KOP 9 with the Project.
The nearest WTG
is 16.8 miles away.

60580932 SAC GRX 025
01/08/2019 VMG INDD

Source: Stantec 2018

Figure 3.2-19. Simulated View from Key Observation Point 9—Table Bluff County Park

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Project facilities would likely be intermittently or partially visible from throughout the surrounding landscape, with the exception of the relatively few unobstructed views from adjacent locations noted below. In general, the facilities would not be prominently visible in public views.

The operations and maintenance (O&M) facility would be located southeast of the intersection of U.S. 101 and Jordan Road. The northern boundary of its footprint would be 300–400 feet from the highway corridor. Existing trees would screen the O&M building in most views from U.S. 101 except for the brief segment of highway at and adjacent to the overpass of Jordan Road. Given the highway speeds at which viewers would typically be traveling, any direct, unscreened views of the O&M building would be very brief. Viewers exiting Avenue of the Giants and entering U.S. 101 would have slightly more sustained views given their slower rates of speed, particularly those passing under the freeway to access the southbound on-ramp. Such views would still be brief.

The access road would extend from U.S. 101 at Jordan Road to Monument Ridge and Bear River Ridge, partially along expanded existing roads and partially along newly constructed roads. It would require a right-of-way of up to 50 feet, which in turn would require the clearing of trees for new and widened roads. Where views up the access roadway are afforded, the 50-foot-wide corridor would be clearly evident. However, most views of the access road corridor would be oblique, with view angles that would make the access road difficult to perceive within the existing forest lands. As such, outside of proximate views affording visibility into the access road corridor, the access road is not likely to be substantially visible.

The 25-mile, 115-kilovolt gen-tie would be built using wooden H-frames, wood poles, or metal monopole structures placed within a 100-foot-wide transmission corridor. As with the access roads, the gen-tie would be most visible where viewers would have a line of sight down the corridor, and such viewpoints are relatively few. Most views of the gen-tie would be broadside ones, with poles potentially detectable across the view, but with the cleared corridor difficult to discern. Given the distance between most viewing locations and the gen-tie, the poles, proposed to be 60–65 feet in height, would appear absorbed into the forested environment where not obscured by nearby, taller trees.

In views from the scenic vista point along U.S. 101, the gen-tie along Shively Ridge would be as close as 1.5 miles away. While some poles might be discernable from this distance, the difference in elevation (Shively Ridge is generally more than 1,000 feet higher than U.S. 101 in this area) would reduce the detectability of the cleared gen-tie corridor and increase the likelihood that existing vegetation near the ridgetop would block the visibility of poles. The visibility of the gen-tie would increase somewhat in its eastern extent, where there would be an aboveground crossing of both Alderpoint Road and SR 36 just south of the point of interconnection at the Bridgeville Substation, as well as the traversing of some more open and exposed areas east of Alderpoint Road. The gen-tie crossing of U.S. 101 south of Scotia is proposed to be located underground.

Both the temporary batch plant and the project substation would be located along Monument Ridge, away from publicly accessible roads. Visibility from the U.S. 101 corridor would likely be limited and intermittent, with interceding vegetation blocking most views. Where visible from lower elevations, these facilities would be difficult to discern from distances of more than 3 miles away; they would likely appear indistinguishable from other vertical features (stands of trees and communications facilities) detectable along the ridgetop.

Ground disturbance to widen shoulders and cut and fill slopes, WTG pads, staging/equipment laydown areas, and batch plant pads would result in adverse effects on scenic vistas along Bear River Ridge and on the visual character of the ridge as viewed from surrounding locations. Grading, compaction, and vegetation removal would

increase the potential for erosion, which could further degrade visual resources along the ridge. The presence of construction equipment, including large trucks and other vehicles, and stockpiled materials would detract from scenic views. Visual contrasts would vary in frequency and duration throughout construction; periods of intense activity may be followed by periods with less activity, and associated visual impacts would vary to some degree, in accordance with construction activity levels.

Short-term effects on visual resources would include scars from ground disturbance that would be visible through at least one season, until the disturbed areas are revegetated successfully.

The operation of WTGs in the project area would cause long-term effects from the introduction of encroaching vertical elements (towers and blades) and distractive movement (when the rotor blades are in motion). Clearing vegetation could introduce long-term visual contrasts in form, line, color, and texture to the landscape, including ground disturbances (e.g., grading and erosion control measures). WTG towers are bold, vertical forms. They appear light in color when well-lit and dark when backlit, and are smooth in texture.

