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5.11 VISUAL RESOURCES

Hydrogen Energy International LLC (HEI or Applicant) is jointly owned by BP Alternative Energy North America Inc. and Rio Tinto Hydrogen Energy LLC. HEI is proposing to build an Integrated Gasification Combined Cycle power generating facility called Hydrogen Energy California (HECA or Project) in Kern County, California. The Project will produce low-carbon baseload electricity by capturing carbon dioxide (CO₂) and transporting it for CO₂ enhanced oil recovery (EOR) and sequestration (storage)¹.

The 473-acre Project Site is located approximately 7 miles west of the outermost edge of the city of Bakersfield and 1.5 miles northwest of the unincorporated community of Tupman in western Kern County, California, as shown in Figure 2-1, Project Vicinity. HEI is also acquiring an additional 628 acres of land adjacent to the Project Site, herein referred to as “Controlled Area” (see Figure 2-4, Site Plan). HEI will own this property and have control over public access and future land use.

The Project Site is near a hydrocarbon-producing area known as the Elk Hills Field. The Project Site is currently used primarily for agricultural purposes. Existing surface elevations vary from about 282 feet to 291 feet above mean sea level.

The Project will gasify petroleum coke (petcoke) (or blends of petcoke and coal, as needed) to produce hydrogen to fuel a combustion turbine operating in combined cycle mode. The Gasification Block feeds a 390-gross-megawatt (MW) combined cycle plant. The net electrical generation output from the Project will provide California with approximately 250 MW of low-carbon baseload power to the grid. The Gasification Block will also capture approximately 90 percent of the carbon from the raw syngas at steady-state operation, which will be transported to the Elk Hills Field for CO₂ EOR and Sequestration. In addition, approximately 100 MW of natural gas generated peaking power will be available from the Project.

The Project Site and linear facilities comprise the affected study area and are entirely located in Kern County, California. These Project components are described below.

Major on-site Project components will include, as shown on Figure 2-5, Preliminary Plot Plan:

- Solids Handling, Gasification, and Gas Treatment
 - Feedstock delivery, handling and storage
 - Gasification
 - Sour shift/gas cooling
 - Mercury removal
 - Acid gas removal

¹ This carbon dioxide will be compressed and transported via pipeline to the custody transfer point at the adjacent Elk Hills Field, where it will be injected. The CO₂ EOR process involves the injection and reinjection of carbon dioxide to reduce the viscosity and enhance other properties of the trapped oil, thus allowing it to flow through the reservoir and improve extraction. During the process, the injected carbon dioxide becomes sequestered in a secure geologic formation. This process is referred to herein as CO₂ EOR and Sequestration.

- Power Generation
 - Combined-cycle power generation
 - Auxiliary combustion turbine generator
 - Electrical switching facilities
- Supporting Process Systems
 - Natural gas fuel systems
 - Air separation unit (ASU)
 - Sulfur recovery unit/Tail Gas Treating Unit
 - Zero liquid discharge (ZLD) units for process and plant waste water streams
 - Carbon dioxide compression
 - Raw water treatment plant
 - Other plant systems

The Project also includes the following offsite facilities, as shown on Figure 2-7, Project Location Map:

- **Electrical Transmission Line** – An electrical transmission line will interconnect the Project to Pacific Gas & Electric’s (PG&E) Midway Substation. Two alternative transmission line routes are proposed; each alternative is approximately 8 miles in length.
- **Natural Gas Supply** – A natural gas interconnection will be made with PG&E or SoCalGas natural gas pipelines, each of which are located southeast of the Project Site. The natural gas pipeline will be approximately 8 miles in length.
- **Water Supply Pipelines** – The Project will use brackish groundwater supplied from the Buena Vista Water Storage District (BVWSD) located to the northwest. The raw water supply pipeline will be approximately 15 miles in length. Potable water for drinking and sanitary use will be supplied by West Kern Water District to the southeast. The potable water supply pipeline will be approximately 7 miles in length.
- **Carbon Dioxide Pipeline** – The carbon dioxide pipeline will transfer the carbon dioxide captured during gasification from the Project Site southwest to the custody transfer point. Two alternative carbon dioxide pipeline routes are proposed; each alternative will be approximately 4 miles in length.

The Project components described above are shown on Figure 2-8, Project Location Details, which depicts the region, the vicinity, the Project Site and its immediate surroundings.

All temporary construction equipment laydown and parking, including construction parking, offices, and construction laydown areas, will be located on the Project Site.

The disturbed acreage associated with the Project is summarized in Table 5.1-1, Project Disturbed Acreage.

**Table 5.11-1
Project Disturbed Acreage**

Project Component	Size	Approx. Linear Length (miles)	ROW Construction	ROW Permanent	Temporary Disturbance (acres)	Permanent Disturbance (acres)
Project Site	473 acres	NA	NA	NA	473	250
Electrical transmission line	25-foot-diameter structural base (60 structures total)	8	175 feet ¹	150 feet	24	0.67 ²
Natural gas pipeline	16-inch diameter	8	50 feet	25 feet	50 ³	0.33 ⁴
Process water pipeline	20-inch diameter	15	50 feet	25 feet	93 ⁵	0.29 ⁶
Potable water pipeline	6-inch diameter	7	Accounted for in Natural Gas Line ROW			
CO ₂ pipeline	12-inch diameter	4	50 feet	25 feet	25 ³	0.11 ⁷
Temporary Construction Areas	Accounted for in Project Site	NA	NA	NA	Accounted for in Project Site	None
Total Project Disturbance					665	251.4

Source: HECA Project

Notes:

~ = approximately
CO₂ = carbon dioxide
NA = not applicable
ROW = right of way

1. This is a maximum width required in areas where structures will be installed. However, total temporary disturbance along the entire route is calculated based on the following: (1) a 150-foot by 150-foot area is required for each of the 60 structures, equaling 31 acres; and (2) 25-foot temporary roadway is required along the entire 8-mile line, equaling 24 acres.
2. Consists of permanent ground disturbance associated with the base of the 60 new structures.
3. Acreage includes the area required for the entry/exist pits.
4. Acreage includes permanent disturbance occupied by the gas metering station located within the Controlled Area southeast of the Project Site.
5. Acreage includes the 100-foot by 150-foot temporarily disturbed area required for the construction of each of five groundwater wells.
6. Acreage includes the 50-foot by 50-foot permanent disturbed area required for each of five groundwater wells.
7. Acreage includes two 50-foot by 50-foot valve boxes positioned along the pipeline route.

This section discusses the potential for the construction, operation, and maintenance of the Project to cause significant impacts to aesthetic values within the Project vicinity. The section addresses the inventory of existing visual resources of the affected environment; the assessment of the environmental consequences of the Project on visual resources; and the laws, ordinances, regulations, and standards (LORS) pertaining to the aesthetic effects of the Project.

This visual resource analysis was conducted in conformance with California Energy Commission (CEC) guidelines for the inventory and assessment of visual impacts for an Application for Certification (AFC). The CEC guidelines, in turn, comply with the California Environmental Quality Act of 1970 (CEQA) documentation requirements (summarized in Section 5.11.2, Environmental Consequences). The study methods used (described in more detail in the inventory and impact assessment sections below) were based upon those established by the Bureau of Land Management (BLM) Visual Resource Management Inventory and Contrast Rating System (BLM 1986), the Federal Highway Administration (FHWA) Visual Impact Assessment (FHWA 1981), U.S. Forest Service (USFS) Visual Management System (USFS 1974, 1995), and previous methodologies used in other CEC studies and other energy-related projects. Additionally, the methodology has been tailored to meet the specific issues and regulatory requirements associated with the Project.

5.11.1 Affected Environment

This section contains an inventory of visual resources within the vicinity of the Project, a description of the regional landscape setting, the visual sphere of influence (VSOI) of the Project, and the inventory methods and results.

5.11.1.1 *Regional Landscape Setting*

The county has a large agricultural and industrial base. This region contains a number of large industrial operations, many with visible vapor plumes. Key agricultural commodities include grapes, almonds, milk, citrus, cotton, carrots, pistachios, hay, potatoes, and cattle. The county is also a significant producer of oil, natural gas, hydro-electric power, wind-turbine, and geothermal power and is host to numerous overhead electrical transmission lines. Kern remains California's top oil-producing county, with over 85 percent of the State's 43,000 oil wells. The county accounts for one-tenth of overall U.S. oil production, and three of the five largest U.S. oil fields are in Kern County.

The Project Site is currently used for farming purposes, with the exception of the northwest corner of the site which is used for organic fertilizer production. Land within the Controlled Area to the northwest of the Project Site is currently used for grain storage and additional organic fertilizer production. The organic fertilizer production facility adds an industrial nature to the vicinity of the Project Site with large grain elevators and metal storage tanks adjacent to the Project Site. Other small structures used for agricultural purposes are also located northwest of the Project Site.

The Project Site is bounded by Adohr Road on the north, Tupman Road to the east, an irrigation canal to the south, and the Dairy Road right-of-way to the west. Primary access to the site, including truck access, is from Adohr Road. Stockdale Highway and Interstate 5 (I-5) are located approximately 1 mile to the north and 3 miles to the east, respectively.

Land within 1 mile of the Project Site is primarily used for farming purposes, particularly the cultivation of cotton, alfalfa and onions. The western border of the Tule Elk State Natural Reserve is located approximately 1,700 feet to the east of the Project Site. The nearest single-family dwellings are located approximately 370 feet to the north; 1,400 feet to the east;

3,300 feet to the southeast of the Project Site; and 4,000 feet to the north. The Elk Hill Oil Field Unit is located 1 mile south of the Project Site.

The 473-acre Project Site is located approximately 1 mile south of Stockdale Highway, and 2 miles southwest of I-5 (see Figures 5.11-1, Sensitive Visual Resources Visual Sphere of Influence (VSOI) Map, and Figure 5.11-2, Aerial of Immediate Project Vicinity). The Project Site is included in the Exclusive Agriculture (A) zone. Electrical Power Generating Plants are permitted in this zoning district with a conditional use permit.

Both alternatives for the transmission line route (see Figure 5.11-2, Aerial of Immediate Project Vicinity) begin at the western edge of the Project Site; proceed north along the Dairy Road right-of-way; cross Adohr Road; and proceed west along Adohr Road. Alternative 2 turns north at Dunford Road and crosses various roads including Stockdale Highway and Buerkle Road. North of Buerkle Road, Alternative 2 heads northwest crossing State Route 58 (SR 58) and connects to the existing PG&E Midway Substation in the unincorporated community of Buttonwillow. The transmission line route identified as Alternative 1 moves westward along Adohr Road, turns north on Freeborn Road and crosses Stockdale Highway and Buerkle Road. Alternative 1 then heads northwest crossing SR 58 and connects to the existing PG&E Midway Substation.

The Project Site lies within the southwestern portion of San Joaquin Valley, which stretches from the Sacramento-San Joaquin Delta in the north to the Tehachapi Mountains to the south. Various California coastal ranges line the valley to the west (including the Diablo and Santa Ynez) and the Sierra Nevada act as the eastern valley boundary. The climate is dry with hot summers and mild winters, and there is a persistent haze, generally characteristic of the air quality in the area that impairs the clarity of distant views. The general area is characterized as relatively flat with extensive current and previous soil disturbance associated with farming activities and ongoing oil field operations. The closest notable topography is Hillcrest Point over 5 miles away to the southwest of the Project Site. The Project Site itself is generally flat, allowing for open, panoramic, and expansive views of the valley to the north, northwest and east. The Project Site also has middleground/distant views of the hills that make up the Elk Hills Oil Fields to the west and southwest (south of Hillcrest Point).

Existing night lighting in the area is scattered and generally limited to residences. The few major sources of night lighting in the region include oil extraction operations in the Elk Hills which is visible and noticeable from the Project Site and surrounding area. Adjacent to the Project Site, an existing fertilizer facility produces noticeable amounts of night lighting which both scatters and provides glare beyond the immediate facility. Overall, the region is primarily dark with numerous light sources that while visible, do not tend to light the night sky significantly.

The California Aqueduct (California State Water Project) runs in a northwest to southeast orientation approximately 1,900 feet south of the Project Site and is the dominant water feature in the Project area. Other water features in the region include the West Side and Outlet Canals approximately 500 feet south of the Project Site, the Kern River Flood Control Channel approximately 700 feet south of the Project Site, the East Side Canal approximately 1,300 feet to the east, and the Buena Vista Aquatic Recreation Area/Lake Webb located approximately 9 miles to the southeast.

As noted above, the Tule Elk State Natural Reserve, an approximately 955-acre reserve area, is located approximately 1,700 feet east of the Project Site (closest point to the Project Site). Management of the Tule Elk State Natural Reserve is under the jurisdiction of the California Department of Parks and Recreation. The Tule Elk State Natural Reserve is a refuge to the Tule Elk, a rare species of elk that was once nearly hunted to the point of extinction. The reserve contains the Tule Elk Reserve State Park that includes a visitor center, a small park with shaded picnic tables, and a viewing platform/observation deck). The observation deck, approximately 3,900 feet from the project area boundary, allows visitors to look over the reserve area as well as to observe the Tule Elk in their habitat.

There are no existing recreational trails of local importance, nor are there plans for future trail routes or bike paths identified within the VSOI. The two closest areas considered recreational are the Elk Hills Elementary School playground, located approximately 2.3 miles southeast of the Project Site, within the unincorporated community of Tupman, and the Tule Elk State Natural Reserve, located approximately 1,700 feet to the east.

In general, the Project area is comprised primarily of agricultural lands/farming activities, with scattered residences as well as oil field extraction, grain storage, and fertilizer production activities/industrial facilities. In addition, several semi-urban/urban areas surround the Project region, from 2 to 15 miles away from the Project Site. Those nearest include: the communities of Tupman, McKittrick, Buttonwillow, and the city of Taft. Other than a few locations on the outskirts of Tupman, none of these areas have direct views to the Project Site. The nearest large incorporated city in the area is Bakersfield, which lies approximately 6.6 miles east of the Project area and contains the largest population in the nearby region, an estimated 323,213 people in 2007 (CDOF 2009).

As stated, the Project includes interconnection to the PG&E Midway Substation. The substation is located within the unincorporated community of Buttonwillow and is a dominant structure located on the east side of the community. There are a few residential neighborhoods located to the west of the substation, including a small park and various commercial establishments. East of the substation is largely vacant with industrial land uses (such as a railroad and industrial warehouses). Also, a number of existing large transmission towers/lines extend from the south and north to connect to the existing substation. Buttonwillow is included within one census tract, and contains approximately 1,266 residents.

5.11.1.2 *Visual Sphere of Influence*

The VSOI for the Project (Figure 5.11-1, VSOI Map) represents the area within which the Project could be seen and potentially result in significant impacts to visual resources. The furthest distance at which potentially significant visual impacts could occur was determined to be 5 miles. This distance was based primarily on the Project description regarding the potential visibility of major Project components (e.g., carbon dioxide vent, cooling towers, feedstock conveyors and storage silos, combustion turbine electric-generator units/heat recovery steam generators [HRSG], flare, transmission towers, and other ancillary equipment for the Project) from sensitive viewing areas (see Figure 2-4, Plot Plan, for a general layout of the Project components). Other Project components including an interconnection at the Midway Substation and the transmission line were also considered in the development of the VSOI.

The Project was reviewed for sensitive resources within the following view ranges:

Foreground – 0 to 0.5 mile from the observer’s position. At this distance, the observer can view details of trees, shrubs, wildflowers, and animals.

Middleground – 0.5 to 5 miles from the observer’s position. At this distance, the observer can see forest stands, natural openings, masses of shrubs, and rock outcrops.

Background – 5 miles to horizon from the observer’s position. At this distance, the observer can view mountain peaks, ridgelines, and patterns of forest stands and openings.

Based on a 5-mile distance limit, the VSOI boundary was refined to account for local viewing conditions, primarily topographic and vegetative screening. Computer viewshed analyses were conducted (using 30-meter-grid cell resolution, generated from 1:24,000 Digital Elevation Model [DEM] data from the United States Geological Survey [USGS]) to map the boundaries of the VSOI within the 5-mile limit. USGS DEM files were imported into an ArcView 9.3-based geographical information system (GIS) using the spatial analysis extension. Once in GIS, the DEMs were mosaicked. The combined DEM was used to run viewshed analyses in Universal Transverse Mercator, Zone 11, Units Meters, North American Datum 83 (UTM 83).

The Project’s tallest structure, the carbon dioxide vent, at a height of 260 feet, as well as the 110-foot-tall transmission pole heights for both transmission line route alternatives (Alternative 1 and Alternative 2), and a vertical observer offset of 6 feet, were input into the viewshed model. The results represent a “typical” viewshed for the Project area. Overall, the Project Site is clearly visible from the west, north, and east with sporadic visibility from areas located to the south and southeast (within the identified 5-mile radius). The hills comprising the Elk Hills Oil Fields block most of the views from the south/southwest to the Project Site. Beyond the mapped VSOI, the Project Site will either not be visible due to topography/screening, or lack sufficient scale in the background field of view that significant visual impacts will not be expected.

The VSOI also takes into account the visibility of the existing development (large transmission lines, storage tanks, grain elevators, and existing buildings), as well as the visibility of the Project facilities (carbon dioxide vents, earthen berms, and cooling towers). Other variables affecting potential visibility of a project include orientation of the viewer, duration of view, atmospheric conditions, lighting (daylight versus nighttime), and visual absorption capability (VAC). VAC is defined as the extent to which the complexity of the landscape can absorb new elements without changing the overall visual character of the area.

The VSOI is mapped to identify the maximum potential area for significant impacts of a project in views from visually sensitive areas. Within the VSOI, varying levels of Project visibility have been identified. The highest level of Project visibility exists when the viewer is immediately adjacent to the Project, is a permanent stationary viewer, and there is no screening. Conversely, the lowest level of visibility exists, for example, when the viewer is located at greater distances from a project, and the viewer is traveling at a high rate of speed and in partial to fully screened conditions.

Sensitive viewing areas were identified after discussions with the CEC’s visual resources technical lead for the project and inventoried within the 5-mile radius of the Project Site. The

identification of sensitive viewing areas within the VSOI was conducted through review of existing land use data, agency contacts, and during field surveys. The results of the viewshed analysis and the field photo survey indicated that most sensitive viewing areas within the VSOI were from those areas with middleground/background views to the Project. The following is a representative list of sensitive viewing areas that were considered during the inventory:

- Schools; parks; recreation areas; wildlife areas; visitors centers; or areas used for camping, picnicking, bicycling, or other recreational activities (e.g., Elk Hills Elementary School playground and Tule Elk State Natural Reserve).
- Residential areas (e.g., the residences located closest to the Project Site and residences located closest to the substation interconnection or transmission line routes). It is estimated that fewer than 20 residences within 5 miles of the Project Site have direct views.
- Travel routes such as major roads or highways used primarily by origin/destination travelers (e.g., local residents, workers, and commuter travelers along Tupman Road, Brite Road, I-5, Adohr Road, and Stockdale Highway).

During field surveys conducted within the Project vicinity, it was determined that the picnic area within the Tule Elk State Natural Reserve, located approximately 1,700 feet east of the Project Site, is the closest recreational view to the Project Site (see Figure 5.11-3, Scenic Attractiveness Evaluation Form for Landscape Character Photo – [Figure 1 of 6]). However, views from the reserve toward the Project Site are generally partially to totally screened by vegetation in some areas. Additionally, residential and travel-way viewers at or near this location are located between the reserve and the Project Site and demonstrate more sensitive unobscured views and thus, in consultation with CEC staff, the reserve has not been selected as a Key Observation Point (KOP) for this study. The Elk Hills Elementary School playground, located approximately 2.3 miles southeast of the Project Site, is the next closest recreational view to the Project Site (Figure 5.11-19, KOP 3: View from Elk Hills Elementary School Existing Conditions). The Elk Hills Elementary School playground will have direct/unobstructed views to the Project.

Field surveys revealed that the nearest residential viewer is located approximately 375 feet north of the Project Site's northwest boundary, along the Dairy Road right-of-way. Other residential viewers are located approximately 1,400 feet to the east of the Project Site on Station Road. The closest residential viewer will have direct foreground views of the Project that may be slightly screened by the earthen berms proposed along the north and east portions of the Project Site. The residence on Station Road will also have immediate foreground views of the Project (Figure 5.11-15, KOP 1: View from Station Road Existing Conditions). Other residences are generally located to the north of the site or to the southeast in the unincorporated community of Tupman and would all represent middleground or greater views.

Travelers along the intersection of Stockdale Highway and I-5, located approximately 2 miles northeast of the site (at the closest point), have both indirect and direct views of the Project Site (Figure 5.11-21, KOP 4: View from Stockdale Highway and I-15 Existing Conditions). Topography and cultural modifications often create screened and sporadic views of the Project Site. However, for areas where the topography gives a more direct view to the Project Site (e.g., near the intersection of Stockdale Highway and I-5), travelers will have a clear, albeit distant,

view of the larger on-site structures (carbon dioxide vent and other highly visible features of the Project) which can be somewhat co-dominant with existing man-made modifications/structures in the surrounding area. Traffic flow/road counts along I-5 indicate that approximately 32,500 travelers/average daily trips (ADT) use the freeway near the Stockdale Highway/I-5 interchange.