Across all viewsheds analyzed in detail in Appendix C, WTGs would relate to the verticality of the nearby tall trees or more human-made vertical elements, such as flagpoles, streetlights, utility poles, and street signs, but they would create a strong contrast visually within the broader horizontal lines of the horizon. When spinning, the rotor blades would further contrast with the mostly static elements in view. The WTGs would appear silhouetted above the ridgetop trees. Thus, the project would redefine the skyline. The intactness and unity of the views would be reduced substantially. Vividness would be reduced as well for many of the KOPs, because the WTGs placed along the ridgeline would detract from the surrounding views, described above. However, for some KOPs, the vividness would be increased because of the addition of memorable features. Introducing a wind energy generation facility into landscapes that predominantly feature rural residential and agricultural uses would generally reduce the compositional harmony of these views.

Although such a contrast likely would affect the apparent visual character in views toward the project site, the visual quality of the same views would only be reduced from a range of moderate to high in existing views to a range of moderate to moderately high in views with the project present.

An analysis of the project view from each KOP is presented below.

Key Observation Point 1—Shively

With the proposed project, the visual quality of the view from KOP 1 would be reduced but would remain moderately high (Figure 3.2-11). The WTGs on the eastern segment of Monument Ridge would be visible in the left half of the view, appearing above the low ridgeline at distances of 2.8 to 4.1 miles from KOP 1. The predominantly residential viewers in this area have an assumed moderately high to high degree of sensitivity to visual change.

The presence of the WTGs would not alter the vividness of the landform or vegetation, because they would obscure views of neither. Their presence—the noticeably light color in direct sunlight and the motion of the rotor blades when spinning—would increase the memorability of human-made features. Under sunny conditions, the WTGs as viewed from the east would appear bright during morning light and dark in the afternoon, when they would be backlit. Therefore, the view's vividness would increase slightly but remain moderately high. The project would reduce the intactness of the view to moderate. The WTGs would be visible within a limited portion of the

view, both above and beyond the landform and vegetation that are the primary contributors to the view's visual character.

However, the WTGs would encroach on the existing skyline, which is undeveloped. WTG towers are strong vertical forms beneath angular rotor blades. Such structures, which appear light in color when well-lit and are smooth in texture, would relate to the verticality of the nearby tall trees, but would contrast visually with the broader context of the view from KOP 1. When spinning, the rotor blades would present a further contrast with the other mostly static elements in view. The WTGs would appear above ridgetop trees and would be roughly equal in height to the highest visible ridgetop in the center of the view. Thus, the project would redefine the skyline, though not substantially.

The presence of the WTGs would similarly reduce the overall unity of the view. Their visibility would introduce power generation elements that would appear industrial in character. Although the WTGs would occupy only a relatively small portion of the view, the visible contrast would reduce the compositional harmony observable in the existing view, reducing the view's unity from high to moderately high.

These changes would be only moderately perceptible to viewers at KOP 1 and its vicinity. The WTGs would occupy a narrow portion of the view toward the ridgeline from Shively; the view faces the easternmost extent of a generally east-west oriented string of structures. Because Monument Ridge overlooks Shively, the viewpoint is in an inferior position relative to the project site. The project would appear in the middleground of the view, with the nearest WTG visible 2.8 miles away. The WTGs would be visible amid the ridgetop's tree line. Awareness of the WTGs may be high, given the lack of other prominent human-made structures beyond the valley floor. However, exposure is likely to be limited by intervening trees, both along the ridgetop and near viewing locations on the valley floor. The motion of rotating blades would draw viewers' attention where WTGs are visible, as there are few other sources of motion within the landscape, aside from agricultural activities (irrigation and operation of vehicles and machinery).

Key Observation Point 2—Scotia 4th & B

With the proposed project, the visual quality of the view from KOP 2 would be reduced but generally would remain moderately high (Figure 3.2-12). Four WTGs along Bear River Ridge would be mostly to partially visible in the right half of the view. The most prominent two would appear above the sparsely wooded portions of the ridgeline. Rotor blades of two other WTGs would appear to extend above the tree line to the right. These WTGs would appear as close as 3.2 miles from KOP 2, where viewers are assumed to have a moderately high to high degree of sensitivity to visual change.

The WTGs, though few, would be clearly visible along the ridgeline backdrop in this view. They would add a degree of visual interest, and thus, would slightly increase the view's vividness. Specifically, they would be a source of visible motion when the rotor blades are spinning, and their light color would be noticeable when well-lit during the morning hours. (In views from the northeast, the WTGs would appear backlit and darker in the afternoon light.)

The WTGs would not block views of the landform or vegetation. However, they would encroach on the ridgeline, appearing as clearly detectable structures where none currently appear. As visible vertical features, they would relate to some minor elements in the view's foreground (e.g., house stove pipes, a utility pole, and individually detectable trees), but their strong and angular linear forms would contrast with their immediate surroundings.

Thus, the moderately high degree of intactness observed in the existing view would be reduced to moderate. Similarly, introducing power generation structures to a highly unified existing view would reduce the view's unity somewhat.

These changes would be perceptible to viewers at KOP 2, and throughout Scotia wherever views toward Bear River Ridge are available and not obstructed by intervening structures in the immediate foreground. The WTGs would occupy a limited portion of the ridgeline as seen from Scotia, which has a somewhat obtuse and inferior angle of view toward Bear River Ridge. The project would appear toward the back of the view's middleground, with the nearest WTG visible just over 3 miles away. Two WTGs would be mostly visible, with portions of two more partially visible above the tree line.

Awareness of the WTGs would likely be high at KOP 2 and in the surrounding residential neighborhood, and exposure would be high where views are static and uninterrupted. However, such views are also highly likely to be visually characterized more by the foreground structures and activities—Scotia's residential and industrial uses—with the ridgeline remaining as a backdrop. The motion of rotating blades would draw viewer attention where WTGs are visible, although traffic associated with residential and mill activities is the current source of motion in views from KOP 2.

Key Observation Point 3—Scotia Main Street

The proposed project would reduce the visual quality of the view from KOP 3 from moderately high to moderate (Figure 3.2-13). The WTGs on the western segment of Monument Ridge would be visible in the left half of the view, appearing above the forested ridgeline at distances of 4.2 to 4.5 miles from KOP 3. Viewers in this area are assumed to have a moderately high to high degree of sensitivity to visual change.

In this view, the WTGs would appear as prominent human-made features above the forested ridgeline in the background. The project would not obscure views of the surrounding ridgelines or the vegetation, and therefore, would not alter the landform or the vegetation. The presence of the WTGs would increase the memorability of human-made features; the motion of spinning rotor blades and the darkened structures, backlit in views to the south from Scotia, would be noticeable. Overall, however, the vividness of the view would remain moderately high.

Adding the WTGs would reduce the intactness of the view from moderate to moderately low. The WTGs would increase the presence of vertical features in the view that would encroach on the existing skyline and alter the undeveloped nature of the ridgeline. The angular lines of the blades would contrast with other background features, and the forms would relate more to vertical elements in the foreground (flagpole, streetlights, utility poles, and street signs) than to trees or other vertical features amid the slopes or atop the ridgeline beyond Scotia. The project would also reduce the view's unity from moderately high to moderate. The WTGs would appear industrial in character, contrasting with the suburban character of the view. It should be noted that typical pedestrian and vehicular activities mean that the operating WTGs would likely not be the only moving features in this view.

The project and its effects on visual quality would be prominently visible from this part of Scotia. Viewers here would have a high degree of exposure to and awareness of the WTGs, with 10 structures nearly completely visible in views from an inferior position, giving a higher profile along the skyline. The nacelles of all 10 WTGs would be visible from KOP 3. Viewers in Scotia would be likely to experience the project as a backdrop, present in any

views that currently include the western portion of Monument Ridge. The visual character of their immediate surroundings would not be altered, but the visual character of the broader context within which more proximate conditions exist would be affected.

Key Observation Point 4—Rio Dell

The proposed project would slightly reduce the visual quality of the view from KOP 4, but visual quality would remain moderately high (Figure 3.2-14). The WTGs on the western segment of Monument Ridge would be visible in the left half of the view and would appear above the forested ridgeline, 5.3 miles from KOP 4. Viewer sensitivity at this viewpoint is assumed to be moderately high to high.

The WTGs would appear above the forested ridgeline and would not obscure views of the landform or vegetation. They would appear as memorable human-made features and would increase the vividness of the view to a high level, primarily because of the linear qualities of the towers and blades; their backlit, darkened color; and the motion of the rotor blades when operational. Although the right side of the view from this KOP would remain intact, the WTGs would appear concentrated in the left side of the KOP view and would encroach on the undeveloped skyline. This, along with the introduction of prominent vertical forms atop the background ridgeline, would slightly reduce the overall intactness of the view, which would nevertheless remain moderate. The WTG layout pattern would create a visual break between the left side and the right side of the view from this KOP, reducing the unity of the view to moderate.

The project would be visible atop Monument Ridge from KOP 4 and from any location in Rio Dell with views of the ridgeline. Viewers here would have a high degree of awareness of the WTGs, with a total of 10 structures nearly completely visible in views toward a skyline from an inferior position. Exposure would be mitigated somewhat by the distance from the view; the WTGs would appear as smaller features on the ridgetop than in closer views, and the view from KOP 4 includes agricultural activities in the immediate foreground that may draw viewers' attention.