Travelers along the eastbound lane of Brite Road, located approximately 0.3 mile west of the transmission line Alternative 1 and 1.25 miles west of the transmission line Alternative 2, have direct views of the transmission line alternatives crossing their view (Figure 5.11-25, KOP 6: View from Brite Road Existing Conditions). Topography and cultural modifications create few obstructions in an open panoramic view of the transmission alternatives, which would only be screened by a house with a cluster of large trees in the foreground and various power/telephone lines (Figure 5.11-14, Scenic Attractiveness Evaluation Form for KOP 6).

During surveys for the interconnection at the PG&E Midway Substation, it was noted that a single-family residential area is located adjacent to the existing substation. The nearest resident to the interconnection is located approximately 2,600 feet west of the substation across from a small park (Buttonwillow Park). This residence has partially obstructed foreground views (due to full grown trees within the park and the numerous industrial structures associated with the substation) to the existing substation; therefore, the residence was not included as a representative KOP. The nearest recreational viewer was identified at the baseball bleachers in Buttonwillow Park approximately 2,100 feet from the interconnection and is representative of the most impacted recreational view of the interconnection (see Figure 5.11-6, Scenic Attractiveness Evaluation Form for Landscape Character Photo No. 4).

Levels of potential impact on sensitive viewing areas were established through an analysis of the following two primary components:

- Impact susceptibility – The degree to which a sensitive viewpoint would be impacted by changes within its viewshed
- Impact severity – The degree of change to the landscape created within a specific viewshed

Character photos of the areas surrounding the Project Site (Figures 5.11-3 through 5.11-8, Character Photos of the Project Area) show neighboring land uses to help the reader visualize the immediate Project vicinity, as well as sensitive viewing areas and sensitive visual resources within the surrounding Project area. Some of these character photos do not have views to the Project; however, they have been included to help identify potentially sensitive visual resources within the region. These photos also help the reader understand the general visual character of the surrounding area and the land uses within the region.

5.11.1.3 Visual Study Inventory Components

The following sections detail the visual study inventory components used in the assessment of potential impacts. Three primary components that were inventoried include (1) an evaluation of scenic attractiveness, (2) consideration of Existing Scenic Integrity Levels (ESILs), and (3) the identification of sensitive viewing areas.

Scenic Attractiveness

When evaluating scenic attractiveness, both natural and man-made components within the VSOI were considered as they either add to or detract from the overall landscape character within a specific setting. Scenic attractiveness levels are established by evaluating the distinctiveness and diversity of a particular landscape setting in relation to the following elements:

- Landform
- Vegetation
- Water
- Color
- Effects of adjacent scenery
- Scarcity of the landscape
- Cultural modifications

The inventory and evaluation of the above elements assist with the characterization of scenic attractiveness within the VSOI. In general, landscapes are characterized by three levels: A through C.

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

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

Class C – Areas have minimal diversity or interest where representative natural features have limited variation in form, line, color, or texture in the context of the surrounding region.

The VSOI for the Project area was characterized at the Class C level for scenic attractiveness. No landscapes were considered to have distinctive characteristics as defined for Class A levels. Most landscapes within the VSOI were identified as Class C or as landscapes lacking significant natural amenities and being heavily modified from their natural state for agricultural production.

Scenic Attractiveness Classification Evaluation Forms (Figures 5.11-9 through 5.11-14, Scenic Attractiveness Evaluation Form for Sensitive View Area and KOP 1 through KOP 6) were developed for key view areas within the VSOI. The values underlined in the scenic attractiveness rating box on the forms illustrate the assigned values (H – high, M – moderate, L – low) for each natural feature (e.g., landform, vegetation, water, etc.) or negative/positive cultural modification. The combined value of these elements is used to determine in which class the landscape should be characterized. The Visual Resource Management (VRM) system is designed to separate the existing landscape and the project into their features and elements and to compare each part to the other to identify parts that are incompatible (BLM 1986). The outcome of this process is VRM classes, and the following is a summary of the VRM classes:

Class I – Objective: preserve the existing character of the landscape. Changes to the landscape character should not be evident.

Class II – Objective: retain the existing character of the landscape. Changes to the landscape character may attract slight attention but should be subordinate to the visual setting.

Class III – Objective: partially retain the existing character of the landscape. Changes to the landscape character may begin to attract attention but should not dominate the visual setting.

Class IV – Objective: allow for activities that modify the existing character of the landscape. Changes to the landscape character may attract attention and dominate the visual setting. However, these activities should minimize changes to the landscape where possible.

Existing Scenic Integrity Levels

The ESILs of a specific landscape setting can be defined as the extent to which natural features have been modified by human actions to the point of degrading the natural setting. An inventory of the ESILs within the VSOI was conducted and varying cultural modifications were documented. Varying cultural modifications included, but were not limited to, the unincorporated community of Tupman, cultivated farmlands, existing power/telephone transmission lines, oil field activities and associated structure (storage tanks, etc.), abandoned structures, miscellaneous industrial storage tanks, property fencing, and Tupman and Adohr Roads and other roadways. The following ESIL criteria were used to evaluate degrees of modifications:

- **High** – Landscape character appears intact. Deviations are present but repeat form, line, color, texture, and patterns common to the landscape character so completely and at such a scale that they are not evident.
- **Moderate** – Landscape character appears slightly altered. Noticeable deviations remain visually subordinate to the landscape character being viewed.
- **Low** – Landscape character appears heavily altered. Deviations strongly dominate the landscape character. Deviations do not borrow from attributes such as size, shape, edge effects, vegetative type changes, or architectural styles within or outside the landscape being viewed.

Most areas within the VSOI were classified as retaining low existing scenic integrity.

Viewer Sensitivity and Sensitive Viewing Areas

Viewer Sensitivity

While conducting this study, no attempt was made to model for varying levels of viewer concern of change within their landscape. Because of the difficulty in inventorying for every individual's sensitivity level, it was determined that all viewers may have a high level of concern related to

changes occurring in landscapes within the VSOI. Generally, a viewer's concern level is associated with, but not limited to, the following factors:

- Viewing location, orientation of view, and duration of view
- Activity in which the viewer may be engaged (e.g., water-related recreation activities, bird/elk-watching, hiking)
- Visual acuity related to the intensity of visual detail within a landscape setting
- State of mind or attitude
- Preconceived expectations related to scenic quality
- Inherent values related to scenic quality and familiarity within specific landscape settings

Sensitive Viewing Areas

After discussions with the CEC's visual resources technical lead for the Project, and a review of surrounding land uses, it was determined that sensitive viewing areas within the VSOI consisted primarily of recreational users at the Elk Hills Elementary School playground, located approximately 2.3 miles southeast of the Project Site in the unincorporated community of Tupman; the closest residence to the Project, located approximately 375 feet north of the northwest Project Site boundary as well as a second residence located approximately 1,400 feet east of the Project Site on Station Road; travelers along I-5 at the intersection of Stockdale Highway and I-5 and along Stockdale Highway; travelers along Brite Road eastbound; and the closest recreational viewer to the transmission line interconnection at the existing PG&E Midway Substation in the unincorporated community of Buttonwillow.

The Elk Hills Elementary School playground is the closest recreational view to the Project Site. Due to the elevated position of the school and its playground; users within the school playground will have direct middleground views to the Project Site.

Due to topography of the area, the nearest residence to the west and east would both have a foreground-direct, unobstructed view to the Project Site.

Stockdale Highway and Brite Road are not considered Designated Scenic Highways by federal (FHWA), state (California Department of Transportation [Caltrans]), or local standards. No travel routes within the VSOI are designated as federal, state, or county scenic highways or travel routes subject to aesthetic management goals or objectives. Although the current Kern County General Plan does not indicate any of the roadways and highways within this Project's vicinity as designated scenic routes, the Tupman Rural Community Specific Plan (dated October, 1984) and the Buttonwillow Community Development Plan (dated April, 1974) do indicate a proposed County Scenic Route 11 within the Project vicinity. However, Kern County's Planning department was contacted to verify whether there were any designated scenic routes within the Project vicinity. According to Shawn Beyeler (a planner at Kern County), Kern County currently has a list of 20 proposed scenic routes; however none of them have been officially designated as scenic routes by Kern County or are located within the Project area.

The nearest viewer to the interconnection at the PG&E Midway Substation is the recreational viewer located approximately 1,300 feet southwest of the substation at the baseball field in Buttonwillow Park. This recreational viewer has a foreground unobstructed view to the existing

substation and is representative of the most impacted recreational view of the interconnection (Figure 5.11-6, Scenic Attractiveness Evaluation Form for Landscape Character Photo No. 4 [Transmission Route Option 1]).

5.11.1.4 Inventory Results

Scenic Attractiveness

The VSOI is composed of Class C landscapes, or as an area with minimal diversity or interest where representative natural features have limited variation in form, line, color, or texture in the context of the surrounding region, (Figures 5.11-9 through 5.11-14, Scenic Attractiveness Evaluation Form for Sensitive View Area and KOP 1 through KOP 6). This is because of the degree of human modifications present within the VSOI and the absence of distinctive natural amenities (e.g., diverse and distinctive natural elements). Flora colors of the landscape sometimes vary depending on the specific crops being grown in the vicinity. Within the VSOI, views of mountainous areas add variety within the background-viewing threshold. Additionally, because of the limited elevations in topography, this allows for large expansive views of the valley. However, a persistent haze, generally characteristic of the air quality in the area, impairs the clarity of distant views.

Existing Scenic Integrity Levels

Most landscapes inventoried within the VSOI can be classified as retaining primarily low ESILs because of the presence of man-made development including: farming activities and facilities, oil field activities and associated structures, telephone/transmission line systems, other industrial facilities, storage tanks, the large PG&E Midway Substation, residential developments, and fencing and roadways in a 5-mile radius surrounding the Project Site and interconnection. Areas adjacent to the Project Site were also identified as having low ESILs because of the existing oil field activities, industrial storage tank and abandoned structures to the south of the site, existing fencing, telephone/transmission lines along Tupman Road, and large agricultural activities that characterize the area.

Sensitive Viewing Areas and Key Observation Points

KOPs are viewing locations chosen to be representative of the most visually sensitive areas that will view the Project. The inventory of KOPs included three components: (1) identification and photo-documentation of viewing areas and potential KOPs; (2) classification of visual sensitivity of KOPs; and (3) description of Project Site visibility from KOPs. KOPs were identified based on review of available land use data, field inspection, and discussion with CEC's visual resources technical lead for the evaluation of visual resources.

Viewer sensitivity is a measure of the degree of concern for change in the visual character of a landscape. Viewer sensitivity considers type of use, user attitude, volume of use, adjacent land use, visual quality, and special classifications. Three levels of viewer sensitivity (high, moderate, and low) were used to describe the sensitivity of viewers within the study area. High-sensitivity viewpoints identified in the study area include existing residences and recreation areas. Moderate-sensitivity viewers identified in the study area consist of existing area

roadways. Low-sensitivity viewers include industrial areas and are not evaluated in detail for this study because these are considered to be a compatible use with the facility, and therefore will not result in significant visual impacts.

Visibility determines how the Project will be seen from a particular viewing area or KOP. The inventory of Project visibility documented the distance from the viewpoint to the Project. Perception of details (e.g., form, line, color, and texture) diminishes with increasing distance. The distance zones were: foreground (0 to 0.5 mile), middleground (0.5 to 5 miles), and background (beyond 5 miles). In addition, the inventory evaluated if views were open, partially screened (filtered), or screened (e.g., presence of hillside terrain, vegetation, and/or buildings).

Six sensitive viewing areas were identified as representative of viewers who will be most susceptible to visual impact within their viewshed as a result of the Project. A brief characterization of these areas follows.

Sensitive Viewing Area and Key Observation Point No. 1

This image was taken from Station Road and represents both travelers heading west and adjacent residences on the south side of the road that represent the closest residences identified by the CEC staff on the east of the Project Site (Figure 5.11-15 KOP 1: View from Station Road Existing Conditions and Figure 5.11-1 VSOI Map). This KOP is located approximately 2,600 feet east of the Project Site. A residence approximately 375 feet north of the Project Site, along the Dairy Road right-of-way, would actually be the closest. There are other residential areas within the 5-mile radius (southeast in the unincorporated community of Tupman and scattered farmhouses to the east, north, and west) with views to the Project area. However, these residences are either partially screened from view by topography, existing mature vegetation, and existing structures, or view the project from a distance which minimizes impacts. The residence at this KOP has the most unobstructed view to the Project Site, and therefore was chosen as a representative KOP. This view is also consistent with longer viewing durations (i.e., from residential views).

Topographic relief across the setting consists of generally flat terrain in the foreground, middle ground, and hilly terrain in the distant background. There are no water sources within view from this KOP. The California Aqueduct is located in the background, however, as it is below surface grade, is not visible from this residence. A variety of cultural modifications (including cultivated farmlands, existing power/telephone transmission lines, oil field activities and associated structures, abandoned structures, miscellaneous industrial storage tanks, a fertilizer plant and associated structures, property fencing, and Station and Tupman Roads) are visible in middleground and distant range views. The hills of the Elk Hills Oil Field Unit are barely visible in the distant background and blend in with the mountainous terrain, providing a distant visual backdrop. What little color variation exists is created mainly from cultivated farmlands. The main visual interest and/or draw to this area is essentially created by the open expanses of land, geometric forms, and edges created by the cultivated cropland. While this landscape is mildly interesting within its setting, it is fairly common within the region. The ESIL from this area can be characterized as low.

Sensitive Viewing Area and Key Observation Point No. 2

This image was taken from the Stockdale Highway eastbound lane (see Figure 5.11-17, KOP 2: View from Stockdale Highway Existing Conditions and Figure 5.11-1, VSOI Map, for KOP location) located approximately 1 mile north-northwest of the Project Site. As stated, the Stockdale Highway is not considered a Scenic Highway by federal (FHWA), state (Caltrans), or local standards. However, Stockdale Highway represents a major east-west connection in the area south of Buttonwillow and north of Tupman with connection to the I-5 corridor. Additionally, two south-facing residences are located on the north side of the road in this location and are representative of middleground residential viewers north of the Project Site.

A variety of cultural modifications (including existing power/telephone lines, miscellaneous industrial storage tanks, a fertilizer production plant, other roadways) limit visual appeal to form and line characteristics of the area. All significant contrasts to form and line are created from cultural modifications. Vegetation and color within the area is sparse (tan grayish landscape with geometric cultivated fields of monotonous green). No water sources are visible within this area. This view is consistent with sporadic short viewing durations (i.e., from traveler views focusing on the road) and is considered to have a low degree of severity. The ESIL from this area can be characterized as low.

Sensitive Viewing Area and Key Observation Point No. 3

This image was taken from the nearest recreational facility with an open view toward the project area – the Elk Hills Elementary School playground (see Figure 5.11-19, View from Elk Hills Elementary School Existing Conditions, and Figure 5.11-1, VSOI Map, for KOP location), located approximately 2 miles southeast of the Project Site. This location represents the “worst-case” recreational view of the Project Site. The Elk Hills Elementary School playground was selected due to its superior topographic location and corresponding view of the Project Site.

Topographic relief across the setting consists of a broad, horizontal composition varying from relatively flat terrain to rolling hills in the foreground, adding to the panoramic visual appeal of the form and line characteristics of the area. The only water source within view from this KOP is the California State Water Project, which runs in a northwest to southeast orientation south of the Project Site, and is the dominant feature visible in the foreground of this view. A variety of cultural modifications (including California State Water Project, existing power/telephone transmission lines, miscellaneous industrial storage tanks, property fencing, Tupman Road) are visible in middleground and distant range views. The immediate area is characterized by little color variations (mainly from patches of sparse low-lying vegetation), and low contrast of generally mute tones. However, in the middleground to the north and northwest, cultivated farmlands add some monochromatic color to the middleground and background landscape. This landscape is mildly interesting within its setting, but fairly common within the region. The ESIL from this area can be characterized as low.

Sensitive Viewing Area and Key Observation Point No. 4

This image was taken from the westbound lane of Stockdale Highway near the I-5 interchange (see Figure 5.11-21, KOP 4: View from Stockdale Highway and I-15 Existing Conditions and

Figure 5.11-1, VSOI Map for KOP location), representing the public view of the Project area, approximately 2 miles northeast of the Project Site. This KOP was chosen as a representative KOP due to its close proximity to the I-5 interchange and directional signage to the Tule Elk Reserve, which results in the assumption that this KOP can be considered a gateway view toward the proposed Project area. This view is a short-duration view, considering travel at speeds in excess of 45 miles per hour. The relatively flat topography of the foreground and middleground gives way to more dramatic terrain in the background in this area, and allows for very open, panoramic views of the adjacent area. Topographic relief across the setting consists of a broad, horizontal composition varying from relatively flat terrain across the view with rolling terrain in the background, adding somewhat to the panoramic visual appeal of the form and line characteristics of the area.

A variety of cultural modifications (including industrial storage structures and numerous telephone/transmission lines) are visible in foreground, middleground, and background views. The area is characterized by little color variation with mostly natural sparse vegetation, and has low to moderate contrast of generally flat tones. Views from this KOP consist of large expanses of uncultivated, sparsely vegetated property with the most prominent visible features being the numerous highly contrasting steel lattice transmission structures which cross the middleground of the view and create a skylining effect. This landscape is mildly interesting within its setting, but fairly common within the region, and the scenic attractiveness of the view has been highly compromised by visible man-made alterations. The ESIL from this area can be characterized as low.

Sensitive Viewing Area and Key Observation Point No. 5

This image was taken from the southbound lane of I-5 representing public view of the project area, approximately 3 miles east of the Project Site (Figure 5.11-23 KOP 5: View from Southbound I-15 Existing Conditions and Figure 5.11-1, VSOI Map for KOP location). This KOP was chosen as a representative KOP due to the high use of I-5 as a major roadway through the area. This view is a short duration view because of travel at speeds in excess of 65 miles per hour. The relatively flat topography of the foreground and middleground gives way to more dramatic terrain in the background of this area and allows for very open, panoramic views of the adjacent area. Topographic relief across the setting consists of a broad horizontal composition varying from relatively flat terrain across the view with rolling terrain in the distant background, adding somewhat to the visual appeal to form and line characteristics of the area. The background terrain is silhouetted by atmospheric conditions and the relative haze in the area.

A variety of cultural modifications (including industrial storage structures, fencing, and numerous telephone/transmission lines) are visible in foreground and middleground views. The area is characterized by little color variation with mostly natural sparse and striated vegetation, and has a low to moderate contrast of generally flat tones. Views from this KOP consist of large expanses of uncultivated, sparsely vegetated property with the most prominent visible features being the numerous highly contrasting steel lattice transmission structures which cross the middleground of the view and create a skylining effect. This landscape is mildly interesting within its setting, but fairly common within the region, and the scenic attractiveness of the view has been highly compromised by visible man-made alterations. The ESIL from this area can be characterized as low.

Sensitive Viewing Area and Key Observation Point No. 6

This image was taken from the eastbound lane of Brite Road representing a residential and public view of the transmission line Alternative 1, approximately 0.3 mile west of the line crossing the middleground and approximately 1.25 miles west of the transmission line crossing of Alternative 2 which is also a middleground view (Figure 5.11-25 KOP 6: View from Eastbound Brite Road Existing Conditions and Figure 5.11-1, VSOI Map for KOP location). This KOP was chosen as a representative KOP due to the adjacent residential viewers and the usage of Brite Road through the area by local travelers, who are primarily residents. This view is a short duration view because of travel at speeds up to 40 miles per hour. The relatively flat topography of the foreground and middleground gives way to more dramatic terrain in the background in this area and allows for very open, panoramic views of the adjacent area. Topographic relief across the setting consists of a broad horizontal composition varying from relatively flat terrain across the view with rolling terrain in the distant background (Elk Hills area), adding somewhat to the visual appeal to form and line characteristics of the area; however, the background terrain is only visible to the southeast and south of the KOP. Direct views down Brite Road are relatively flat in regards to terrain.

A variety of cultural modifications (including industrial storage structures, houses, fencing, and telephone/transmission lines) are visible in foreground and middleground views. The area is characterized by little color variation with mostly natural sparse and striated vegetation, and has a low to moderate contrast of generally flat tones. Views from this KOP consist of large expanses of cultivated and both densely planted or sparsely vegetated property with the most prominent visible features being a house with a cluster of large trees in the middleground of the view. There is an agricultural irrigation channel, which runs south to southwest of the view and is visible from this KOP due to the earthen berms built along its edges. This landscape is mildly interesting within its setting, but common within the region, and the scenic attractiveness of the view has been highly compromised by visible man-made alterations. The ESIL from this area can be characterized as low.

5.11.2 Environmental Consequences

5.11.2.1 Significance Criteria and Assessment Methodology

The visual resources study included the assessment of impacts on scenic attractiveness and sensitive viewing areas within the VSOI related to the construction, operation, maintenance, and long-term presence of the Project.