The immediate backdrop of the grazing area is a residential portion of Rio Dell. Neither of these areas is likely to generate as much movement in the landscape as operation of the proposed project. As with views from Scotia, viewers in Rio Dell would be likely to experience the project as a backdrop, affecting perceptions of both visual quality and character in background views.

Key Observation Point 5—Fortuna Riverwalk

The proposed project would reduce the visual quality of the view from KOP 5 from high to moderately high (Figure 3.2-15). WTGs placed along the Bear River Ridge segment and the western segment of Monument Ridge would be visible across the background. The WTGs would appear above the ridgelines at distances of 8.7 to 11.5 miles from KOP 5. Recreational viewers in this area are assumed to have a moderately high to high degree of sensitivity to visual change.

The WTGs would be prominently visible in unobstructed views toward the project from KOP 5. In this view, the WTGs would not obstruct the panoramic view of the river valley or the surrounding forested ridgelines and hillsides. The WTGs would appear above the ridgelines and extend across the background portion of the view from this KOP, appearing as vertical forms, but following the horizontal orientation of the ridgelines. They would appear as the most prominent human-made features in this view from KOP 5; the memorability of the new features would increase the vividness of the view slightly, from moderately high to high.

However, introducing the WTGs would also reduce the intactness from high to moderately high, because the WTGs would noticeably encroach upon the skyline in the background and contrast with the undeveloped appearance of the ridgelines. Further contrast would come from the noticeable angular form of the rotor blades; the dark color of the WTGs (from being backlit for most of the day in this south-facing view); and from the motion of operational WTGs across the skyline, which would likely be observable from this distance. The linear formation of the WTGs would emphasize the horizontal orientation of the ridgelines that provide a backdrop to the Eel River Valley. Similarly, the overall unity of the view would be reduced from high to moderately high, because the introduction of power generation facilities would contrast with the natural environment that dominates the view.

Viewers looking south from the Riverwalk Trail in Fortuna at KOP 5 would have an unobstructed background view of 17 WTGs atop the skyline, across nearly the entire background of this KOP view. Viewer awareness would likely be moderately high, but the degree of exposure would be offset somewhat by the distance between the viewpoint and the ridgelines. The WTGs would be discernible as a series of dark (backlit for most of the day) vertical structures along the distant skyline, viewed from an inferior vantage point. Motion from spinning rotors would also be noticeable. However, the most prominent source of motion in the view is the Eel River. The riverbank area that extends from the foreground to the lower hills and ridges in the middleground serves as a focal point that would likely draw as much attention from viewers as the background ridgeline.

Key Observation Point 6—Hydesville

The proposed project would reduce the visual quality of the view from KOP 6, but visual quality would remain moderate (Figure 3.2-16). WTGs placed along the western and eastern segments of Monument Ridge would be visible in the background, at distances of 8.5 to 10.2 miles from KOP 6. Residential viewers in this area have an assumed moderately high degree of sensitivity to visual changes, and motorists driving on SR 36 have a moderate degree of sensitivity.

The WTGs would be visible in the background and would follow the low profile of the forested bluff. As vertical forms with angled WTG rotors appearing amid a tree-lined ridgetop, they would be memorable features that would increase the vividness of the view slightly, to moderately high. The forested bluff would partially obscure the visibility of some of the WTGs and limit their prominence in the background. Regardless, the WTGs would encroach on the skyline and disrupt the undeveloped appearance of the forested bluff. Because the WTGs would be backlit in south-facing views, they would appear as relatively small dark forms for most of the day, thus minimizing potential contrast between the evergreen ridgeline and the light-colored WTGs. Nevertheless, the intactness of the view would be reduced from moderate to moderately low. The unity of the view would be reduced to moderate, given the introduction of a power generation element to an area that otherwise appears rural residential and agricultural in character.

These changes would be perceptible to viewers at KOP 6 and elsewhere in the vicinity with a similar line of sight to the ridgeline. Of the 11 WTGs visible from KOP 6, the nacelles of just five would be visible above the current tree line. They would be perpendicular to viewers traveling along SR 36, which passes through this area in a generally east/west direction, and from which views to the south are frequently obstructed by roadside vegetation or structures.

The project would likely be less visible, if visible at all, from the agricultural area in the view's foreground, given its position of greater vantage inferiority than the KOP. Given all of this, viewers are likely to have moderately

low awareness and exposure to the project from this location. Because the WTG rotor blades would be visible above the horizon, they would likely be the source of visible motion in the landscape, once operational. However, other sources of motion in the area under existing conditions include agricultural uses: operation of vehicles, farm equipment, and irrigation systems. The motion of WTGs may draw viewers' attention, but such motion would very likely not appear within a completely static view.