The consideration of significant visual impacts was based predominantly on the requirements of CEQA. Appendix G of the CEQA Guidelines states that potential impacts to visual resources would be significant if a proposed project results in:

- A substantial adverse effect on a scenic vista
- Substantial damage of scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings
- Substantial degradation of the existing visual character or quality of the site and its surroundings

- Creation of a new source of substantial light or glare that would adversely affect day or nighttime views in the area

Additionally, the CEC requires that consideration be given to the following:

- Compliance with LORS
- Level of viewshed alteration and ground form manipulation
- Regional effects to visual resources
- Magnitude of impact related to light and glare
- Magnitude of back-light scatter during nighttime hours
- Level of sunlight reduction or increase in shadows in areas used by the public

Additionally, the matrix presented in Table 5.11-2, Visual Impact Significance Matrix – Sensitive Viewing Areas, aids in the assessment of visual impact significance. The significance of the potential visual impact is based upon the evaluation of the susceptibility and the severity of the visual change in viewsheds. In addition, Table 5.11-3, Visual Impact Susceptibility – Sensitive Viewing Areas, and Table 5.11-5, Visual Impact Severity – Sensitive Viewing Areas, further describes the methodology used to evaluate potential visual impact.

**Table 5.11-2
Visual Impact Significance Matrix – Sensitive Viewing Areas**

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

Visual Simulations

A comparison of existing views with visual simulations, depicted on Figures 5.11-15 through 5.11-26, Scenic Attractiveness Evaluation Form for Sensitive View Area and KOP 1 through No. 6, aided in verifying Project-related impacts. The simulations served to provide a representative sample of the existing landscape settings contained within the VSOI, as well as an illustration of how the Project may look from specific key viewing locations. The general process used to develop these photographic simulations is described below.

Photographic/Three-Dimensional Model Composite Simulation

To ensure a high degree of visual accuracy in the simulations, computer-aided design (CAD) equipment and global positioning systems (GPS) were used to create life-sized, computer-generated models of the Project. This translates to using real-world scale and coordinates to locate facilities, other site data, and the actual camera locations corresponding to three-dimensional (3D) simulation viewpoints. The degree of accuracy of the CAD equipment is absolute; the accuracy for the GPS location data is to within approximately 1 meter, or 3.3 feet.

Microstation/AutoCad, 3D Computer-Aided Design, and GPS Data Integration

A DEM is used to provide a 3D representation of the earth's surface within the Project vicinity, and a CAD site map is imported as a background reference. CAD drawings of both existing and proposed facilities are placed on top of the site map to register and orient the correct locations of KOPs. The 3D massing models of both the existing structures and the proposed modifications are generated in real-world scale. The GPS camera positioning information is then referenced to the 3D data set.

Model View Professional/3D Studio Max/Adobe Photoshop

An electronic camera lens matches the camera lens that was actually used in the field. An 8-megapixel camera with a 50 millimeter lens was used consistently throughout the process. This lens selection allows for viewing of the computer-generated model in the same way that the Project would be viewed in the field.

Next, the digital photograph is transferred into the 3D database as an environment within which the view of the 3D model is generated. To generate the correct view relative to the actual photograph, the electronic camera is placed in the digital environment at a location corresponding to the real-world location from which the photograph was taken. This is provided by GPS records collected during field study. From here, the 3D wire-frame model is displayed on top of the existing structures, topography, or natural features to ensure proper alignment, scale, angle, and distance. When all lines of the wire-frame model exactly match the photograph, the camera target position is confirmed.

To complete this phase, the sun angle is set, materials and textures are applied, and the composite image is rendered through a computer imaging process known as ray tracing. Any additional filters required for appropriate atmospheric conditions (such as blur, focus, or haze) are applied at this time.

The photographic simulations developed for this project have been designed to be viewed 10 inches from the viewer's eye. This distance will portray the most realistic life-sized image from the location of the KOPs.

Assessing Visual Impact Susceptibility on Sensitive Viewing Areas

As stated previously, in Section 5.11.1.2, Visual Sphere of Influence, visual impact susceptibility is the degree to which a sensitive viewpoint would be impacted by changes within its viewshed. Following identification of the six most sensitive viewing areas within the VSOI, the degree of impact on each area was determined through the analysis of the following components:

- ESIL – The degree of existing disturbance within the natural setting
- Viewer Sensitivity – All residential and recreational viewers were considered high sensitivity viewers, while motorists are less sensitive
- Project Visibility – An assessment of the viewing angle, potential screening, lighting conditions, and time of day

- Viewer Exposure – An assessment of the distance from the Project, number of viewers, and duration of views

Table 5.11-3, Visual Impact Susceptibility – Sensitive Viewing Areas, illustrates the level of visual impact susceptibility anticipated for each sensitive viewing area based on an evaluation of the previously stated factors.

**Table 5.11-3
Visual Impact Susceptibility – Sensitive Viewing Areas**

Viewing Areas	Existing Scenic Integrity Level	Viewer Sensitivity	Project Visibility	Viewer Exposure	Visual Impact Susceptibility
Sensitive Viewing Area and KOP 1 (Figure 5.11-15, see also Figure 5.11-1 for KOP location) – travel-way view and unobstructed residential view to the east along Station Road.	Low	High	High	High	High
Sensitive Viewing Area and KOP 2 (Figure 5.11-17, see also Figure 5.11-1 for KOP location) – from largely unobstructed view along Stockdale Highway to the North-northwest.	Low	High	Moderate	Moderate	Moderate
Sensitive Viewing Area and KOP 3 (Figure 5.11-19, see also Figure 5.11-1 for KOP location) – Elk Hills Elementary School playground view to the southeast.	Low	High	Low	Moderate	Moderate/ Low
Sensitive Viewing Area and KOP 4 (Figure 5.11-21, see also Figure 5.11-1 for KOP location) – traveler view from Stockdale Highway adjacent to the I-5 interchange.	Low	Moderate	Low	Low	Low
Sensitive Viewing Area and KOP 5 (Figure 5.11-23, see also Figure 5.11-1 for KOP location) – traveler view from southbound I-5.	Low	Moderate	Low	Low	Low
Sensitive Viewing Area and KOP 6 (Figure 5.11-25, see also Figure 5.11-1 for KOP location) – traveler view from eastbound Brite Road of Alternative 1. ¹	Low	Moderate	High	Moderate	Moderate

Source: HECA Project

Note:

KOP = key observation point

¹ The traveler heading east would have a similar view of Alternative 2, given the same viewing distance.

Assessing Visual Impact Severity on Sensitive Viewers

The severity of the impact (high to low) on sensitive viewers was assigned a severity level proportionate to the amount of anticipated change to the landscape created within a specific viewshed. The primary criteria for project impacts include:

- The degree of project contrast (e.g., form, line, color, and texture)
- Scale and spatial dominance
- Extent of view blockage/screening (i.e., topographic and/or vegetative) and night lighting

Table 5.11-5, Visual Impact Severity – Sensitive Viewing Areas, describes the levels designated to each variable as they relate to the degree of visual impact severity anticipated on representative sensitive viewing areas.

The final evaluation conducted in the impact assessment was the assignment of potential impact levels on representative sensitive viewing areas by combining viewer susceptibility and severity levels at key and characteristic viewing locations.

5.11.2.2 Visual Impact Assessment Results

This section discusses the affected visual resources for the Project. A description of the potential impacts on scenic attractiveness and on sensitive viewers is provided. A detailed description of the Project is in Section 2.0, Project Description. Due to height/size, the following Project elements are some of the more important Project features related to the visual impact assessment:

- Combustion turbine generator (CTG); GE (7 FB) w/ IGCC Combustor, a steam turbine generator (STG), an HRSG and a natural gas fueled auxiliary simple cycle CTG; GE LMS100[®].
- ASU cooling tower.
- Gasification cooling towers.
- Water treatment plant including the raw, treated and firewater tanks.
- 230-kilovolt (kV) switchyard at the western end of the Project Site.
- Feedstock conveyor area, active storage silos, and crusher station.
- New transmission line (two alternatives) corridor will extend generally north and west from the Project Site to connect with the existing PG&E substation north of the site.
- Buildings include a control room, a laboratory, administration area, warehouse and maintenance building, an emergency dispatch center, and medical service facility at the east side of the Project Site.

- Table 5.11-4, Major Component Design Characteristics, provides the dimensions (height, length and width, or diameter) and color/materials of each major component visible from off the Project Site, including any Project-related electrical transmission line and/or off-site pipelines and metering stations.
- Temporary visible plumes may occur (please see the discussion on visible plumes provided below).
- New access road to be constructed extending north from the Project Site to Adohr Road to accommodate deliveries of heavy equipment and general site access.
- A security fence will enclose the entire 473-acre Project Site and access gates will be provided, as required.

Direct Impacts

The following sections describe direct impacts related to the Project.

Visual Impact Significance on Scenic Attractiveness

Project Site

The Project will be clearly visible from the west, north, and east with sporadic visibility from areas located to the south and southeast (within the identified 5-mile-radius). Given the large scale of the Project (473 acres), and the height of some of the structures on site (tallest structure 260 feet), potentially significant impacts on scenic attractiveness will be expected. However, the hills comprising the Elk Hills Oil Fields will block all views from the south/southwest to the Project Site with the exception of the community of Tupman. In addition, landscapes inventoried within the VSOI are classified as retaining primarily low ESILs and the Project Site is located within areas retaining low distinctive or diverse natural amenities or lacking substantial positive cultural modifications. There are a number of existing cultural modifications (e.g., cultivated farmlands, industrial facilities, existing power transmission lines, a fertilizer manufacturing plant partially located on the site, and oil field activities and associated structures/storage tanks, etc.) within the VSOI. While the Project will change the existing character of the site, significant impacts to the scenic attractiveness of the VSOI as a whole are not anticipated due to adjacent industrial scenery. Therefore, less than significant impacts will occur relative to existing scenic attractiveness.

Project Interconnection with PG&E Midway Substation

The Project will connect to the existing PG&E Midway Substation located approximately 5 miles northwest of the Project Site. Both transmission line route alternatives are anticipated to enter the PG&E Midway Substation on its north side. The anticipated pole spacing along the transmission line route is approximately 700 feet with a total of approximately 60 poles between the on-site switchyard and the PG&E Midway Substation. The transmission line will be placed

**Table 5.11-4
Major Component Design Characteristics**

Component	Height (feet)	Diameter (feet)	Color/Materials¹
CO ₂ Vent	260	5	Steel; Gray
Gasification Flare	250	10	Steel; Gray
Rectisol Flare	250	2	Steel; Gray
SRU Flare	250	2	Steel; Gray
AGR Methanol Wash Column	235	12	Steel; Gray
HRSG Stack/HRSG	213/90	20	Steel; Gray
ASU Column (Cold Box)	205	30	Steel; Gray
Gasification Flare Structure	200	65 × 65	Steel; Gray
Slurry Preparation Building	165	140 x 40	Steel; Gray
Tail Gas Thermal Oxidizer Stack	165	3	Steel; Gray
Feedstock Storage Silos	150	60	Steel; Gray
Sour Water Stripper	150	8	Steel; Gray
Additional AGR Columns	75 – 140	12 – 18	Steel; Gray
Auxiliary CTG Stack/Air Filter	110/45	10	Steel; Gray
Plant Wastewater ZLD Evaporator A	100	12	Steel; Gray
Plant Wastewater ZLD Evaporator B	100	12	Steel; Gray
ASU Liquid Oxygen Storage Tank	90	42	Steel; Gray
Process Wastewater ZLD Evaporator	80	5	Steel; Gray
Auxiliary Boiler Stack/Auxiliary Boiler	80/50	6	Steel; Gray
Feedstock Crusher Station	75	48 × 35	Steel; Gray
Fine Slag Handling Enclosure	70	172 × 52	Steel; Gray
Tail Gas Treating Unit Columns	60 – 70	4 – 6	Steel; Gray
Power Block/Gasification Cooling Tower	55	850 × 120	Steel; Gray
ASU Cooling Tower	55	205 × 120	Steel; Gray
Steam Turbine Generator Structure	50	12	Steel; Gray
CO ₂ Compressor Enclosure	50	110 × 110	Steel; Gray
CTG Air Filter	50	–	Steel; Gray
Sour Shift/Low Temp Gas Cooling Unit	50	235 × 40	Steel; Gray
230-kilovolt Switchyard	–	–	Steel; Gray
Plant Wastewater ZLD Feed Tank A	48	120	Steel; Gray
Plant Wastewater ZLD Feed Tank B	48	120	Steel; Gray
Firewater Tank	48	110	Steel; Gray
Water Treatment Plant Tanks	32 – 48	35 – 100	Steel; Gray
Feedstock Truck Unloading Building	44	82 × 36	Steel; Gray
Process Wastewater Treatment Feed Tank	40	60	Steel; Gray
Gasification Settler	35	85	Steel; Gray

Source: HECA Project

Notes:

¹ Steel will be treated to minimize glare

AGR = acid gas removal

ASU = air separation unit

CO₂ = carbon dioxide

CTG = combustion turbine generator

HRSG = heat recovery steam generator

SRU = sulfur recovery unit

ZLD = zero liquid discharge

**Table 5.11-5
Visual Impact Severity – Sensitive Viewing Areas**

Viewing Areas	Form Contrast	Line Contrast	Color Contrast	Texture Contrast	Scale Dominance	Spatial Dominance	View Blockage Night Lighting	Visual Impact Severity
Sensitive Viewing Area and KOP 1 (Figure 5.11-15, see also Figure 5.11-1 for KOP location) – unobstructed travel way and residential viewers to the east along Station Road.	High	High	Moderate/High	Moderate	High	Moderate/High	Moderate/High	High
Sensitive Viewing Area and KOP 2 (Figure 5.11-17, see also Figure 5.11-1 for KOP location) – from largely unobstructed view along Stockdale Highway to the North-northwest of the Project site.	Moderate	Moderate	Low	Low	Moderate	Moderate	Moderate	Moderate
Sensitive Viewing Area and KOP 3 (Figure 5.11-19, see also Figure 5.11-1 for KOP location) – Elk Hills Elementary School playground view to the southeast.	Moderate/Low	Moderate/Low	Low	Low	Moderate	Moderate	Moderate/Low	Moderate
Sensitive Viewing Area and KOP 4 (Figure 5.11-21, see also Figure 5.11-1 for KOP location) – traveler view from Stockdale Highway adjacent to the I-5 interchange.	Low	Low	Low	Low	Low	Low	Low	Low
Sensitive Viewing Area and KOP 5 (Figure 5.11-23, see also Figure 5.11-1 for KOP location) – traveler view from southbound I-5.	Low	Low	Low	Low	Low	Low	Low	Low
Sensitive Viewing Area and KOP 6 (Figure 5.11-25, see also Figure 5.11-1 for KOP location) – traveler view from eastbound Brite Road toward Alternative 1 ¹ .	Moderate	Moderate/Low	Moderate/Low	Low	Moderate/High	Low	Low	Moderate

Source: HECA Project

Note:

KOP = key observation point

¹ The traveler heading east would have a similar view of Alternative 2, given the same viewing distance.

in an approximately 150-foot-wide right-of-way. The Project transmission line configuration is described in more detail in Section 2.1.8.1, Electricity and Transmission Line, in the Project Description.

As discussed above, a large number of transmission systems transverse the area surrounding the PG&E Midway Substation (Figure 5.11-6, Scenic Attractiveness Evaluation Form for Landscape Character Photo No. 4). In addition, transmission systems are generally found along Stockdale Highway, Tupman Road, and other roads within the VSOI.

Given the number of existing transmission systems within the Project vicinity, in combination with the variety of cultural modifications along the transmission line routes (between the Project Site and the PG&E Midway Substation) and within the VSOI, less than significant impacts on scenic attractiveness are anticipated. Therefore, less than significant impacts will occur relative to existing scenic attractiveness.

Visual Impact Significance on Sensitive Viewing Areas

Figures 5.11-9 through 5.11-14, Scenic Attractiveness Evaluation Form for Sensitive View Area and KOP 1 through KOP 6, depicting existing and simulated views from each of the five selected KOPs, aided in verifying Project-related impacts and assessing visual impact significance. As stated, these five sensitive viewing areas were identified as representative of viewers who will be most susceptible to visual impacts within their viewshed as a result of the Project. The simulations served to present a representative sample of the existing landscape settings contained within the VSOI, as well as an illustration of how the Project may look from specific key viewing locations. Table 5.11-3, Visual Impact Susceptibility – Sensitive Viewing Areas, Table 5.11-5, Visual Impact Severity – Sensitive Viewing Areas, and Table 5.11-6, Visual Impact Significance – Sensitive Viewing Areas, illustrate the visual impact susceptibility, visual impact severity, and resultant visual impact significance on sensitive viewing areas, respectively. Each of the five viewing areas and the resultant impacts are described below.

Sensitive Viewing Area and Key Observation Point No. 1

This KOP location represents the closest residential and travel way viewer of the Project. The residence, located approximately 1,400 feet to the east, has foreground views to the Project Site, and is consistent with a high degree of severity because of the proximity to the site and is consistent with longer viewing durations (i.e., from residential views) of the Project. The Project, in the absence of screening, will be highly visible because of the flat, open viewing conditions (see Figure 5.11-16, View from Station Road Simulated Conditions). In general, persons in residential areas generally have an expectation of a high quality visual environment. Potential plume emissions from Project cooling towers will be clearly visible from this KOP; however, plumes are anticipated to occur largely only during seasonal clear weather conditions from November to April (see visible plumes write-up below). New lighting and flaring activities of the Project will potentially affect residential viewers associated with this KOP. Visual impact susceptibility from this location is characterized as high (Table 5.11-3, Visual Impact Susceptibility – Sensitive Viewing Areas). Visual impact severity from this location is characterized as high (Table 5.11-5, Visual Impact Severity – Sensitive Viewing Areas). Thereby, aesthetic impact significance from this location is classified as significant.

**Table 5.11-6
Visual Impact Significance – Sensitive Viewing Areas**

Viewing Areas	Description of Impact	Visual Impact Susceptibility	Visual Impact Severity	Visual Impact Significance
<p>Sensitive Viewing Area and KOP 1 (Figures 5.11-14 and 5.11-15, see also Figure 5.11-1 for KOP location) – Unobstructed residential view to the east of the Project Site on Station Road.</p>	<p>This KOP location represents the closest residential and travel way viewer of the Project. The residence, located approximately 1,400 feet to the east, has foreground views to the Project Site, and is consistent with a high degree of severity because of the proximity to the site and is consistent with longer viewing durations (i.e., from residential views) of the Project. The Project, in the absence of screening, will be highly visible because of the flat, open viewing conditions (see Figure 5.11-15, View from Station Road Simulated Conditions). In general, persons in residential areas generally have an expectation of a high quality visual environment. Potential plume emissions from Project cooling towers will be clearly visible from this KOP; however, plumes are anticipated to occur largely only during seasonal clear weather conditions from November to April (see visible plumes write-up below). New lighting and flaring activities of the Project will potentially affect residential viewers associated with this KOP. Visual impact susceptibility from this location is characterized as high (Table 5.11-3, Visual Impact Susceptibility – Sensitive Viewing Areas). Visual impact severity from this location is characterized as high (Table 5.11-5, Visual Impact Severity – Sensitive Viewing Areas). Thereby, aesthetic impact significance from this location is classified as significant.</p>	<p align="center">High</p>	<p align="center">Moderate/ High</p>	<p align="center">Significant (Less than Significant with visual mitigation described in VRMM-1)</p>
<p>Sensitive Viewing Area and KOP 2 (Figures 5.11-16 and 5.11-17, see also Figure 5.11-1 for KOP location) – Unobstructed view along Stockdale Highway to the north-northwest of the Project Site.</p>	<p>This KOP location represents the closest public view to the Project Site. KOP 2, located approximately 1 mile north-northwest of the Project Site, has middleground views to the site and shorter viewing durations (i.e., from speeds in excess of 45 miles per hour) of the Project. The Project will be visible because of the flat, open viewing conditions coupled with numerous man-made alterations (the existing fertilizer plant). The Project will create some visual contrast to the existing setting by altering middleground views from this travel way; however, the project will be adjacent to industrial structures and will be backdropped by hilly terrain (see Figure 5.11-17, View from Stockdale Highway Simulated Conditions). Potential plume emissions from Project cooling towers will be visible from this KOP; however, plumes are anticipated to occur largely only during seasonal clear weather conditions from November to April (see visible plumes write-up below). New lighting and flaring activities of the Project are not considered to adversely affect the views from this location (see Lighting/Glare/Flare of the Project Site). However, it should be noted, the</p>	<p align="center">Moderate</p>	<p align="center">Moderate</p>	<p align="center">Less than Significant</p>