Key Observation Point 7—Mattole Road

The proposed project would reduce the visual quality of the view from KOP 7 from high to moderately high (Figure 3.2-17). The WTGs would be visible in the background and concentrated in the left side of the view, ranging from 7.5 to 12.5 miles away. The WTGs would appear clustered at the top of Bear River Ridge and Monument Ridge, where motorists driving on Mattole Road are assumed to have a moderate to moderately high degree of sensitivity to visual change.

The project would introduce new human-made features into the view from KOP 7, which consists primarily of natural landforms and vegetation. The WTGs would not obscure views of the hillsides and vegetation visible in the foreground and the middleground, nor would they be dominant features in background views. They would, however, add forms unique to the landscape. Given the somewhat lateral view of the project from this KOP, WTGs atop the two separate ridges would appear from this distance as two discrete groups of structures. Some WTGs would appear in front of others, causing them to appear in portions of the view as jagged clusters (the rotor blades) supported by the WTG towers. They would also appear dark during backlit morning conditions and light during afternoon light in views from the west.

The addition of features with visual interest would slightly increase the vividness of the view from this KOP, which would remain high. However, in the relatively small portion of the KOP view they would occupy, the WTGs would encroach on the skyline and would contrast in form, line, and color with the undeveloped and vegetated ridgelines and hillsides. As a result, the intactness of the view would be reduced from high to moderately high. Similarly, introducing power generation facilities into a predominantly natural environment would reduce the overall unity of the view from high to moderately high.

These changes would be perceptible to viewers at KOP 7 and other locations along Mattole Road that afford visibility of the project site, although views of the site from this area are only intermittent because of the winding road and intervening vegetation and topography. The 15 visible WTGs would occupy a narrow portion of this KOP view from the west, because the WTG strings would be generally aligned west-to-east. The inferior position of the viewpoint relative to the project site would enhance the appearance of the WTGs on the skyline. Still, the lack of trees on Bear River Ridge and the WTG heights along Monument Ridge compared with the trees there would enhance the visibility of the WTGs. They would stand out as the only identifiable infrastructure in this KOP view outside of the roadway corridor, and as the only source of visible motion in the landscape when operating. Therefore, viewers would have moderately high awareness of the WTGs where visible, but exposure would be low because views would be intermittent and of short duration.

Key Observation Point 8—State Route 211

The proposed project would reduce the visual quality of the view from KOP 8 from moderately high to moderate (Figure 3.2-18). The WTGs would be visible in this view and would appear across the ridgeline in the background, 10.5 to 16.5 miles from KOP 8. Motorists driving on SR 211 are assumed to have a moderate degree

of sensitivity to visual changes. Residents in the vicinity are assumed to have moderately high to high degrees of sensitivity.

The project would not obscure the expansive view of the farmlands in the foreground and middleground or the surrounding ridgelines in the background. Vividness would remain moderately high because the WTGs would appear within a view that includes numerous other human-made features. The small, vertical forms of WTGs would be restricted to the background of the view from this KOP, but they would encroach on nearly the entire KOP view. This would reinforce the horizontal orientation of the ridgeline but would nonetheless reduce the intactness of the existing KOP view from moderate to moderately low.

Further, the WTGs would mostly appear backlit in views to the south from this location; therefore, they would appear mostly dark atop the ridgeline, except for early morning and late afternoon, when they could appear somewhat lighter. The motion of spinning rotors would be detectable from this distance. However, agricultural activities in the area include the operation of vehicles, farm equipment, and—as shown in the view from KOP 8—pivot irrigation, which would relate somewhat to the circular motion of the rotors. The introduction of power generation facilities would contrast with the existing rural and agricultural components that characterize the current view, reducing the unity of the view to moderate.

Viewers looking south from SR 211 west of the Ferndale Bridge would perceive nearly the entire 34-WTG layout, entirely within a background view. Thirty-one of the 34 WTGs would be partially or mostly visible from this location, and the project would appear to extend across nearly the entire KOP view. Viewer awareness from this area would be high. Despite the distance between the viewpoint and the project, unobstructed views of long duration and the area's inferior vantage point would allow for moderately high viewer exposure. The WTGs would appear uniformly beyond a predominantly agricultural area. It is likely that some viewers would perceive the project as a backdrop to a working, nearly entirely managed landscape.

Key Observation Point 9—Table Bluff County Park

The proposed project would slightly reduce the visual quality of the view from KOP 9, but overall visual quality would remain moderate (Figure 3.2-19). The WTGs would be visible in this view and would appear across the ridgeline in the background, 16.8 to 23.8 miles from KOP 9. The recreational and residential viewers in this area are assumed to have a moderately high to high degree of sensitivity to visual changes.