**Table 5.11-6
Visual Impact Significance – Sensitive Viewing Areas (Continued)**

Viewing Areas	Description of Impact	Visual Impact Susceptibility	Visual Impact Severity	Visual Impact Significance
	<p>existing viewshed has already been modified with the presence of cultivated farmland, existing power/telephone transmission lines, oil field activities and associated structures, abandoned structures, miscellaneous industrial storage tanks, and other cultural modifications in the immediate vicinity. Visual impact susceptibility from this location is characterized as moderate (Table 5.11-3, Visual Impact Susceptibility – Sensitive Viewing Areas). Visual impact severity from this location is characterized as moderate (Table 5.11-5, Visual Impact Severity – Sensitive Viewing Areas). Thereby, aesthetic impact significance from this location is classified as less than significant.</p>			
<p>Sensitive Viewing Area and KOP 3 (Figure 5.11-18 and 5.11-19, see also Figure 5.11-1 for KOP location) – Elk Hills Elementary School playground view to the southeast of the Project.</p>	<p>This KOP location represents the closest recreational user view to the Project. The Elk Hills Elementary School and playground, located approximately 2 miles to the southeast, has middleground views to the Project Site, and is consistent with a low degree of severity because of the distance to the site and scale of Project components from this superior viewpoint. In general, persons using recreational areas generally have an expectation of a high quality visual environment. However, as this KOP is an elementary school playground, the focus for recreational users is largely of playground activities, and use of the playground is generally for short durations (e.g., only during recess, Figure 5.11-19, View from Elk Hills Elementary School Simulated Conditions). Potential plume emissions from Project cooling towers will be visible from this KOP; however plumes are anticipated to occur largely only during seasonal clear weather conditions from November to April (see visible plumes discussion below). New lighting and flaring of the Project is not considered to adversely affect the Elk Hills Elementary School, which is primarily used during the day (see Lighting/Glare/Flare of the Project Site). Visual impact susceptibility from this location is characterized as low to moderate (Table 5.11-3, Visual Impact Susceptibility – Sensitive Viewing Areas). Visual impact severity from this location is characterized as moderate (Table 5.11-5, Visual Impact Severity – Sensitive Viewing Areas). Thereby, aesthetic impact significance from this location is classified as less than significant.</p>	<p>Moderate/ Low</p>	<p>Low</p>	<p>Less than Significant</p>

**Table 5.11-6
Visual Impact Significance – Sensitive Viewing Areas (Continued)**

Viewing Areas	Description of Impact	Visual Impact Susceptibility	Visual Impact Severity	Visual Impact Significance
<p>Sensitive Viewing Area and KOP 4 (Figure 5.11-020 and 5.11-21 see also Figure 5.11-1 for KOP location) – traveler view from Stockdale Highway adjacent to I-5 interchange.</p>	<p>This KOP location represents the public view of a traveler along the Stockdale Highway northeast of the Project Site. KOP 4, located approximately 2 miles northeast of the proposed Project, has middleground views to the Project and will have shorter viewing durations (i.e., from speeds in excess of 45 miles per hour). Middleground views from this KOP are highly impacted by views of numerous large existing power transmission lines. The addition of the Project to this viewshed is expected to be co-dominant with the man-made alterations already present to viewers at this location (Figure 5.11-21, View from Stockdale Highway and I-15 Simulated Conditions). Potential plume emissions from Project cooling towers will be visible from this KOP; however, plumes are anticipated to occur largely only during seasonal clear weather conditions from November to April (see visible plumes write-up below). New lighting and flaring activities of the Project are not considered to adversely affect the views from this location (see Lighting/Glare/Flare of the Project Site). Visual impact susceptibility from this location is characterized as low (Table 5.11-3, Visual Impact Susceptibility – Sensitive Viewing Areas). Visual impact severity from this location is characterized as low (Table 5.11-5, Visual Impact Severity – Sensitive Viewing Areas). Thereby, aesthetic impacts associated with the Project from this location are anticipated to be low and less than significant.</p>	<p align="center">Low</p>	<p align="center">Low</p>	<p align="center">Less than Significant</p>
<p>Sensitive Viewing Area and KOP 5 (Figure 5.11-22 and 5.11-23, see also Figure 5.11-1 for KOP location) – Traveler views from Southbound I-5.</p>	<p>This KOP location represents the public view of a traveler along I-5 (a major travel route for the region) east of the Project Site. KOP 5, located approximately 3 miles east of the proposed project, has middleground views to the Project and will have shorter viewing durations (i.e., from speeds in excess of 65 miles per hour). Middleground views from this KOP are highly impacted by views of numerous large existing power transmission lines that create a skylining effect. The Project Site is visible from this KOP but is co-dominant with the existing transmission towers in this view (Figure 5.11-23, View from Southbound I-15 Simulated Conditions). Potential plume emissions from Project cooling towers will be visible from this KOP; however, plumes are anticipated to occur largely only during seasonal clear weather conditions from November to April (see visible plumes write-up below). New lighting and flaring activities of the Project are not considered to adversely affect the views from this location (see Lighting/Glare/Flare of the Project Site). Visual impact susceptibility from this location is characterized as low (Table 5.11-3, Visual</p>	<p align="center">Low</p>	<p align="center">Low</p>	<p align="center">Less than Significant</p>

**Table 5.11-6
Visual Impact Significance – Sensitive Viewing Areas (Continued)**

Viewing Areas	Description of Impact	Visual Impact Susceptibility	Visual Impact Severity	Visual Impact Significance
	Impact Susceptibility – Sensitive Viewing Areas). Visual impact severity from this location is characterized as low (Table 5.11-5, Visual Impact Severity – Sensitive Viewing Areas). Thereby, aesthetic impacts associated with the Project from this location are anticipated to be low and less than significant.			
Sensitive Viewing Area and KOP 6 (Figure 5.11-25 and 5.11-26, see also Figure 5.11-1 for KOP location) – Residential and traveler views from eastbound Brite Road of transmission alternative 1 ¹ .	This KOP location represents the residential and public views of travelers along eastbound Brite Road west of transmission Alternative 1. KOP 6, located approximately 0.3 mile west of transmission line Alternative 1, has a foreground view of the transmission line which will be short in duration (i.e., due to travel speeds up to 45 miles per hour). Foreground views from this KOP are moderately impacted by views of existing power/telephone lines that create a skylining effect, agricultural related structures, and a highly manipulated landscape. Transmission Line Alternative 1 is visible from this KOP but is co-dominant with the existing transmission and telephone poles/towers in this view (Figure 5.11-26, View from Eastbound Brite Road Simulated Conditions). There will not be night lighting associated with the transmission lines. Visual impact susceptibility from this location is characterized as moderate (Table 5.11-3, Visual Impact Susceptibility – Sensitive Viewing Areas). Visual impact severity from this location is characterized as moderate (Table 5.11-5, Visual Impact Severity – Sensitive Viewing Areas). Thereby, aesthetic impacts associated with the transmission alternative from this location are anticipated to be moderate and less than significant.	Moderate	Moderate	Less than Significant

Source: HECA Project

- Notes:
 HECA = Hydrogen Energy California
 KOP = key observation point
 VSOI = visual sphere of influence

¹ The traveler heading east would have a similar view of Alternative 2, given the save view distance.

In order to address potentially significant visual impacts at KOP 1 and from the closest residence to the northwest, a second location not referenced as a KOP, specific mitigation measures are described in Section 5.11.4, Design Features and Mitigation Measures. For the adjacent residence located to the northwest of the Project Site, two options that would reduce the anticipated impact levels include the strategic placement of landscaping elements or, alternatively, the acquisition of the property. With implementation of the mitigation measures, less-than-significant impacts from the construction, operation, maintenance, and long-term presence of the Project are anticipated for KOP 1 and the closest residence to the northwest.

Sensitive Viewing Area and Key Observation Point No. 2

This KOP location represents the closest public view to the Project Site. KOP 2, located approximately 1 mile north-northwest of the Project Site, has middleground views to the site and shorter viewing durations (i.e., from speeds in excess of 45 miles per hour) of the Project. The Project will be visible because of the flat, open viewing conditions coupled with numerous man-made alterations (the existing fertilizer plant). The Project will create some visual contrast to the existing setting by altering middleground views from this travel way; however, the project will be adjacent to industrial structures and will be backdropped by hilly terrain (Figure 5.11-18, View from Stockdale Highway Simulated Conditions). Potential plume emissions from Project cooling towers will be visible from this KOP; however, plumes are anticipated to occur largely only during seasonal clear weather conditions from November to April (see visible plumes write-up below). New lighting and flaring activities of the Project are not considered to adversely affect the views from this location (see Lighting/Glare/Flare of the Project Site). However, it should be noted, the existing viewshed has already been modified with the presence of cultivated farmland, existing power/telephone transmission lines, oil field activities and associated structures, abandoned structures, miscellaneous industrial storage tanks, and other cultural modifications in the immediate vicinity. Visual impact susceptibility from this location is characterized as moderate (Table 5.11-3, Visual Impact Susceptibility – Sensitive Viewing Areas). Visual impact severity from this location is characterized as moderate (Table 5.11-5, Visual Impact Severity – Sensitive Viewing Areas). Thereby, aesthetic impact significance from this location is classified as less than significant.

Sensitive Viewing Area and Key Observation Point No. 3

This KOP location represents the closest recreational user view to the Project. The Elk Hills Elementary School and playground, located approximately 2 miles to the southeast, has middleground views to the Project Site, and is consistent with a low degree of severity because of the distance to the site and scale of project components from this superior viewpoint. In general, persons using recreational areas generally have an expectation of a high quality visual environment. However, as this KOP is an elementary school playground, the focus for recreational users is largely of playground activities, and use of the playground is generally for short durations (e.g., only during recess, see Figure 5.11-20, View from Elk Hills Elementary School Simulated Conditions). Potential plume emissions from Project cooling towers will be visible from this KOP; however, plumes are anticipated to occur largely only during seasonal clear weather conditions from November to April (see visible plumes discussion below). New lighting and flaring of the Project is not considered to adversely affect the Elk Hills Elementary School, which is primarily used during the day (see Lighting/Glare/Flare of the Project Site).

Visual impact susceptibility from this location is characterized as low to moderate (Table 5.11-3, Visual Impact Susceptibility – Sensitive Viewing Areas). Visual impact severity from this location is characterized as moderate (Table 5.11-5, Visual Impact Severity – Sensitive Viewing Areas). Thereby, aesthetic impact significance from this location is classified as less than significant.

Sensitive Viewing Area and Key Observation Point No. 4

This KOP location represents the public view of a traveler along the Stockdale Highway northeast of the Project Site. KOP 4, located approximately 2 miles northeast of the proposed project, has middleground views to the project and will have shorter viewing durations (i.e., from speeds in excess of 45 miles per hour). Middleground views from this KOP are highly impacted by views of numerous large existing power transmission lines. The addition of the Project to this viewshed is expected to be co-dominant with the man-made alterations already present to viewers at this location (Figure 5.11-21, View from Stockdale Highway and I-15 Simulated Conditions). Potential plume emissions from Project cooling towers will be visible from this KOP; however, plumes are anticipated to occur largely only during seasonal clear weather conditions from November to April (see visible plumes write-up below). New lighting and flaring activities of the Project are not considered to adversely affect the views from this location (see Lighting/Glare/Flare of the Project Site). Visual impact susceptibility from this location is characterized as low (Table 5.11-3, Visual Impact Susceptibility – Sensitive Viewing Areas). Visual impact severity from this location is characterized as low (Table 5.11-5, Visual Impact Severity – Sensitive Viewing Areas). Thereby, aesthetic impacts associated with the Project from this location are anticipated to be low and less than significant.

Sensitive Viewing Area and Key Observation Point No. 5

This KOP location represents the public view of a traveler along I-5 (a major travel route for the region) east of the Project Site. KOP 5, located approximately 3 miles east of the proposed project, has middleground views to the Project and will have shorter viewing durations (i.e., from speeds in excess of 65 miles per hour). Middleground views from this KOP are highly impacted by views of numerous large existing power transmission lines that create a skylining effect. The Project Site is visible from this KOP but is co-dominant with the existing transmission towers in this view (Figure 5.11-24, View from Southbound I-15 Simulated Conditions). Potential plume emissions from Project cooling towers will be visible from this KOP; however, plumes are anticipated to occur largely only during seasonal clear weather conditions from November to April (see visible plumes write-up below). New lighting and flaring activities of the Project are not considered to adversely affect the views from this location (see Lighting/Glare/Flare of the Project Site). Visual impact susceptibility from this location is characterized as low (Table 5.11-3, Visual Impact Susceptibility – Sensitive Viewing Areas). Visual impact severity from this location is characterized as low (Table 5.11-5, Visual Impact Severity – Sensitive Viewing Areas). Thereby, aesthetic impacts associated with the Project from this location are anticipated to be low and less than significant.

Sensitive Viewing Area and Key Observation Point No. 6

This KOP location represents the residential and public views of residences and travelers along Brite Road directly west of both transmission Alternatives 1 and 2. KOP 6, located approximately 0.3 mile west of transmission Alternative 1 and 1.25 miles west of transmission Alternative 2, has middleground views to the transmission lines and will have both long and short viewing durations (i.e., from stationary residences and traveling at speeds in excess of 45 miles per hour). Middleground views from this KOP are moderately impacted by views of numerous existing power/telephone line structures. The addition of the Project to this viewshed is expected to be co-dominant with the man-made alterations already present to viewers at this location (Figure 5.11-26, View from east bound Brite Road Simulated Conditions). There will be no lighting or glare impacts resulting from the proposed transmission alternatives. Visual impact susceptibility from this location is characterized as moderate for views of transmission Alternative 1 and transmission Alternative 2 (Table 5.11-3, Visual Impact Susceptibility – Sensitive Viewing Areas). Visual impact severity from this location is characterized as moderate for transmission Alternative 1. Impact severity for Alternative 2 will be similar given the same view distance (Table 5.11-5, Visual Impact Severity – Sensitive Viewing Areas). Thereby, aesthetic impacts associated with the Project from this location are anticipated to be moderate and less than significant.

With implementation of Project design features and recommended mitigation, less than significant visual impacts are expected to occur within the VSOI and region with the construction, operation, maintenance, and long-term presence of the Project.

Lighting/Glare/Flare of the Project

Lighting will be required for safe and efficient operation of the Project, for example in the following typical areas:

- Building interior, office, control, and maintenance areas
- Building exterior entrances
- Outdoor equipment platforms and walkways
- Transformer and switchyard areas
- Entrance gate

The lighting system is intended to provide personnel with illumination for Project operation under normal conditions, means of egress under emergency conditions, and emergency lighting to perform manual operations during a power outage of the normal power source. The lighting system will be designed and installed to meet Occupational Safety and Health Administration (OSHA) minimum standards, and to offer maximum illumination of operating work areas while minimizing off-site illumination. Lighting will be directed downward to avoid backscatter, and shielded from public view to the extent practicable. Lighting not required continuously during nighttime hours will be controlled with sensors or switches operated such that lighting will be on only when needed. Lighting design for the Project will be consistent with applicable lighting LORS. See Section 2.9.2.3, Specific Project Emergency Systems, in the Project Description for further description of lighting fixtures. Additionally, the Kern County Planning Department

reiterates the use of “normal mitigations such as shielded fixtures and motion sensor security lighting” be used for the project and is described in Section 5.11.4 VIS-2 (Oviatt 2009)

Currently, little nighttime lighting is produced within the VSOI, and consists mainly of street lighting on larger roadways, external lighting of industrial facilities, farming operations, and residences in the area. While the Project may slightly add to existing lighting, the Project will not significantly increase the existing night lighting in the Project area due to the design features of the Project lighting as described in VIS-2 (Section 5.11.4.1, Project Design Features) that reduce backscatter, glare and unnecessary light. In addition, structures and transmission towers will be treated to reduce sun reflectivity and reduce potential glint/glare.

Overall, the addition of the Project is not anticipated to create significant glint/glare or night lighting impacts from backscatter light and night lighting that a nearby viewer may experience when looking toward the Project Site due to the design of the Project lighting (VIS-2 in Section 5.11-4.1, Project Design Features). Two residential viewers in close proximity of the Project will possibly have significant impacts from night lighting resulting from the Project. Therefore, the Project will develop a lighting plan and equipment surface treatment plan as described in Section 5.11.4, Design Features and Mitigation Measures, to ensure potential glint/glare impacts are reduced and maintained to less than significant levels.

Under certain conditions during construction-related activities, slightly higher amounts of backscatter lighting may be apparent to the casual observer. This condition provides safety for construction workers during this phase of the Project. Upon completion of construction, night lighting at the Project Site will be substantially reduced and less noticeable to the casual observer. Therefore, visual impacts related to construction activities will be temporary and are considered less than significant. The Project will be consistent with Section 1.10.7, Light and Glare of the Kern County General Plan.

Lighting Related to Airfield Operations

Federal Aviation Agency (FAA) Advisory Circular 70/7460-1K requires that all airspace obstructions over 200 feet high or in close proximity to an airfield have obstruction lighting. The tallest structure on site is 260 feet high (CO₂ vent). There is one airport within the identified VSOI (Figure 5.11-1, VSOI Map). Elk Hills - Buttonwillow Airport, is located approximately 5 miles northwest of the Project Site and 3 miles southwest of the substation interconnection. This airport covers approximately 216 acres, has one runway, and generally supports small private planes.

While the Elk Hills – Buttonwillow Airport is located within the VSOI 5-mile-radius of the interconnection to the PG&E Midway Substation, the transmission poles are well below the 200 feet limit (approximately 110 feet high); therefore, no obstruction lighting is required for Project transmission poles. However, Project facilities over 200 feet high on the Project Site may require obstruction lighting by the FAA. With proper installation of obstruction lighting on proposed structures, no impacts to aircraft operation are expected with construction, operation, and maintenance of the Project. Obstruction lighting is designed primarily to be visible to aviation and does not produce significant down lighting or backscatter and is not anticipated to

adversely or significantly add to the night lighting levels or adversely affect any of the five identified KOPs.

Flare/Flaring Activities

The project includes flares for burning excess gas (for example, during start up or emergency or upset conditions) including a gasification flare and a Sulfur Recovery Unit (SRU) flare. These flares can create additional lighting impact if operated at night. These flares are not as luminous as typical refinery flares. The operation of flares at night may potentially result in adverse impacts for KOP 1, 2, and the closest residence located to the northwest of the Project; however, these flares will be operated infrequently.

Because these two flares are operated infrequently, and because the affect of lighting from flaring will decrease with distance, it is not anticipated that these flares will result in adverse impacts to KOP 3, 4, or 5; therefore, impacts from flaring activities to all KOPs (1 through 5) are anticipated to be less than significant due to infrequent use and/or distance.

Visible Plumes

The potential exists for vapor plumes (water vapor condensation) to be visible from two sources at the Project Site: (1) plumes from the 55-foot-high wet cooling towers (4-celled ASU cooling tower and 17-celled power block/gasification cooling towers); and (2) plumes from the 213-foot-high CTG/HRSG stack. Both sources of condensed water vapor plumes were analyzed. The following analysis describes the plume modeling methodology, input data, and assumptions used in the analysis, as well as the results.

Methodology

The frequency, persistence, and size of visible condensate plumes depends primarily on the design and type of combustion turbine generator/HRSG and/or cooling tower, as well as meteorological conditions of temperature and humidity. Specifically, visible plume formation depends on local ambient temperature, humidity conditions, and wind patterns. A location with higher temperature and lower humidity (i.e., general climate in Kern County) would have fewer extended visible plumes compared to operation of the same project at a cooler, more humid location. Visible plume formation is more frequent during the cooler seasons (i.e., winter) when ambient conditions are more conducive. Results focused on seasonal daylight clear hours and winter daytime no fog hours. For the purposes of this analysis, Seasonal Daylight Clear Hours are defined as: daylight hours from November through April without naturally occurring fog, rain, or limited visibility and include all hours of clear skies and 50 percent of the scattered or broken skies. Winter Daytime No Fog Hours are defined as winter days without any naturally occurring fog. It should be noted that the same ambient conditions that result in plume formation from Project cooling towers will often cause natural weather conditions such as fog, haze, and precipitation to occur, which generally reduces visibility. Days when fog, haze or precipitation is present were excluded from plume frequency calculations for this analysis.

The characteristics of visible plumes important to an assessment of visual impacts include plume length (the distance over which a plume remains intact), plume height (the distance from ground

to the centerline of the plume), plume width (the horizontal cross wind spread of the plume), and plume depth (the cross plume spread perpendicular to the width, typically in the vertical direction).

Plumes from the wet cooling towers were modeled using the Seasonal/Annual Cooling Tower Impact (SACTI) model. SACTI is a mathematical model used to predict cooling tower visible plume dimensions over a full range of meteorological conditions experienced at a given location and the frequency of different plume lengths, widths, and heights as a function of direction from the cooling tower. The model is designed to provide predictions and may be used for the licensing of power plants with cooling towers. SACTI model results are summarized in terms of typical and reasonable worst-case visible plume dimensions for the entire year, and during daytime and nighttime hours. For purposes of this analysis, the “typical” plume dimension (height, width, length) is the one that is exceeded 50 percent of the time, and the “reasonable worst-case” is the condition that is exceeded only 10 percent of the time. A description of this model, model data inputs, and model results may be found in Appendix C-1, Modeling Protocol and on the digital versatile disks (DVD) entitled HECA Air Quality and Public Health Modeling Files provided with the AFC.

Plumes from the HRSG stack were analyzed using the Combustion Source Visible Plume (CSVP) model. The CSVP model determines visible water vapor plume frequency. The model consists of a series of programs which ultimately calculate the distance downwind the visible plume can extend and the plume height and width. The model requires ambient temperature, relative humidity, precipitation, wind direction, wind speed and stability per hour of input data. The model was originally created to determine plume size for HRSGs. The first module of the program, CSVP, determines if the plume will reach saturation, and the second module, PLUMEWV, determines plume size by modeling the plume until the centerline of the plume crosses the second intersection point on the saturation curve. Parameters used in the model included the fixed HRSG stack height and diameter at 213 feet and 20 feet respectively. A description of this model, model data inputs, and model results may be found in Appendix C-1, Modeling Protocol.

Model Results

As stated above, visible plume formation is more frequent during the cooler seasons (i.e., winter) when ambient conditions are more favorable to plume formation. Therefore, Table 5.11-7, SACTI Cooling Tower Plume Predictions – Winter Daytime No Fog Hours, displays the dimensions of the “reasonable worst-case” plumes from both the power block/gasification and ASU cooling towers predicted to be visible during clear winter daytime hours, when the plumes will be most noticeable. In addition, the dimensions of the typical (or average) daytime plumes from Project cooling towers are also provided in the table below. Typical plumes generated from Project cooling towers were predicted to be much smaller in length, height and width than the worst-case plumes. Visible plumes that extend beyond the cooling tower structures are predicted to occur approximately 15 to 22 percent of the winter daytime no fog hours.

Table 5.11-7
SACTI Cooling Tower Plume Predictions
Winter Daytime No Fog Hours (Mass Flow Rate = 11554.9 kg/s)

	Power Block/Gasification Cooling Tower	ASU Cooling Tower
Length (m)		
50% (Typical)	30 m – 40 m	30 m – 40 m
10% (Reasonable Worst-case)	600 m – 700 m	200 m – 250 m
Height (m)		
50% (Typical)	20 m – 30 m	20 m – 30 m
10% (Reasonable Worst-case)	300 m – 310 m	90 m – 100 m
Width (m)		
50% (Typical)	30 m – 40 m	20 m – 30 m
10% (Reasonable Worst-case)	130 m – 140 m	60 m – 70 m
% of hours Visible Plume		
Extends Beyond Cooling Tower Building (greater than 30 meters from center)	15.53%	21.64%

Source: SACTI Model Output (provided on the DVD entitled HECA Air Quality and Public Health Modeling Files provided with the AFC.)

Notes:

m = meters

DVD = digital versatile disk

HECA = Hydrogen Energy California

AFC = Application for Certification

CSVP = combustion source visible plume

HRSG = heat recovery steam generators

Winter Daytime No Fog Hours = Clear winter days, when a cold, high-humidity conditions conducive to plume formation exists.

Similar to the results of the SACTI model, the results presented in Table 5.11-8, CSVP HRSG Stack Plume Characteristics During Seasonal Daylight Clear Hours, represents the reasonable worst-case (the 10 percent longest plume), and the typical plume expected (the 50 percent longest plume). The results depict only the hours that the plumes are visible in seasonal daylight clear conditions.

The reasonable worst-case visible plume from the HRSG stack predicted by the CSVP model has a plume height of 271.4 meters (890 feet); however, the average height of the visible plume was predicted to be 152.8 meters (501 feet) during seasonal daylight clear hours. Visible plumes are predicted to occur approximately 78 percent of the seasonal daylight clear hours, but they are predicted to occur only 40 percent of all hours modeled.

Impact Analysis

Plumes generated from Project operations would be visible from residences and travelers within the VSOI. When plumes are formed over the Project Site they will be above and extend downwind of the Project structures.

**Table 5.11-8
CSVP HRSG Stack Plume Characteristics During Seasonal Daylight Clear Hours**

	Plume Length (m)	Plume Height (m)	Plume Width (m)	Plume Depth (m)
Reasonable Worst-Case (10%)	716	271.4	84.9	75.6
Typical Case (50%)	197	152.8	34.5	39.1

Source: CSVP Model Output (provided on the DVD entitled HECA Air Quality and Public Health Modeling Files provided with the AFC.)

Notes:

m = meters

DVD = digital versatile disk

HECA = Hydrogen Energy California

AFC = Application for Certification

CSVP = combustion source visible; plume

HRSG = heat recovery steam generators

Seasonal Daylight Clear Hours = daylight hours from November through April without rain, fog, or limited visibility that include clear skies and 50 percent of the scattered or broken skies excluding overcast skies.

The reasonable worst-case winter daytime no fog cooling tower plume height starts above the 55-foot (16.8 meters) power block/gasification and ASU cooling towers and can reach an ultimate height of approximately 1,017 feet (310 meters) and 328 feet (100 meters), respectively. However, this worst-case scenario is predicted to occur during just 10 percent of the winter daytime no fog hours in the five years modeled. Visible plumes lengths are not expected to extend beyond the power block/gasification and ASU cooling towers structures more than 15.5 percent and 21.6 percent during all modeled winter daytime no fog hours.

The reasonable worst-case seasonal daylight clear HRSG plume height starts above the 213-foot (65 meters) HRSG stack and can reach an ultimate height of approximately 890 feet (271.4 meters), and is visible for approximately 764 feet (233 meters) downwind of the stack. However, this scenario is predicted to occur for only 15 to 25 percent of the seasonal daylight clear hours in the five years modeled. The model predicts some type of visible plume from the HRSG stack for 40 percent of all modeled hours (day, night, and all weather and sky conditions).

Plumes are expected to be visually subordinate from distant viewpoints, and subordinate to co-dominant from middleground to foreground viewpoints, depending upon specific viewing locations and conditions. Currently, there are few to no visible plumes within the existing viewshed. Although the addition of plumes to the project area would create a change to existing conditions, most viewers will be at such distances that impacts from visible plumes are considered to be less than significant. The area of highest concern for visible plumes is for the nearest resident within the VSOI, represented by KOP 1.

For KOP 1, reasonable worst-case visible plumes generated from Project operations would create a co-dominant effect related to the Project structures. However, typical plumes generated from Project operations were predicted to be much smaller in length, height and width than the reasonable worst-case plumes, and the typical plumes are what KOP 1 and other viewers within the VSOI would see more often.

Project operations would largely be in peak operation during the summer months (outside of the November to April seasonal hours), at which time the temperature at the Project Site is generally too high for long plumes to occur. Both size and frequency of typical Project cooling tower and HRSG plumes (occurring outside of the winter/no fog and seasonal daylight clear period) are expected to be visually subordinate and would be less than significant. Project cooling tower and HRSG plumes during the reasonable worst-case (within the winter/no fog and seasonal daylight clear period) conditions would be visually co-dominant to dominant; however, plumes of this size would occur for less than 10 percent of the winter/no fog and seasonal daylight clear period and were thus considered to be less than significant. As plume formation depends upon highly variable atmospheric conditions, peak operation of the Project would be during hot, summer months not conducive to plume formation, and the proximity of most viewers would be at such distances that any potential plumes would be remotely visible. Less than significant impacts related to plume generation at the Project Site are anticipated.

Nighttime plumes could present a potential visual impact under two possible circumstances. If bright, upwardly directed night lighting were to illuminate the plumes, they could become visually dominant and obtrusive. However, no such light exists in the immediate project vicinity and on-site lighting would be shielded and directed downward. Thus, no significant impacts from illuminated plumes are anticipated.

Landscaping

According to Kern County Ordinance 19.12.120 Landscaping: Exclusive Agriculture (A) District, no landscaping is required in the A district, except where the proposed use is subject to a plot plan review pursuant to Chapter 19.80. However, visual mitigation measures are proposed to include landscaping.

Indirect and Construction-Related Impacts

The construction laydown area will be contained within the 473-acre Project Site. The temporary on-site construction area will include the construction laydown area, construction parking, offices, and warehouse. Construction access will be from Stockdale Highway north of the Project Site, then south along Dairy Road and east on Adohr Road.

Project Site preparation includes site grading to accommodate the Project on the existing landscape. Excavation work will consist of the removal, storage, and/or manipulation of earth, sand, gravel, vegetation, organic matter, loose rock, and debris to the lines and grades necessary for construction. Most of the earth removed during Project Site preparation will be used to build earthen berms at the northwest and northeast portions of the Project Site. See also Section 2.0, Project Description, for more information relating to earthwork.

Project construction is forecasted to begin in December 2011 and end in December 2014. Commissioning and startup is forecasted to begin in October 2014 with commercial operation to initiate in September 2015. Construction of the 230 kV transmission line route and interconnection is expected to take approximately 6 months within the Project construction period. Construction will most typically take place Monday through Friday beginning at 6:00 a.m. Due to worker health and safety considerations associated with high daytime

temperatures, early work hours (prior to daybreak) may be adopted. Additionally, certain critical construction activities may need to occur during nighttime hours to accelerate the Project schedule. The peak construction workforce will occur during Month 24 of construction (December 2013) and will involve approximately 1,500 workers and staff.

During the Project construction period, construction activities, construction materials, equipment, trucks, temporary structures, and vehicles will be visible to surrounding areas to the north and east and some areas to the southeast due to the flat, open viewing conditions surrounding the Project Site. As the Project Site is developed for agricultural use, such construction activities at the site will contrast highly with the existing agricultural character of the area; however, interconnection construction activities at the PG&E Midway Substation are not anticipated to contrast significantly with maintenance and other operational activities that routinely occur at the substation. In addition, during construction of the transmission line and 150-foot-wide right-of-way, construction materials, equipment, and vehicles will be visible to adjacent areas. Refer to Section 2.6, Project Construction, for further detail regarding the schedule of the construction period. While visual changes associated with construction activities at the Project Site and along the transmission line route will introduce activities and structures not currently occurring in the area, construction activities will be conducted within a 44-month period. Therefore, visual impacts are considered temporary and thus, less than significant. In addition, as previously stated, construction of the 230-kV transmission line is only anticipated to take approximately 6 months to complete. Indirect impacts associated with the construction, operation, and long-term presence of the Project and ancillary facilities may include impacts associated with fugitive dust, night lighting, and the presence of construction equipment. Construction activities will be conducted in a manner that minimizes (visible) dust emissions. Potential impacts are considered temporary and less than significant.

5.11.3 Cumulative Impact Analyses

The Project and other projects in the vicinity are not expected to result in significant cumulative impacts to environmental resource areas, including, but not limited to, air quality, land use, cultural resources, visual resources, water resources, or traffic during the construction or operation phases. The areas within the VSOI are generally characterized by agricultural activities, oil extraction and other industrial facilities, as well as desert terrain supported by small towns and other sparsely populated communities. All proposed projects within the VSOI can be characterized primarily as zone changes, lot line/property line adjustments, roadway improvements, home remodeling, agricultural supply services, or activities related to agriculture, or oil and mining operations. No new residential or recreational uses are proposed that may generate additional sensitive visual receptors. A new dairy operation is planned on the north side of Adhor Road at Dairy Road. The dairy facilities will be subordinate to the Project and the adjacency of the two projects is expected to result in less than significant impacts for viewers in the area.

The addition of the Project will alter the existing landscape and visual setting at the Project Site. However, the addition of any of the other listed projects, when considered in combination with the Project, will not cumulatively create significant impacts to the visual setting within the VSOI. Thus, as mentioned above, no significant cumulative impacts have been identified as a result of the construction, operation, maintenance, or long-term presence of the Project and other projects

in the area. For further discussion of cumulative impacts, see Appendix J, List of Proposed Projects.

5.11.4 Design Features and Mitigation Measures

Project design inherently includes mitigation measures. For example, the Project Site location was chosen because of its proximity to other existing industrial land uses (industrial oil producing area within Kern County). In addition, Project features have been designed to help minimize visual impacts as described below:

5.11.4.1 Project Design Features

VIS- 1 Power Plant

- Structures, stacks, buildings, and storage tanks will be painted in accordance with CEC guidelines and colors will be selected to blend in with the existing visual conditions.
- The colors will provide for subtle variations and contrast. The selected color will help the Project to blend more naturally with the natural setting.
- Reflectivity of surfaces will be reduced by using nonreflective elements where practical.

VIS-2 Lighting

- Lighting on the Project Site will be limited to areas required for safety, will be directed on site to avoid backscatter, and will be shielded from public view to the extent practical.
- All lighting that is not required to be on during nighttime hours will be controlled with sensors or switches operated so that the lighting will be on only when needed.
- High-pressure sodium vapor fixtures will be used. These lights typically produce low-intensity amber light, which will reduce visual contrast with the night sky.
- Stacks and other tall Project elements will be lit in accordance with FAA guidelines.

VIS-3 Natural Gas and Carbon Dioxide Pipelines

- After construction, areas where pavement or vegetation has been removed will be restored to be consistent with the surrounding area. Pipeline routes may also follow road rights-of-way and therefore will be placed under pavement or prepared dirt surfaces.

While the Project includes features that reduce visual impacts from the construction/operation, potentially significant impacts have been identified for the nearest residential viewer to the Project Site identified by CEC staff (location identified as KOP 1). Visual impacts from the construction/operation of the proposed project would significantly impact the nearest residential viewer west of the Project Site. Suggested visual resources mitigation measures (VRMMs) are provided below to ensure that all potential impacts are reduced to levels considered to be less than significant.

5.11.4.2 Mitigation Measures

VRMM-1: Property Acquisition or Alternate Landscaping. In order to reduce impacts at the nearest residence, one of the following two options will be implemented:

- Before construction, the closest residential property, 370 feet northwest of the Project Site, could be acquired by HEI in order to negate significant impacts incurred from the close proximity of a sensitive residential viewer; or
- Landscaping on the Project property or on the adjacent private property (with the consent of the land owner) to provide for visual screening to reduce impacts to a less than significant level (see VRMM-2).

VRMM-2: Prepare Conceptual Landscaping Plan at a 1:40 scale per CEC requirements for screening purposes. The plan shall include information on the type of plant species proposed, their size, quantity, and spacing at planting; expected heights at 5 years and maturity; and expected growth rates. Proposed landscaping could also include:

- Use of native limited height landscaping materials around facility perimeter to ensure proposed landscaping does not further obstruct views.
- Suggested off-site planting on adjacent properties (if landowners are interested) to assist with screening.
- Earthen berms or man-made topographic obstructions that provide partial or full screening of the Project features from view.

5.11.5 Laws, Ordinances, Regulations, and Standards

The applicable LORS related to visual resources are summarized in Table 5.11-9, Summary of LORS – Visual Resources.

5.11.5.1 Federal and State

The Project is located on privately-owned land under the jurisdiction of Kern County. There are a few patches of BLM lands within the area that have views to the Project Site. However, no federal lands considered to be sensitive are located within the VSOI. BLM VRM guidelines were considered for this Project due to the fact that VRM methodology is an effective assessment tool which categorizes impacts based upon changes to scenic quality, sensitivity levels, and distance zones. These are all discussed in detail in Section 5.11.1, Affected Environment. The Project is consistent with all federal aesthetic LORS.

State-designated scenic highways or highways eligible for designation were not identified within the VSOI. Furthermore, no other area managed by the State was identified that will require the Project to adhere to State aesthetic LORS. However, CEQA methodology is described in Section 5.11.2.1, Significance Criteria and Assessment Methodology, and was used as part of the assessment methodology.

**Table 5.11-9
Summary of LORS – Visual Resources**

LORS	Requirements	Conformance to Requirements	Administering Agency	Agency Contact
Federal Jurisdiction				
There are no applicable federal LORS.				
State Jurisdiction				
Application for Certification Requirements	Rules of Practice and Procedure and Power Plant Site Certification Regulations, Appendix B.	See Data Adequacy Worksheet	California Energy Commission (CEC)	1
State Scenic Highway Requirements	Requirements are applicable to state designated scenic highways.	The portions of roads and highways within the Project vicinity are not designated official State Scenic Highways. See Section 5.11.2.2.4.	California Department of Transportation (Caltrans)	2 & 4
Local Jurisdiction				
Kern County General Plan, 1.8 Industrial – Policy 6	Encourage upgrading the visual character of existing industrial areas through the use of landscaping, screening, or buffering.	According to Kern County Ordinance 19.12.120 Landscaping: Exclusive Agriculture (A) District, No landscaping is required in the A district, except where the proposed use is subject to a plot plan review pursuant to Chapter 19.80. Therefore, compliance with this regulation is inapplicable. See Section 5.11.2.2.4.	County of Kern	3

**Table 5.11-9
Summary of LORS – Visual Resources**

LORS	Requirements	Conformance to Requirements	Administering Agency	Agency Contact
Kern County General Plan, 1.8 Industrial – Policy 7	Require that industrial uses provide design features such as screen walls, landscaping, increased height and/or setbacks, and lighting restrictions between the boundaries of residential land use designation so as to reduce impacts on residences due to light, noise, sound, and vibration.	Proper light/glare shielding is included as part of Project design. See Section 5.11.2.2.2.	County of Kern	3
Kern County General Plan, 1.8 Industrial – Implementation Measure VI	Design, layout, and visual appearance coordinated with existing adjacent industrial uses.	The Project design and layout are in conformance with the existing industrial land uses within the area. See Sections 5.11.1.1, 5.11.2.2.1.1.1, and 5.11.2.2.1.1.2	County of Kern	3
Kern County General Plan, 1.8 Industrial – Map Provisions Service Industrial (Map Code 7.2)	Industrial properties/activities which involve outdoor storage/use of heavy equipment. Such uses produce significant air or noise pollution and are visually obtrusive.	The Project area is located north and directly south of existing industrial structures and storage tanks. The design of the Project elements results in a co-dominant visual effect with the adjacent fertilizer plant. See Section 5.11.1.1	County of Kern	3
Kern County General Plan, 1.10.8 Smart Growth Policy 49g	Aesthetically pleasing and unifying design features that promote a visually pleasing environment.	The Project design and visual aesthetics are similar to the existing industrial land uses with in the area. See Sections 5.11.1.1, 5.11.2.2.1.1.1, and 5.11.2.2.1.1.2	County of Kern	3
Kern County General Plan, 1.10.7 Light and Glare Policy 47	Ensure that light and glare from discretionary new development projects are minimized in rural as well as urban areas.	Proper light/glare shielding is included as part of Project design. See Section 5.11.2.2.2.	County of Kern	3
Kern County General Plan, 1.10.7 Light and Glare Policy 48	Encourage the use of low-glare lighting to minimize the nighttime glare effects on neighboring properties	Proper light/glare shielding is included as part of Project design. See Section 5.11.2.2.2.	County of Kern	3

**Table 5.11-9
Summary of LORS – Visual Resources**

LORS	Requirements	Conformance to Requirements	Administering Agency	Agency Contact
Kern County General Plan, Zoning Ordinance Code Chapter 19.86,	Requires public notification and review of any project that might adversely impact visual resources.	Given that the zoning of the Project property is A; a Landscape Plan is not required. See Section 5.11.2.2.4.	County of Kern	3
Kern County General Plan Circulation Element – 2.3.9 Scenic Route Corridors	Requirements are applicable to state designated scenic highways. The California Scenic Highways Master Plan designates three state highways in Kern County “Eligible State Scenic Highway,” including portions of State Routes 14, 58, 41 and State Highway 395.	The portions of roads and highways within the Project vicinity are not designated official State Scenic Highways. See Section 5.11.1.3.3.	County of Kern	4
Kern County River Plan Element, Chapter III - 3.2.3 Policies (3)	Building heights and setbacks shall not significantly obstruct river views, and they shall be regulated in accordance with potential to obstruct river views from existing or planned roads or trails.	There are no river views within the Project vicinity; therefore this requirement is not applicable to the Project. See Section 5.11.1.1 and Figure 5.11.2.	County of Kern	3
Tupman Rural Community Specific Plan, Scenic Highways Implementation 2	All proposed existing and or expanding land uses adjacent to the Tupman Road route shall seek approval of the Planning Agency prior to issuance of permits so as to provide for the screening of unsightly uses.	From a conversation with Shawn Beyeler, Planner 2 (County of Kern Planning Department) on 30 May 2008 it was determined that Tupman Road is not designated as a scenic route and there are to date no scenic routes designated throughout Kern County. See Section 5.11.1.3.3.	County of Kern	4
Buttonwillow Community Development Plan, Open Space	Encourages continuing dual use of transmission line easements as open space or possible greenbelt areas.	Some portions of the Project’s proposed transmission route follow existing transmission lines and poles. Section 5.11.1.1.	County of Kern	3

Table 5.11-9
Summary of LORS – Visual Resources

LORS	Requirements	Conformance to Requirements	Administering Agency	Agency Contact
Buttonwillow Community Development Plan, Scenic Lands	Encourage continuing implementation of the County Scenic Highway Programs	Currently there are no designated County Scenic Highways within the Project vicinity. See Section 5.11.1.3.3.	County of Kern	4

Notes:

BLM = Bureau of Land Management

LORS = laws, ordinances, regulations, and standards

5.11.5.2 Local

The Project Site is located on privately-owned land under the jurisdiction of Kern County. The unincorporated community of Tupman located 1.5 miles to the southeast of the Project Site will have middle and distant views to the Project Site. The unincorporated community of Buttonwillow is located approximately 4 miles to the north of the Project Site. The city of Taft is the closest city to the Project Site and is more than 15 miles away. This city will have no views to the Project Site and therefore local LORS were only considered for Kern County and the unincorporated communities of Tupman and Buttonwillow.

The property is zoned A (Exclusive Agriculture) in Kern County. See Section 5.4, Land Use, for more information. The Kern County General Plan, Buttonwillow Community Development Plan and Tupman Community Specific Plan contain several goals and policies relating specifically to aesthetics and minimizing impacts to visual resources. The Buttonwillow Community Development Plan, and Tupman Community Specific Plan were prepared in conjunction with Kern County; therefore, the majority of Tupman's and Buttonwillow's goals/policies related to aesthetic and visual resources are very similar if not the same as the goals/policies identified in the Kern County General Plan. Each of these local LORS, and the Project's conformance to these LORS, are summarized in Table 5.11-9, Summary of LORS – Visual Resources.