The project in this view from KOP 9 would not obscure views of the flat tidal marshes visible in the foreground and middleground, or of the surrounding forested ridgelines in the background. The WTGs, which would appear from this distance as a single row of small, vertical forms, would add a slight degree of visual interest. Vividness would remain moderately high because the WTGs would appear alongside existing, varying forms of human-made features. However, their encroachment on the skyline, likely darkened appearance caused by their predominantly backlit conditions, and contrast with the undeveloped nature of the ridgelines would reduce intactness from moderate to moderately low. The unity of the view would decrease slightly with the presence of power generation facilities in the view, but because of the facilities' low prominence in views, a function of their distance from the viewpoint, the overall unity of the view would remain moderate.

Viewers at this KOP, assumed to be departing Table Bluff County Park or other coastal areas to the north, are likely aware of the project but are not likely to perceive it as having a deleterious effect on visual quality. The nearest WTG to this KOP would be almost 17 miles away. From this distance, viewers would likely need to be aware of the

project and consciously looking for it to discern it along the horizon. All but one of the 34 WTGs would be partially or mostly visible from this location, and the project when visible would appear to extend across nearly the entire KOP view. Exposure would be moderate, however, given the distance of the view from KOP 9. Further, any view toward the distant ridgeline would also include other features in the middleground and foreground likely to attract viewer attention, including the tidal areas below the viewpoint.

Summary

Sensitive viewer groups—property owners, residents, and recreational travelers—would have foreground, middleground, and background views of project infrastructure, most notably WTGs. The project would introduce new structures within the viewshed. At all viewing distances, WTGs would be noticeable depending on atmospheric conditions. Because WTGs may be silhouetted against the sky under certain lighting conditions, appearing as regularly spaced linear and vertical elements, the contrast introduced by the project would be strong in form and line. The tall structures would be repeated linearly, making them a more dominant and noticeable feature. Sensitivity to visual change across all landscape units generally would be high for residents and recreational travelers, and visual character would be degraded. Therefore, the project's impact on visual resources from the introduction of tall vertical structures would be **significant**.

Mitigation Measure 3.2-1a: Design the Project to Avoid Aesthetic Impacts.

The project applicant shall consider topography when siting WTGs and shall avoid major modifications to natural landforms or other characteristic parts of the landscape. The WTGs shall be clustered or grouped to break up overly long lines of WTGs. The WTGs shall be similar in shape and size.

Each WTG shall be painted an off-white or uniform light-grey color, per manufacturer's requirements. To minimize the structures' reflectivity, the paint used shall have a gloss level that does not exceed 30 percent, or 60–70 gloss units, as calculated by the manufacturer. The surfaces of all other structures (e.g., substations, O&M building) shall be given low-reflectivity finishes with neutral colors to minimize the contrast of the structures with their backdrops.

Commercial messages and symbols shall be prohibited on WTGs.

Overhead transmission lines shall not use lattice steel towers. In lieu of H-frame wooden structures, tubular steel poles or concrete poles may be used and shall be painted light grey or shall be dulled galvanized steel or other nonreflective surface.

To minimize ground disturbance, existing roadways shall be used to access WTG pads. All construction-related areas shall be kept clean and tidy by storing construction materials and equipment in the construction staging and laydown areas and/or generally away from public view. The project applicant shall remove construction debris promptly at intervals of 2 weeks or less, at any one location. The Humboldt County Planning & Building Department shall enforce the requirements of this measure through site plan review.

Mitigation Measure 3.2-1b: Implement Operational Measures to Reduce Aesthetic Impacts.

WTGs shall be kept clean and in good repair. Nacelle covers and rotor nose cones shall always be maintained in place and undamaged. Inoperative WTGs shall be repaired, replaced, or removed as quickly

as feasible because a WTG that is broken or disabled will create a health and safety hazard and disrupt the visual experience of the casual observer. The project applicant shall remove derelict WTGs and derelict parts and pieces within 60 days of decommissioning, and shall relocate such equipment and derelict parts and pieces to an area that is screened from view and/or not visible to the general public. Similarly, O&M areas shall be kept clean and tidy by storing all equipment, parts, and supplies in areas that are screened from view and/or are generally not visible to the general public. Grading and landscape treatment around tower bases shall match the conditions of surrounding landscape and habitat to recreate a pleasing visual environment.

Implementation: Project applicant.

Timing: During construction.

Enforcement: Humboldt County Planning & Building Department; Federal Aviation Administration.