The Project Site is located north of the Elk Hills Oil Fields. The land surrounding the Project Site is primarily used for farmland, industrial, other similar land uses and oil extraction to the south of the Project vicinity. Proper light/glare shielding consistent with local LORS, during both construction and operation of the Project Site, is included as part of Project design. While the Project Site will add to existing area lighting, the Project will not significantly increase the existing night lighting, backscatter light, or glare in the Project area due to its adjacency with similar existing industrial land uses. The Project will not create a significant visual change to existing area conditions.

In addition, Project design elements have been incorporated into the Project description that will be effective in minimizing visual impacts (See Section 2.0, Project Description). The Project will conform to all applicable local LORS related to the preservation of areas identified as retaining high scenic value. Based on the inventory of scenic attractiveness and ESILs, areas retaining high scenic value were not identified within the VSOI. Therefore, compliance with local aesthetic LORS will be maintained.

5.11.6 Involved Agencies and Agency Contacts

The local agency for the Project is the County of Kern Environmental Health Services Department shown in Table 5.11-10, Agency Contact List for LORS.

**Table 5.11-10
Agency Contact List for LORS**

Agency		Contact Information
State Jurisdiction		
1	California Energy Commission Energy Facilities Siting Division Community Resources Unit	Mark Hamblin, Senior Planner/Supervisor 1516 Ninth Street, Sacramento, CA 95814 (916) 654-5107
2	California Department of Transportation (Caltrans) Guidelines for the Official Designation of Scenic Highways Office of Landscape	Senior Landscape Architect 2800 Gateway Oaks Drive, Suite 100 Sacramento, CA 95833 Ken Murray, L.A. #4345 (916) 274-6138
Local Jurisdiction		
3	County of Kern	Scott Denney, Supervising Planner 2700 "M" Street, Suite 100 Bakersfield, CA 93301-2323 (661) 862-8631
4	County of Kern	Shawn Beyeler, Planner 2 2700 "M" Street, Suite 100 Bakersfield, CA 93301-2323 (661) 862-8641

Note:

LORS = laws, ordinances, regulations, and standards

5.11.7 Permits Required and Permit Schedule

No permits are required pertaining to visual resources.

5.11.8 References

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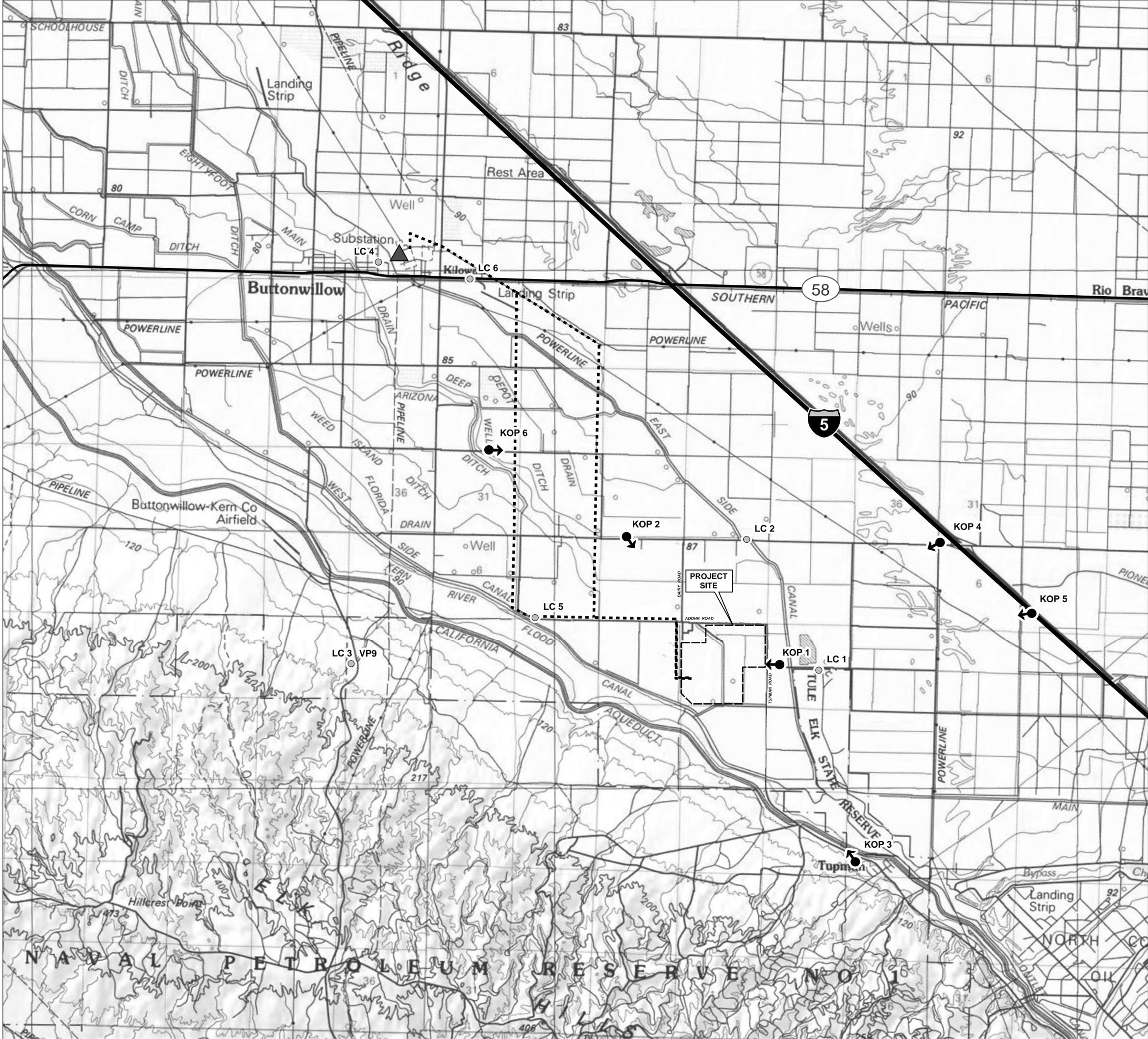
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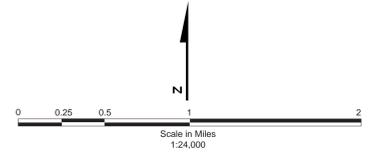


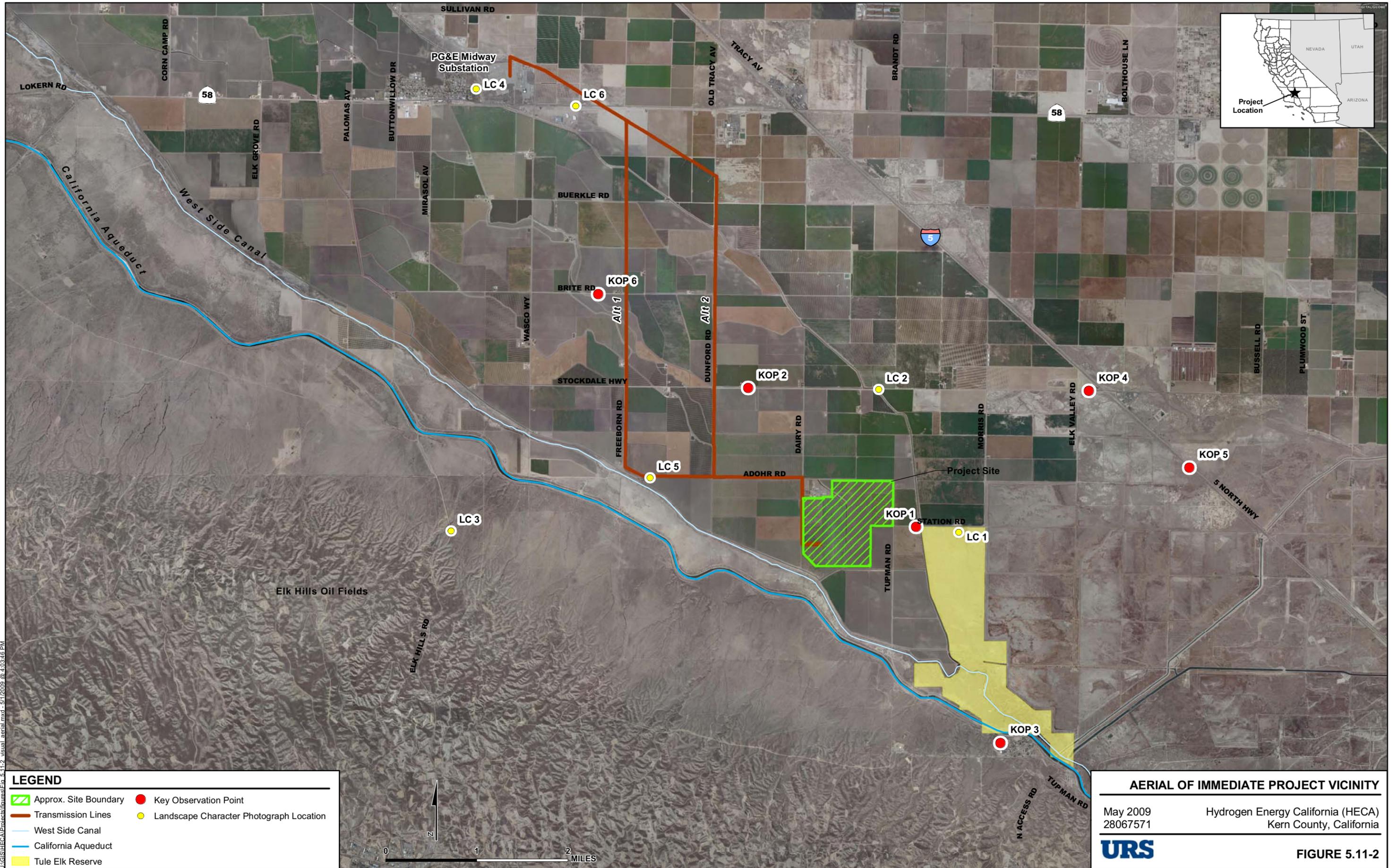
LEGEND

Photograph Location

- ➔ Key Observation Point
- Landscape Character Photograph Location
- Project Site Boundary
- Transmission Line Alternatives
- ▲ Midway Substation

Source: Base topographic data: Map created with TOPO! (tm) (c) 2002 National Geographic Holdings (www.topo.com)





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LEGEND

 Approx. Site Boundary	 Key Observation Point
 Transmission Lines	 Landscape Character Photograph Location
 West Side Canal	
 California Aqueduct	
 Tule Elk Reserve	

AERIAL OF IMMEDIATE PROJECT VICINITY

May 2009
 28067571

Hydrogen Energy California (HECA)
 Kern County, California

URS

FIGURE 5.11-2

Sources: USGS (30'x60' quads: Taft 1982, Delano 1982). Created using TOPOI, ©2006 National Geographic Maps, All Rights Reserved. Kern County and State of California (proposed and approved projects).

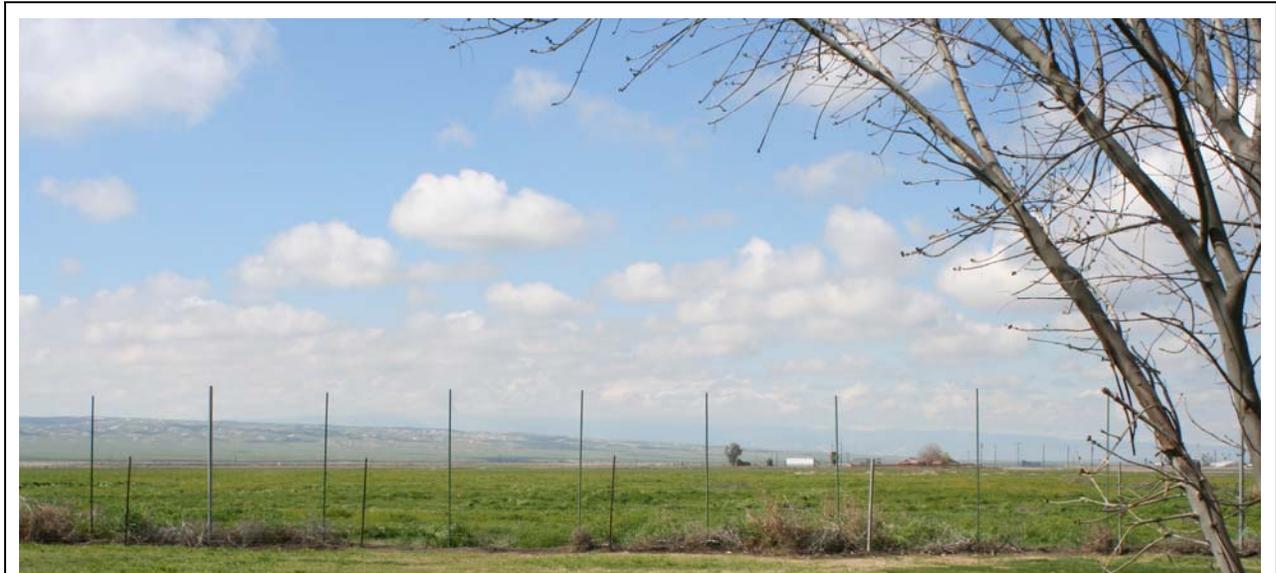
**FIGURE 5.11-3
SCENIC ATTRACTIVENESS EVALUATION FORM FOR
LANDSCAPE CHARACTER PHOTO NO. 1**

Landform	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Vegetation	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Water	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Color	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Adjacent Scenery	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Scarcity	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Modifications*	H (2)	H/M (1)	M (0)	M/L (-2)	L (-4)
Scenic Attractiveness: Class C (11)					

**Scenic Quality
Classifications:**
A = 19 or more
B = 12 to 18
C = 11 or less

Note: Evaluation score is **bold**; H = High; M = Moderate; and L = Low

* Explains cultural modifications present in the landscape, ranging from negative intrusions (-4) to those that complement the scenic quality and promote visual harmony (2).



Narrative Landscape Description and Photograph: Landscape Character Photo No. 1 (see Figure 5.11-1 for photograph location) was taken from the picnic area of the Tule Elk State Natural Reserve and represents a recreational public view of the project area, approximately 0.75 mile east of the Project area. The relatively flat topography of the foreground and middleground gives way to more dramatic terrain in the background in this area and allows for very open, panoramic views of the adjacent area. Topographic relief across the setting consists of a broad, horizontal composition varying from relatively flat terrain across the view to rolling terrain in the distant background, adding somewhat to the visual appeal of the form and line characteristics of the area. There are no natural water features in the Project area. A variety of cultural modifications (including industrial storage structures, telephone/transmission lines, and residential housing) are visible in foreground and middleground views. The area is characterized by little color variation, with thick undulating grasses, and low to moderate contrast of generally flat tones. Views from this KOP consist of large expanses of naturally vegetated property, and the most prominent visible features are the heavy steel fencing structures that cross the foreground, as well as the large trees that screen most of view toward the Project Site. This landscape is mildly interesting within its setting, and uncommon within the region due to habitat restoration/preservation for the Tule Elk.

**FIGURE 5.11-4
SCENIC ATTRACTIVENESS EVALUATION FORM FOR
LANDSCAPE CHARACTER PHOTO NO. 2**

Landform	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Vegetation	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Water	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Color	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Adjacent Scenery	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Scarcity	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Modifications*	H (2)	H/M (1)	M (0)	M/L (-2)	L (-4)
Scenic Attractiveness: Class C (5)					

<p>Scenic Quality Classifications: A = 19 or more B = 12 to 18 C = 11 or less</p>
--

Note: Evaluation score is **bold**; H = High; M = Moderate; and L = Low

* Explains cultural modifications present in the landscape, ranging from negative intrusions (-4) to those that complement the scenic quality and promote visual harmony (2).



Narrative Landscape Description and Photograph: Landscape Character Photo No. 2 (see Figure 5.11-1 for photograph location) was taken from a residence along Stockdale Highway and represents a public view of the Project area, approximately 1.0 mile north of the Project area. The relatively flat topography of the foreground and middleground gives way to more dramatic terrain in the background in this area and allows for very open, panoramic views of the adjacent area. Topographic relief across the area consists of a broad horizontal composition varying from relatively flat terrain across the view to the mountainous terrain of the Elk Hills in the distant background, adding somewhat to the visual appeal of the form and line characteristics of the area. There are no natural water features in the Project area. A variety of cultural modifications (including industrial storage structures, telephone/transmission lines, irrigation canals, and residential housing) are visible in foreground and middleground views. The water in the canal is below grade, and thus not visible in this area. The area is characterized by little color variation, with scattered trees usually associated with residences and cultivated farmland, and low to moderate contrast of generally flat tones. Views from this photo consist of large expanses of cultivated crops, with the most prominent visible features being the fertilizer operation in the middleground, as well as the large trees in the foreground that partially screen the view toward the project site. This landscape is mildly interesting within its setting, and common within the region due to the agricultural heritage.

**FIGURE 5.11-5
SCENIC ATTRACTIVENESS EVALUATION FORM FOR
LANDSCAPE CHARACTER PHOTO NO. 3**

Landform	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Vegetation	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Water	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Color	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Adjacent Scenery	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Scarcity	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Modifications*	H (2)	H/M (1)	M (0)	M/L (-2)	L (-4)
Scenic Attractiveness: Class C (9)					

Scenic Quality Classifications:
A = 19 or more
B = 12 to 18
C = 11 or less

Note: Evaluation score is **bold**; H = High; M = Moderate; and L = Low

* Explains cultural modifications present in the landscape, ranging from negative intrusions (-4) to those that complement the scenic quality and promote visual harmony (2)



Narrative Landscape Description and Photograph: Landscape Character Photo No. 3 (see Figure 5.11-1 for photograph location) was taken from Elk Hills Road and represents a public view of the Project area, approximately 3.8 mile west of the Project area. The superior view looks across the relatively flat topography of the foreground, middleground, and background, which rises slightly as the viewer approaches Elk Hills. The vantage points allows for very open, panoramic views of the adjacent area. Topographic relief across the area consists of a broad, horizontal composition varying from relatively flat terrain across the view with the mountainous terrain of the Elk Hills rising up toward the viewpoint, adding somewhat to the visual appeal of the form and line characteristics of the area. There are no natural water features in the Project area. The California Aqueduct is in the middleground, but is not visible because it is below grade. A variety of cultural modifications (including industrial operation/storage structures, telephone/transmission lines, and residential housing) are visible in foreground and middleground views. The area is characterized by various color variations associated with the natural grasses along the foothills and cultivated farmland in the middleground and background, and has low to moderate contrast of generally flat tones. Views from this photo consist of large expanses of cultivated crops, and the most prominent visible features are the two large transmission lines that cross the middleground. This landscape is mildly interesting within its setting, and common within the regional area.

**FIGURE 5.11-6
SCENIC ATTRACTIVENESS EVALUATION FORM FOR
LANDSCAPE CHARACTER PHOTO NO. 4**

Landform	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Vegetation	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Water	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Color	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Adjacent Scenery	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Scarcity	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Modifications*	H (2)	H/M (1)	M (0)	M/L (-2)	L (-4)
Scenic Attractiveness: Class C (2)					

Scenic Quality Classifications:
A = 19 or more
B = 12 to 18
C = 11 or less

Note: Evaluation score is **bold**; H = High; M = Moderate; and L = Low

* Explains cultural modifications present in the landscape, ranging from negative intrusions (-4) to those that complement the scenic quality and promote visual harmony (2)



Narrative Landscape Description and Photograph: Landscape Character Photo No. 4 (see Figure 5.11-1 for photograph location) was taken from Buttonwillow Park and represents a public view of the project substation interconnection, approximately 0.4 mile west of the interconnection point. The view looks across the relatively flat topography of the foreground, middleground, and background, which is heavily modified by industrial elements in the foreground and middleground. The view allows for a shielded view of the adjacent area, detracting from the visual appeal of possible form and line characteristics in the area. There are no natural water features in the area. A variety of cultural modifications (including industrial operation/storage structures, telephone/transmission lines, fencing, irrigation canals, and substation elements) is visible in foreground and middleground views. The water in the canal itself is below grade, and thus is not visible from this viewpoint. The area is characterized by few color variations associated with the natural grasses/bushes along the canal, and has low to moderate contrast of generally flat tones. Views from this photo consist of large industrial elements that dominate the viewshed.

**FIGURE 5.11-7
SCENIC ATTRACTIVENESS EVALUATION FORM FOR
LANDSCAPE CHARACTER PHOTO NO. 5**

Landform	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Vegetation	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Water	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Color	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Adjacent Scenery	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Scarcity	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Modifications*	H (2)	H/M (1)	M (0)	M/L (-2)	L (-4)
Scenic Attractiveness: Class C (4)					

Scenic Quality Classifications:
A = 19 or more
B = 12 to 18
C = 11 or less

Note: Evaluation score is **bold**; H = High; M = Moderate; and L = Low

* Explains cultural modifications present in the landscape, ranging from negative intrusions (-4) to those that complement the scenic quality and promote visual harmony (2)



Narrative Landscape Description and Photograph: Landscape Character Photo No. 5 (see Figure 5.11-1 for photograph location) was taken from the eastbound lane of Adohr Road approximately 1.7 miles west of the Project Site, and 0.1 mile from closest transmission alternative. The view looks across the relatively flat topography of the foreground, middleground, and background, which is modified crop production. The view allows for an open and panoramic view of the adjacent area, with industrial elements in the middleground that detract from the visual appeal of possible form and line characteristics in the area. There are no natural water features in the area. The area is characterized by few color variations, which are associated with the agricultural plantings flanking the view and creating divergent lines toward the Project Site, which has low to moderate contrast of generally flat tones. Views from this photo consist of agricultural and industrial elements that create a viewshed common throughout this region.

**FIGURE 5.11-8
SCENIC ATTRACTIVENESS EVALUATION FORM FOR
LANDSCAPE CHARACTER PHOTO NO. 6**

Landform	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Vegetation	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Water	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Color	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Adjacent Scenery	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Scarcity	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Modifications*	H (2)	H/M (1)	M (0)	M/L (-2)	L (-4)
Scenic Attractiveness: Class C (2)					

**Scenic Quality
Classifications:**
A = 19 or more
B = 12 to 18
C = 11 or less

Note: Evaluation score is **bold**; H = High; M = Moderate; and L = Low

* Explains cultural modifications present in the landscape, ranging from negative intrusions (-4) to those that complement the scenic quality and promote visual harmony (2)



Narrative Landscape Description and Photograph: Landscape Character Photo No. 6 (see Figure 5.11-1 for photograph location) was taken from the eastbound lane of State Highway 58, and represents a public view of the project transmission line crossing, approximately 0.3 mile east of the crossing point. The view looks across the relatively flat topography of the foreground, middleground, and background, which is heavily modified by industrial elements in the foreground and middleground. The view allows for an open view of the adjacent areas, which are heavily modified by industrial elements, detracting from visual appeal of possible form and line characteristics in the area. There are no natural water features in the area. A variety of cultural modifications (including industrial operation/storage structures, telephone/transmission lines, pipeline markers, fencing, and the railroad) are visible in foreground and middleground views. The area is characterized by little variation in color associated with the sparse low-lying vegetation, and has low to moderate contrast of generally flat tones. Views from this photo consist of large industrial elements that dominate the viewshed.

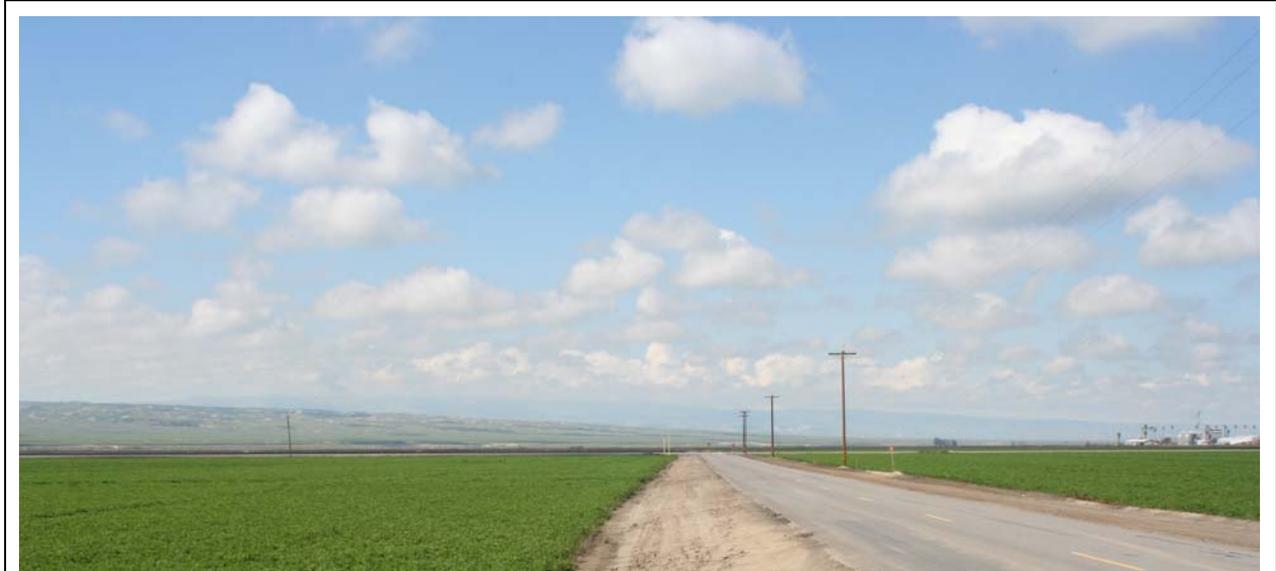
**FIGURE 5.11-9
SCENIC ATTRACTIVENESS EVALUATION FORM FOR
SENSITIVE VIEW AREA AND KOP NO. 1**

Landform	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Vegetation	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Water	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Color	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Adjacent Scenery	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Scarcity	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Modifications*	H (2)	H/M (1)	M (0)	M/L (-2)	L (-4)
Scenic Attractiveness: Class C (8)					

**Scenic Quality
Classifications:**
A = 19 or more
B = 12 to 18
C = 11 or less

Note: Evaluation score is **bold**; H = High; M = Moderate; and L = Low

* Explains cultural modifications present in the landscape, ranging from negative intrusions (-4) to those that complement the scenic quality and promote visual harmony (2)



Narrative Landscape Description and Photograph: Sensitive Viewing Area and KOP No. 1 (Figure 5.11-14; see also Figure 5.11-1 for KOP location) was taken along Station Road adjacent to two residences and is just west of the Tule Elk Reserve, approximately 0.25 mile east of the Project Site. The relative flatness of the foreground and middleground in this area allows for more open, expansive views of the adjacent area. Topographic relief across the setting consists of a broad, horizontal composition varying from relatively flat terrain to more dramatic distant terrain, adding to the panoramic visual appeal of the form and line characteristics of the area (although background topography is partially concealed by haze). There are no natural water features in the Project area. A variety of cultural modifications (including industrial storage tank/structures, telephone/transmission lines along Station and Tupman roads, and crop cultivation) are visible in foreground and middleground views. The area is characterized by few color variations (mainly from the monochromatic crop coloration), with low contrast of generally flat tones. Views from this KOP consist of large expanses of farmlands. This landscape is mildly interesting within its setting, but fairly common within the region.

**FIGURE 5.11-10
SCENIC ATTRACTIVENESS EVALUATION FORM FOR
SENSITIVE VIEW AREA AND KOP NO. 2**

Landform	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Vegetation	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Water	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Color	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Adjacent Scenery	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Scarcity	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Modifications*	H (2)	H/M (1)	M (0)	M/L (-2)	L (-4)
Scenic Attractiveness: Class C (6)					

Scenic Quality Classifications:
A = 19 or more
B = 12 to 18
C = 11 or less

Note: Evaluation score is **bold**; H = High; M = Moderate; and L = Low

* Explains cultural modifications present in the landscape, ranging from negative intrusions (-4) to those that complement the scenic quality and promote visual harmony (2)



Narrative Landscape Description and Photograph: Sensitive Viewing Area and KOP No. 2 (Figure 5.11-16; see also Figure 5.11-1 for KOP location) was taken from the eastbound lane of Stockdale Highway and represents a public view of the Project area, approximately 1.2 miles north-northwest of the Project Site. The relative flatness of the foreground and middleground in this area allows for more open, expansive views of the adjacent area. Topographic relief across the setting consists of a broad, horizontal composition varying from relatively flat terrain to distant rolling terrain, adding somewhat to the panoramic visual appeal of the form and line characteristics of the area. There are no natural water features in the Project area. The only water source within view from this KOP is the California Aqueduct, which runs south of the Project site and is not visible from this KOP. A variety of cultural modifications (including industrial storage tank/structures, telephone/transmission lines along Dairy Road, and crop cultivation) are visible in foreground, middleground, and background views. The area is characterized by few color variations (mainly from the monochromatic crop coloration), and has low contrast of generally flat tones. Views from this KOP consist of large expanses of farmlands. This landscape is mildly interesting within its setting, but fairly common within the region.

**FIGURE 5.11-11
SCENIC ATTRACTIVENESS EVALUATION FORM FOR
SENSITIVE VIEW AREA AND KOP NO. 3**

Landform	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Vegetation	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Water	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Color	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Adjacent Scenery	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Scarcity	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Modifications*	H (2)	H/M (1)	M (0)	M/L (-2)	L (-4)
Scenic Attractiveness: Class C (10)					

Scenic Quality Classifications:
A = 19 or more
B = 12 to 18
C = 11 or less

Note: Evaluation score is **bold**; H = High; M = Moderate; and L = Low

* Explains cultural modifications present in the landscape, ranging from negative intrusions (-4) to those that complement the scenic quality and promote visual harmony (2).



Narrative Landscape Description and Photograph: Sensitive Viewing Area and KOP No. 3 (Figure 5.11-18; see also Figure 5.11-1 for KOP location) was taken from the Elk Hills Elementary School’s playground and represents public recreational views of the Project area, approximately 2.25 miles south-southeast of the Project Site. The rolling topography of the foreground gives way to the flatness of the middleground and background in this area, allowing for very open, expansive views of the adjacent area. Topographic relief across the setting consists of a broad, horizontal composition varying from relatively flat terrain across the view to the rolling terrain in the foreground, adding to the panoramic visual appeal of the form and line characteristics of the area, and giving this KOP a superior viewpoint of the Project Site. There are minimal natural water features in the Project area, with none present in this view. One manmade water feature within view from this KOP is the California Aqueduct, which runs southeast across the middleground of this KOP and is a major focal point of the view. A variety of cultural modifications (including industrial storage tank/structures, telephone/transmission lines along Tupman Road, and crop cultivation) are visible in foreground, middleground, and background views. The area is characterized by some color variation (mainly from the contrast between the monochromatic crop coloration and the natural desert vegetation), and has low to moderate contrast of generally flat tones. Views from this KOP consist of large expanses of farmlands. This landscape is mildly interesting within its setting, but fairly common within the region.

**FIGURE 5.11-12
SCENIC ATTRACTIVENESS EVALUATION FORM FOR
SENSITIVE VIEW AREA AND KOP NO. 4**

Landform	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Vegetation	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Water	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Color	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Adjacent Scenery	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Scarcity	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Modifications*	H (2)	H/M (1)	M (0)	M/L (-2)	L (-4)
Scenic Attractiveness: Class C (5)					

Scenic Quality Classifications:
A = 19 or more
B = 12 to 18
C = 11 or less

Note: Evaluation score is **bold**; H = High; M = Moderate; and L = Low

* Explains cultural modifications present in the landscape, ranging from negative intrusions (-4) to those that complement the scenic quality and promote visual harmony (2)



Narrative Landscape Description and Photograph: Sensitive Viewing Area and KOP No. 4 (Figure 5.11-20; see also Figure 5.11-1 for KOP location) was taken from the westbound lane of Stockton Boulevard near the I-5 interchange and represents public views of the Project area, approximately 2.4 miles northeast of the Project Site. The relatively flat topography of the foreground and middleground gives way to more dramatic terrain in the background in this area, and allows for very open, panoramic views of the adjacent area. Topographic relief across the setting consists of a broad, horizontal composition varying from relatively flat terrain across the view with rolling terrain in the background, adding somewhat to the panoramic visual appeal of the form and line characteristics of the area. There are no natural water features in the Project area. A variety of cultural modifications (including industrial storage structures and numerous telephone/transmission lines) are visible in foreground, middleground, and background views. The area is characterized by few color variations, with mostly natural sparse vegetation, and has low to moderate contrast of generally flat tones. Views from this KOP consist of large expanses of uncultivated, sparsely vegetated property, with the most prominent visible features being the numerous highly contrasting steel lattice transmission structures that cross the middleground of the view and create a skylining effect. This landscape is mildly interesting within its setting, but fairly common within the region, and the scenic attractiveness of the view has been highly compromised by visible manmade alterations.

**FIGURE 5.11-13
SCENIC ATTRACTIVENESS EVALUATION FORM FOR
SENSITIVE VIEW AREA AND KOP NO. 5**

Landform	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Vegetation	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Water	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Color	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Adjacent Scenery	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Scarcity	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Modifications*	H (2)	H/M (1)	M (0)	M/L (-2)	L (-4)
Scenic Attractiveness: Class C (5)					

Scenic Quality Classifications:
A = 19 or more
B = 12 to 18
C = 11 or less

Note: Evaluation score is **bold**; H = High; M = Moderate; and L = Low

* Explains cultural modifications present in the landscape, ranging from negative intrusions (-4) to those that complement the scenic quality and promote visual harmony (2)



Narrative Landscape Description and Photograph: Sensitive Viewing Area and KOP No. 5 (Figure 5.11-22; see also Figure 5.11-1 for KOP location) was taken from the southbound lane of I-5 and represents the public view of the Project area, approximately 3.3 miles east of the Project Site. The relatively flat topography of the foreground and middleground gives way to more dramatic terrain in the background in this area, and allows for very open, panoramic views of the adjacent area. Topographic relief across the setting consists of a broad, horizontal composition varying from relatively flat terrain across the view to rolling terrain in the distant background, adding somewhat to the visual appeal of the form and line characteristics of the area. There are no natural water features in the Project area. A variety of cultural modifications (including industrial storage structures and numerous telephone/transmission lines) are visible in foreground and middleground views. The area is characterized by few color variations, with mostly natural sparse and striated vegetation, and low to moderate contrast of generally flat tones. Views from this KOP consist of large expanses of uncultivated, sparsely vegetated property, and the most prominent visible features are the numerous highly contrasting steel lattice transmission structures that cross the middleground of the view and create a skylining effect. This landscape is mildly interesting within its setting, but fairly common within the region, and the scenic attractiveness of the view has been highly compromised by visible manmade alterations.

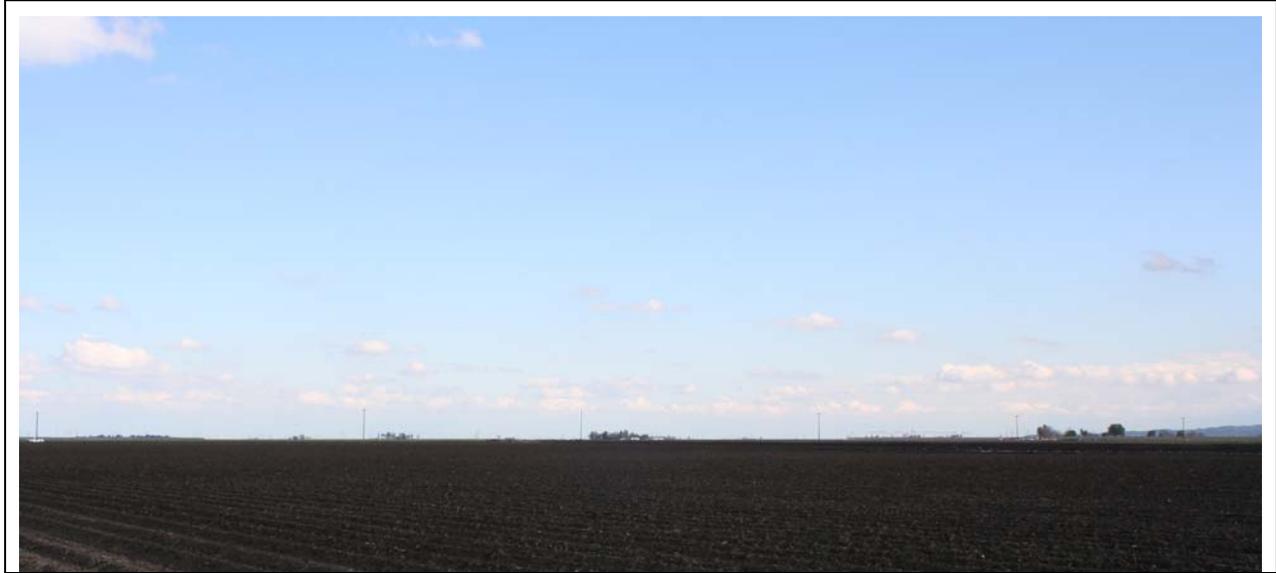
**FIGURE 5.11-14
SCENIC ATTRACTIVENESS EVALUATION FORM FOR
SENSITIVE VIEW AREA AND KOP NO. 6**

Landform	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Vegetation	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Water	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Color	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Adjacent Scenery	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Scarcity	H (5)	H/M (4)	M (3)	M/L (2)	L (1)
Modifications*	H (2)	H/M (1)	M (0)	M/L (-2)	L (-4)
Scenic Attractiveness: Class C (6)					

**Scenic Quality
Classifications:**
A = 19 or more
B = 12 to 18
C = 11 or less

Note: Evaluation score is **bold**; H = High; M = Moderate; and L = Low

* Explains cultural modifications present in the landscape, ranging from negative intrusions (-4) to those that complement the scenic quality and promote visual harmony (2).

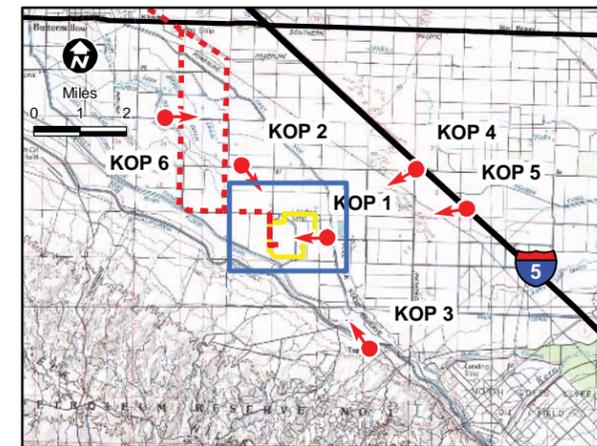


Narrative Landscape Description and Photograph: Sensitive Viewing Area and KOP No. 6 (Figure 5.11-14; see also Figure 5.11-1 for KOP location) was taken from the eastbound lane of Brite Road and represents a public view of the transmission line crossing, approximately 0.3 mile east of this KOP location. The relative flatness of the foreground and middleground in this area allows for more open, expansive views of the adjacent area. Topographic relief across the setting consists of a broad, horizontal composition varying from relatively flat terrain to distant rolling terrain, adding a bit to the panoramic visual appeal of the form and line characteristics of the area. There are no natural water features in the area adjacent to this KOP. The only water source within view from this KOP is an agricultural irrigation channel that runs south to southwest of the view, and is only visible from this KOP because of the earthen berms built along its edges. A variety of cultural modifications (including houses, industrial storage tanks/structures, telephone/transmission lines along Brite Road, and crop cultivation) are visible in foreground, middleground, and background views. The area is characterized by few color variations (mainly from the monochromatic crop coloration and bare cultivated lands not growing crops), and has low contrast from generally flat tones. Views from this KOP consist of large expanses of farmlands. This landscape is mildly interesting within its setting, but fairly common within the region.

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Photograph is intended to be viewed 10 inches from viewer's eyes when printed on 11x17 paper. The photograph below has been cropped top and bottom to show a wide angle of view with the above photograph's area shown in yellow.



Area of enlarged map below



Viewpoint Location Maps

Legend

- - - - - Transmission Line Alternatives
- Project Boundary
- ▲ Key Observation Point

Photograph Information

Time of photograph:	12:14 P.M.
Date of photograph:	March 5, 2009
Distance to project:	0.71 mile
Weather condition:	Partly Cloudy
Viewing direction:	West
Latitude:	35°19'58.83"N
Longitude:	119°22'20.44"W

KOP 1: VIEW FROM STATION ROAD EXISTING CONDITIONS

May 2009	Hydrogen Energy California (HECA)
28067571	Kern County, California



FIGURE 5.11-15

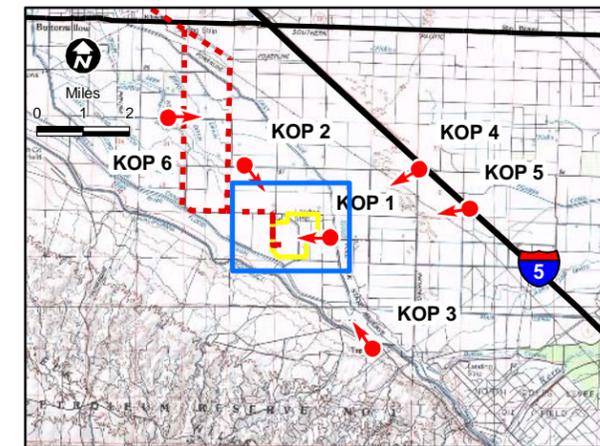
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Photograph is intended to be viewed 10 inches from viewer's eyes when printed on 11x17 paper. The photograph below has been cropped top and bottom to show a wide angle of view with the above photograph's area shown in yellow.