In addition, a storm water pollution prevention plan, a grading and erosion control plan, and a reclamation, revegetation, and weed control plan would be prepared to reduce impacts as discussed in Section 3.5, “Biological Resources”; Section 3.7, “Geology and Soils”; and Section 3.10, “Hydrology and Water Quality.” The referenced mitigation measures would reduce impacts on visual resources by preventing visual degradation from runoff and erosion during and after construction, but would not reduce impacts on visual resources to less than significant. No additional feasible mitigation measures are available to effectively screen foreground views of the WTGs and the access roads. In addition, wind farm efficiency depends in part on precise siting of WTGs, based on local topography, local wind conditions, and other technical factors. Thus, siting flexibility may be constrained. Therefore, the impact on scenic vistas and the visual character of the site would be **significant and unavoidable**.

The expansion of the Bridgeville Substation would not be visible from State Route 36 or any other public viewing area. The substation expansion would have **no impact** on visual resources.

IMPACT 3.2-2	Project Impacts on Scenic Resources along a State Scenic Highway. <i>The project would not adversely affect trees, rock outcroppings, and historic buildings along a state scenic highway. This impact would be less than significant.</i>
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No highways in Humboldt County are officially designated as California state scenic highways; however, the entire segments of SR 36 and U.S. 101 in the project vicinity are eligible for state scenic highway designation (Caltrans 2018). Policy SR-S6, Scenic Highway Map, in the General Plan states that Humboldt County highways listed in Sections 263.1 through 263.8 of the California Streets and Highways Code shall be considered to be scenic highways, pursuant to Policy SR-P3, Scenic Highway Protection, and that the County shall address the potential for significant impacts on scenic resources during ministerial and discretionary permit review. Therefore, impacts on these highways are considered.

SR 211 (where the optional aboveground gen-tie would be located) is not a state scenic highway. KOP 6 is near SR 36. KOPs 1, 2, 3, 4, 5, and 8 are along U.S. 101. The proposed project would not be constructed on a scenic resource that is integral to the character of a scenic highway, but it may be visible from the highway.

KOP 6 is along SR 36, south of the unincorporated community of Hydesville and approximately 8.5 miles north of the project area. This viewpoint is representative of those experienced by motorists driving along scenic highways. These viewers are assumed to have a moderate to moderately high degree of visual sensitivity to visual changes.

The proposed project would reduce the visual quality of the view from KOP 6, but visual quality would remain moderate (Figure 3.2-16). WTGs placed along the western and eastern segments of Monument Ridge would be visible in the background, at distances of 8.5 to 10.2 miles from KOP 6. The WTGs would be visible in the background and would follow the low profile of the forested bluff. As vertical forms with angled WTG rotors appearing amid a tree-lined ridgetop, they would be memorable features that would increase the vividness of the view slightly, to moderately high. The forested bluff would partially obscure the visibility of some of the WTGs and limit their prominence in the background. Regardless, the WTGs would encroach on the skyline and disrupt the undeveloped appearance of the forested bluff. They would appear as relatively small, dark forms for most of the day, because of the backlit nature of south-facing views, thus minimizing the potential contrast between the evergreen ridgeline and light-colored WTGs. Nevertheless, the intactness of the view would be reduced from moderate to moderately low. The unity of the view would be reduced to moderate because of the introduction of a power generation element to an area that otherwise appears rural residential and agricultural in character.

WTGs visible from KOP 6 would be perpendicular to viewers traveling along SR 36, which passes through this area in a generally east/west direction, and from which views to the south are frequently obstructed by roadside vegetation or structures. Because rotor blades would be visible above the horizon, they would likely be the source of visible motion in the landscape after becoming operational. The motion from WTGs may draw viewers' attention, but such motion very likely would not appear within a completely static view. Furthermore, five to seven air traffic safety lights could be visible at night, depending on the project's final lighting plan.

Impacts on KOPs along U.S. 101 are discussed in Impact 3.2-3. The proposed project would not degrade any trees, rock outcroppings, and historic buildings along a scenic highway. Thus, this impact would be **less than significant**.

The expansion of the Bridgeville Substation would not be visible from State Route 36. The substation expansion would have **no impact** on visual resources.

IMPACT 3.2-3	New Source of Substantial Light or Glare that Would Adversely Affect Day or Nighttime Views in the Area. <i>The project would result in substantial increases in daytime or nighttime light and glare. This impact would be significant.</i>
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WTGs would be painted off-white with a matte finish, in accordance with FAA requirements, and no reflective surfaces are proposed. In accordance with FAA Advisory Circular AC 70/7460-1K, safety lighting would be required on WTGs 200 feet or taller, to reduce potential hazards to aircraft traveling to nearby airports. These regulations would require either a single incandescent or rapid-discharge flashing red light on the WTG on each end of a line, and on interior WTGs, so that no lighted WTG would be 0.5 mile or more from the nearest lighted WTG (FAA 2007).

The tallest WTG considered for the project would be more than 600 feet tall, thus requiring appropriate obstruction lighting. Lighting would be installed on the exterior of the nacelles, in compliance with FAA rules.

Recommendations for marking and lighting structures vary, depending on terrain, local weather patterns, geographic location, and in the case of wind farms, the cumulative number of towers and overall site layout. Because of its review process, the FAA may recommend installing tower markings or aviation safety lighting on all or only a portion of the WTG towers. Specific project requirements, based on WTG heights and site-specific aviation conditions, would be developed in conjunction with the FAA, and WTG lighting would be consistent with all FAA requirements.

Depending on the outcome of the FAA Part 77 notification procedure, tower lighting could be steady red, blinking red, or blinking white, per FAA guidelines. Lights likely would not be mounted on every WTG, but would be located on several strategically selected WTGs, to mark the extent of the WTGs adequately. A minimum number of lights would be used as required to minimize attractants for birds during night migrations. Table 3.2-3 shows an estimate of the number of air traffic safety lights that could be visible from each KOP, based on hubs visible in simulations. The exact number of FAA lights would depend on the final lighting plan from the FAA.

Table 3.2-3. Visual Quality Rating by Landscape Unit/Key Observation Point

Landscape Unit/ Key Observation Point	Number of Air Traffic Safety Lights Visible (based on representative locations)
Eel River Corridor	
KOP 1—Shively	4
KOP 2—Scotia 4th & B	4–9
KOP 3—Scotia Main Street	10–15
KOP 4—Rio Dell	10–15
KOP 5—Fortuna Riverwalk	17–35
State Route 36	
KOP 6—Hydesville	5–7
West Humboldt	
KOP 7—Mattole Road	12–20
Ferndale Plains	
KOP 8—State Route 211	30–48
Humboldt Bay Landscape Unit	
KOP 9—Table Bluff County Park	33–56
Note: KOP = key observation point The exact number of Federal Aviation Administration (FAA) lights would depend on the final lighting plan from the FAA. Source: Stantec 2018	

The FAA lighting associated with the project, which would appear higher than and separated from any existing source of light on the valley floor, likely would be a substantial source of contrast in nighttime views. The uniformity and elevated presence of the project's FAA lighting, and the blinking of the lights, would accentuate the contrast in nighttime views. WTG lights would be visible to residents, travelers, and others in the area. The intensity of safety lighting and the number of lights installed could create a source of light pollution that would cause viewers to redirect their attention from their immediate surroundings toward the project site. This impact would be **significant**.

No feasible mitigation measures exist to fully mitigate the largest source of light. Therefore, this impact would be **significant and unavoidable**.

The Bridgeville Substation expansion would comply with County lighting requirements to direct all lights downward to prevent illumination of the sky or adjacent properties. Therefore, this impact of substation expansion would be **less than significant**.

IMPACT 3.2-4	Shadow Flicker Effects. <i>The project would not result in substantial shadow flicker. This impact would be less than significant.</i>
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The County has not adopted a significance threshold for this impact and shadow flicker impacts are not regulated in applicable federal or state law. The following discussion is provided for the general information of the public and the County decision-makers.

“Shadow flicker” is the term used to refer to the alternating changes in light intensity that can occur at times when the rotating blades of WTGs cast moving shadows on the ground or on structures. Shadow flicker occurs only when the WTGs operate during sunny conditions and is most likely early and late in the day, when the sun is at a low angle in the sky.

The intensity of shadow flicker is defined as “the difference or variation in brightness at a given location in the presence or absence of a shadow” (NRC 2007). The intensity of the shadows cast by moving rotor blades of WTGs, and thus the perceived intensity of the flickering effect, is determined by the distance of the affected area from the WTG, with the most intense, distinct, and focused shadows occurring closest to the WTG. In addition, the following factors could affect the total amount of shadow flicker:

- ▶ Haze or particulate matter in the air could reduce the intensity of light and reduce distances at which shadows could be cast.
- ▶ Potential structures and vegetation between receptors and the WTGs would block shadows created by the rotating WTG blades, and thus would prevent shadow flicker from occurring at receptors. Receptors normally would have much less window than wall space on any given side.

The frequency of shadow flicker is a function of the number of blades making up the WTG rotor and rotor speed. Shadow flicker frequency is measured in terms of alternations per second, or hertz (Hz). Flicker normally is considered a nuisance above 2.5 Hz (Clarke 1991). Flicker frequency caused by a WTG is on the order of the rotor frequency (i.e., 0.6 to 1.0 Hz), which is harmless to humans. Only frequencies exceeding 10 Hz are likely to cause epileptic seizures (NRC 2007).

Because of the lack of strong evidence of health impacts regarding shadow flicker, this impact would be **less than significant**.

The Bridgeville Substation would not produce any shadow flicker. Therefore, **no impact** related to shadow flicker would result from expansion of the substation.

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