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Area of enlarged map below



Viewpoint Location Maps

Legend

- - - - - Transmission Line Alternatives
- Project Boundary
- Key Observation Point

Photograph Information

Time of photograph:	12:14 P.M.
Date of photograph:	March 5, 2009
Distance to project:	0.71 mile
Weather condition:	Partly Cloudy
Viewing direction:	West
Latitude:	35°19'58.83"N
Longitude:	119°22'20.44"W

**KOP 1: VIEW FROM STATION ROAD
SIMULATED CONDITIONS**

May 2009 Hydrogen Energy California (HECA)
28067571 Kern County, California

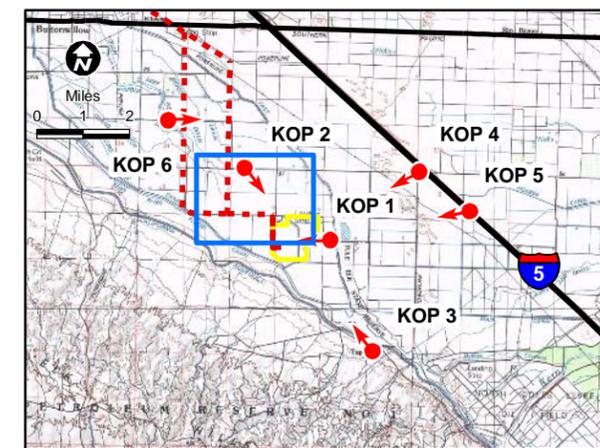


FIGURE 5.11-16

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Photograph is intended to be viewed 10 inches from viewer's eyes when printed on 11x17 paper. The photograph below has been cropped top and bottom to show a wide angle of view with the above photograph's area shown in yellow.



Area of enlarged map below



Viewpoint Location Maps

Legend

- - - Transmission Line Alternatives
- Project Boundary
- Key Observation Point

Photograph Information

Time of photograph:	1:14 P.M.
Date of photograph:	March 5, 2009
Distance to project:	1.98 miles
Weather condition:	Partly Cloudy
Viewing direction:	Southeast
Latitude:	35°21'16.82"N
Longitude:	119°24'18.91"W

**KOP 2: VIEW FROM STOCKDALE HIGHWAY
EXISTING CONDITIONS**

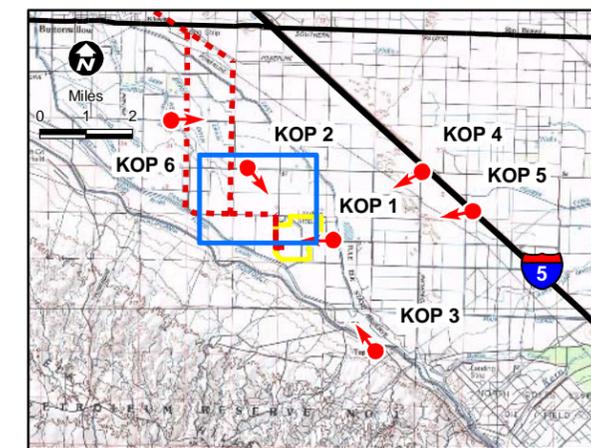
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28067571 Kern County, California



FIGURE 5.11-17



Photograph is intended to be viewed 10 inches from viewer's eyes when printed on 11x17 paper. The photograph below has been cropped top and bottom to show a wide angle of view with the above photograph's area shown in yellow.



Area of enlarged map below



Viewpoint Location Maps

Legend

- - - - - Transmission Line Alternatives
- Project Boundary
- ▲ Key Observation Point

Photograph Information

Time of photograph:	1:14 P.M.
Date of photograph:	March 5, 2009
Distance to project:	1.98 miles
Weather condition:	Partly Cloudy
Viewing direction:	Southeast
Latitude:	35°21'16.82"N
Longitude:	119°24'18.91"W

**KOP 2: VIEW FROM STOCKDALE HIGHWAY
SIMULATED CONDITIONS**

May 2009 Hydrogen Energy California (HECA)
28067571 Kern County, California



FIGURE 5.11-18

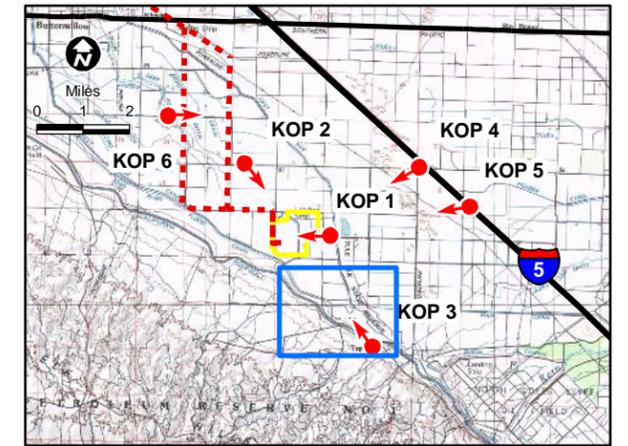
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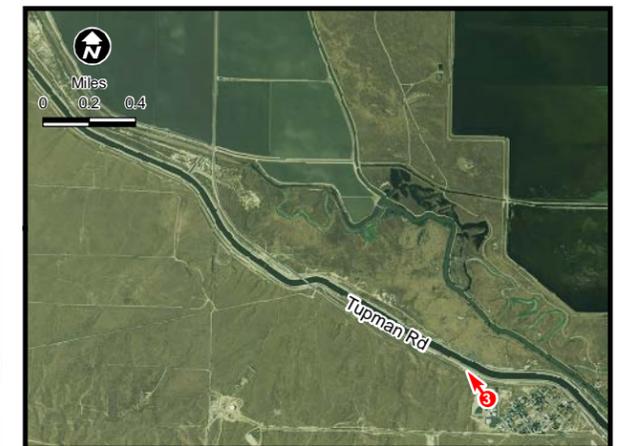
Photograph is intended to be viewed 10 inches from viewer's eyes when printed on 11x17 paper. The photograph below has been cropped top and bottom to show a wide angle of view with the above photograph's area shown in yellow.



5/21/09 vsa..T:\HECA\GRAPHICS\5.11 Visual\5.11-19_K3E.ai



Area of enlarged map below



Viewpoint Location Maps

Legend

- - - - - Transmission Line Alternatives
- Project Boundary
- Key Observation Point

Photograph Information

Time of photograph:	12:52 P.M.
Date of photograph:	March 5, 2009
Distance to project:	2.79 miles
Weather condition:	Partly Cloudy
Viewing direction:	Northwest
Latitude:	35°17'56.21"N
Longitude:	119°21'19.91"W

KOP 3: VIEW FROM ELK HILLS ELEMENTARY SCHOOL EXISTING CONDITIONS

May 2009 Hydrogen Energy California (HECA)
28067571 Kern County, California

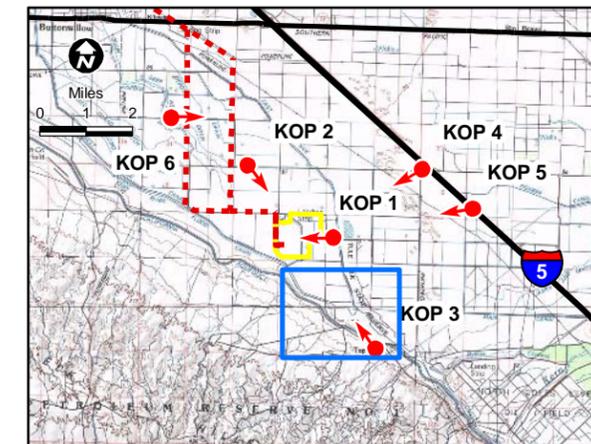


FIGURE 5.11-19

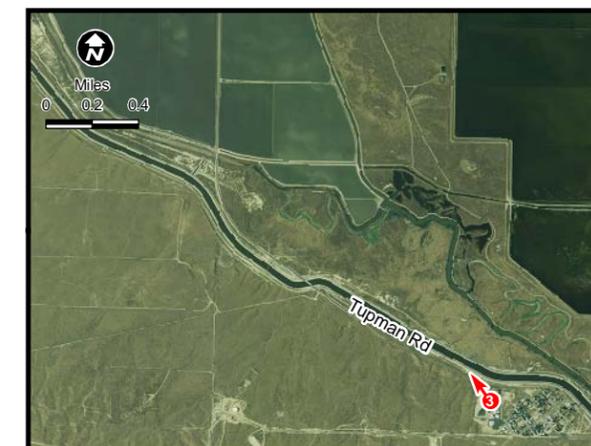
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Photograph is intended to be viewed 10 inches from viewer's eyes when printed on 11x17 paper. The photograph below has been cropped top and bottom to show a wide angle of view with the above photograph's area shown in yellow.



Area of enlarged map below



Viewpoint Location Maps

Legend

- - - - - Transmission Line Alternatives
- Project Boundary
- Key Observation Point

Photograph Information

Time of photograph:	12:52 P.M.
Date of photograph:	March 5, 2009
Distance to project:	2.79 miles
Weather condition:	Partly Cloudy
Viewing direction:	Northwest
Latitude:	35°17'56.21"N
Longitude:	119°21'19.91"W

KOP 3: VIEW FROM ELK HILLS ELEMENTARY SCHOOL SIMULATED CONDITIONS

May 2009 Hydrogen Energy California (HECA)
28067571 Kern County, California

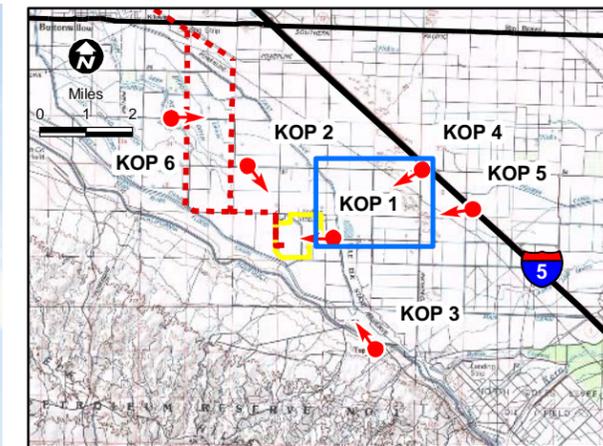


FIGURE 5.11-20



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Photograph is intended to be viewed 10 inches from viewer's eyes when printed on 11x17 paper. The photograph below has been cropped top and bottom to show a wide angle of view with the above photograph's area shown in yellow.



Area of enlarged map below



Viewpoint Location Maps

Legend

- - - - - Transmission Line Alternatives
- Project Boundary
- ▲ Key Observation Point

Photograph Information

Time of photograph:	3:09 P.M.
Date of photograph:	March 5, 2009
Distance to project:	3.03 miles
Weather condition:	Partly Cloudy
Viewing direction:	Southwest
Latitude:	35°21'17.81"N
Longitude:	119°20'20.91"W

KOP 4: VIEW FROM STOCKDALE HIGHWAY AND I-5 EXISTING CONDITIONS

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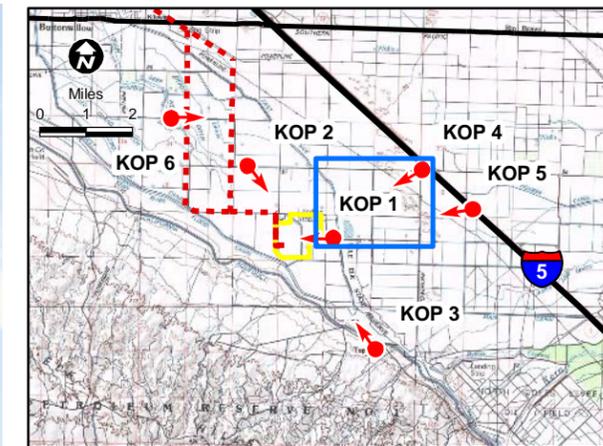


FIGURE 5.11-21



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Photograph is intended to be viewed 10 inches from viewer's eyes when printed on 11x17 paper. The photograph below has been cropped top and bottom to show a wide angle of view with the above photograph's area shown in yellow.



Area of enlarged map below



Viewpoint Location Maps

Legend

- - - - - Transmission Line Alternatives
- Project Boundary
- ▲ Key Observation Point

Photograph Information

Time of photograph:	3:09 P.M.
Date of photograph:	March 5, 2009
Distance to project:	3.03 miles
Weather condition:	Partly Cloudy
Viewing direction:	Southwest
Latitude:	35°21'17.81"N
Longitude:	119°20'20.91"W

**KOP 4: VIEW FROM STOCKDALE HIGHWAY AND I-5
SIMULATED CONDITIONS**

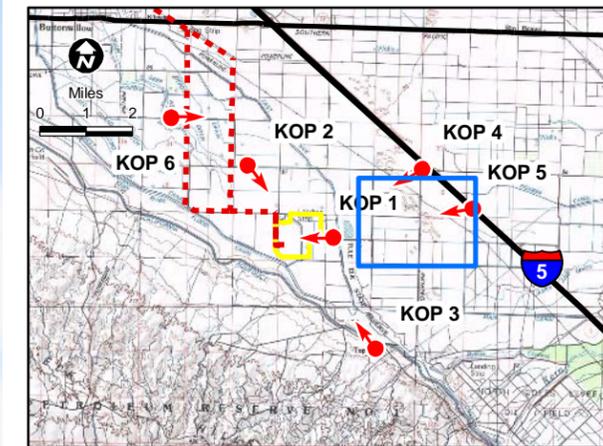
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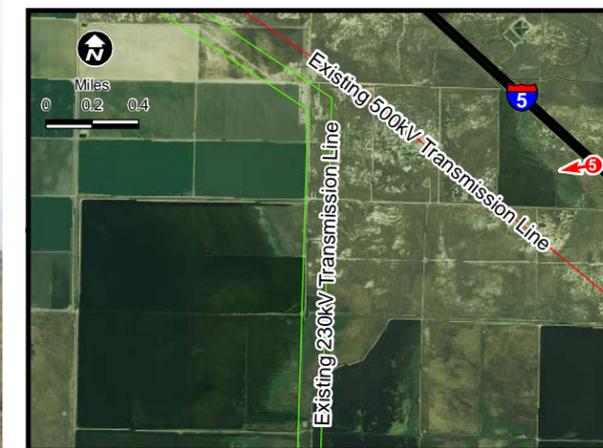
FIGURE 5.11-22



Photograph is intended to be viewed 10 inches from viewer's eyes when printed on 11x17 paper. The photograph below has been cropped top and bottom to show a wide angle of view with the above photograph's area shown in yellow.



Area of enlarged map below



Viewpoint Location Maps

Legend

- - - - - Transmission Line Alternatives
- Project Boundary
- ▲ Key Observation Point

Photograph Information

Time of photograph:	3:13 P.M.
Date of photograph:	March 5, 2009
Distance to project:	3.77 miles
Weather condition:	Partly Cloudy
Viewing direction:	Southwest
Latitude:	35°20'34.70"N
Longitude:	119°19'10.12"W

KOP 5: VIEW FROM SOUTHBOUND I-5 EXISTING CONDITIONS

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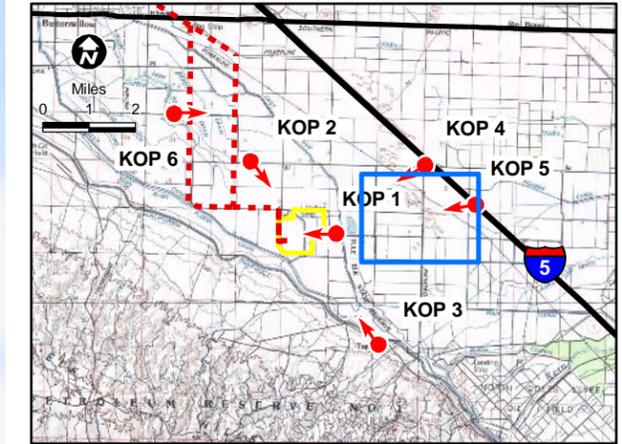


FIGURE 5.11-23

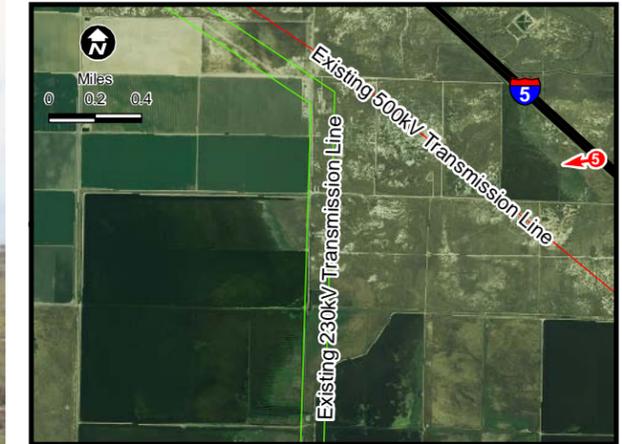
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Photograph is intended to be viewed 10 inches from viewer's eyes when printed on 11x17 paper. The photograph below has been cropped top and bottom to show a wide angle of view with the above photograph's area shown in yellow.



Area of enlarged map below



Viewpoint Location Maps

Legend

- - - - - Transmission Line Alternatives
- Project Boundary
- ▲ Key Observation Point

Photograph Information

Time of photograph:	3:13 P.M.
Date of photograph:	March 5, 2009
Distance to project:	3.77 miles
Weather condition:	Partly Cloudy
Viewing direction:	Southwest
Latitude:	35°20'34.70"N
Longitude:	119°19'10.12"W

**KOP 5: VIEW FROM SOUTHBOUND I-5
SIMULATED CONDITIONS**

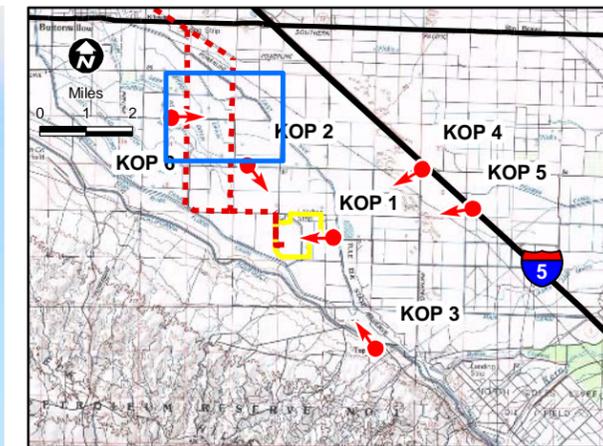
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FIGURE 5.11-24



Photograph is intended to be viewed 10 inches from viewer's eyes when printed on 11x17 paper. The photograph below has been cropped top and bottom to show a wide angle of view with the above photograph's area shown in yellow.



Area of enlarged map below



Viewpoint Location Maps

Legend

- - - - - Transmission Line Alternatives
- Project Boundary
- Key Observation Point

Time of photograph:	4:07 P.M.
Date of photograph:	March 5, 2009
Distance to project:	0.31 mile
Weather condition:	Partly Cloudy
Viewing direction:	Southeast
Latitude:	35°22'9.23"N
Longitude:	119°26'4.83"W

**KOP 6: VIEW FROM EASTBOUND BRITE ROAD
EXISTING CONDITIONS**

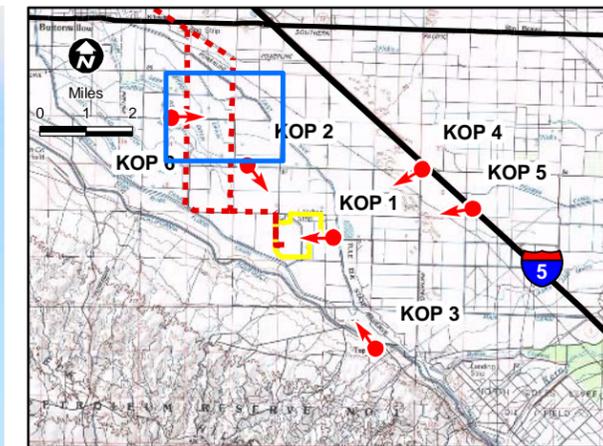
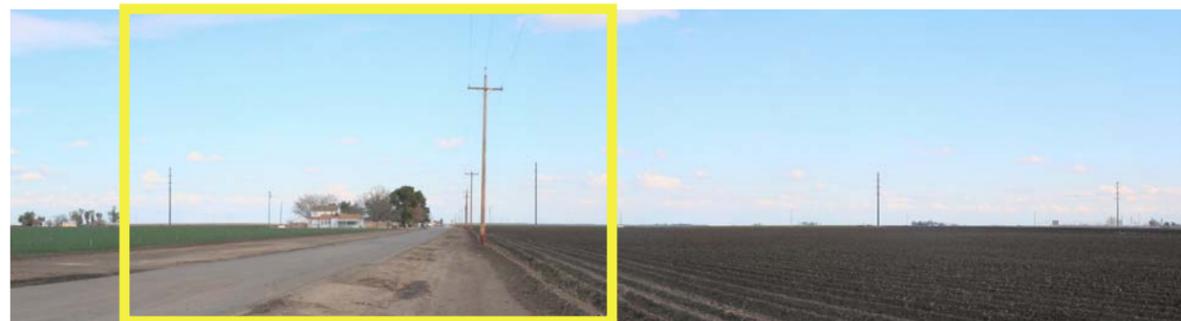
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FIGURE 5.11-25



Photograph is intended to be viewed 10 inches from viewer's eyes when printed on 11x17 paper. The photograph below has been cropped top and bottom to show a wide angle of view with the above photograph's area shown in yellow.



Area of enlarged map below



Viewpoint Location Maps

Legend

- - - - - Transmission Line Alternatives
- Project Boundary
- Key Observation Point

Photograph Information

Time of photograph:	4:07 P.M.
Date of photograph:	March 5, 2009
Distance to project:	0.31 mile
Weather condition:	Partly Cloudy
Viewing direction:	Southeast
Latitude:	35°22'9.23"N
Longitude:	119°26'4.83"W

**KOP 6: VIEW FROM EASTBOUND BRITE ROAD
SIMULATED CONDITIONS**

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FIGURE 5.11-26

