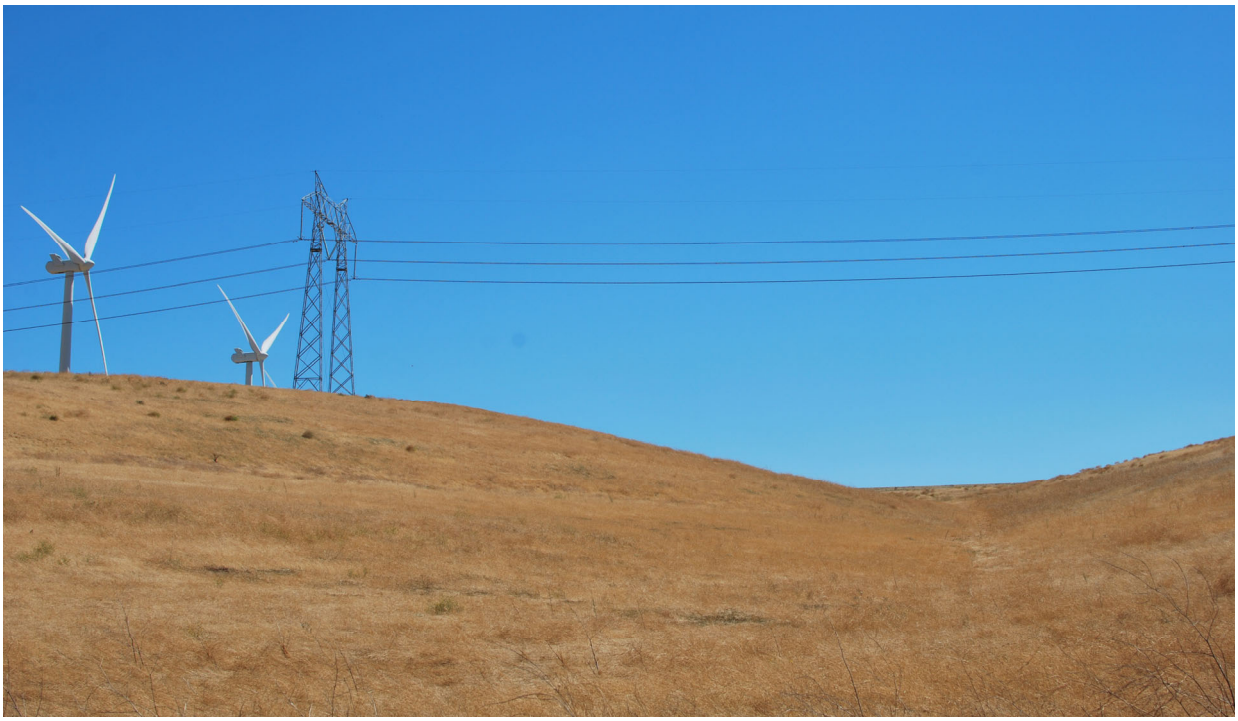
VISUAL RESOURCES TECHNICAL REPORT

LS Power Grid California, LLC

Collinsville 500/230 Kilovolt Substation Project

Solano, Sacramento, and Contra Costa Counties, California

July 25, 2024; Revised October 2024



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Glossary of Terms and Acronyms

CAISO	California Independent System Operator
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CPUC	California Public Utilities Commission
DPLU	Department of Planning and Land Use
EIR	Environmental Impact Report
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
KOP	key observation point
kV	kilovolt
LCU	landscape character unit
LSPGC	LS Power Grid California, LLC
MUP	Major Use Permit
NESC	National Electric Safety Code
O&M	Operations and Management
PEA	Proponent's Environmental Assessment
PG&E	Pacific Gas and Electric Company

1.0 INTRODUCTION

This technical report examines visual resources in the area of the proposed LS Power Grid California, LLC (LSPGC) Collinsville 500/230 Kilovolt Substation Project (Proposed Project) to determine how the Proposed Project could affect the aesthetic character of the landscape. The report includes a description of existing visual conditions and an evaluation of potential visual impacts on aesthetic resources resulting from the construction, operation, and maintenance of the Proposed Project.

The Proposed Project would be located in unincorporated southern Solano County, in unincorporated Sacramento County, in unincorporated Contra Costa County, and in the City of Pittsburg; it would include the construction and operation of the proposed Collinsville 500/230 kilovolt (kV) Substation, approximately 6 miles of new transmission line between the proposed Collinsville Substation and Pacific Gas and Electric Company's (PG&E's) existing Pittsburg Substation, and a 500 kV interconnection between the existing Vaca Dixon-Tesla 500 kV Transmission Line and the proposed Collinsville Substation.

Visual resources are the natural and built features of the landscape that can be seen and that contribute to an attractive landscape appearance and the public's enjoyment of the environment. Landforms, water, vegetation patterns and human-made structures define an area's visual character. This report analyzes whether the Proposed Project would alter the perceived visual character of the environment and cause visual impacts; the report conforms to the California Public Utility Commission (CPUC) requirements concerning Proponent's Environmental Assessment (PEA) visual resources evaluation. It also addresses criteria for visual impact analysis set forth by the California Environmental Quality Act (CEQA).

2.0 PROJECT OVERVIEW

Components of the Proposed Project would be located in unincorporated portions of Solano, Sacramento, and Contra Costa counties, and in the City of Pittsburg, in California. The components of the Proposed Project would be primarily located in unincorporated Solano County in the Montezuma Hills at the confluence of the Sacramento River and San Joaquin River. The Proposed Project Area is bounded by the north shore of the Sacramento River, Montezuma Slough to the west, Talbert Lane in the Montezuma Hills to the north, and Broad Slough to the east; this defines the Proposed Project Area (Figure 1). The Proposed Project's northern terminus would be at existing transmission lines at Talbert Lane, and the southern terminus would be at the existing PG&E Pittsburg Substation—this defines the Proposed Project alignment.[1]

[1] The Proposed Project components that would be located in unincorporated portions of Sacramento County and Contra Costa County would be installed underwater or underground; because these components would not be visible, these components and jurisdictions are not considered further in the report.

The Proposed Project would involve the construction of a new substation and transmission lines to address the California Independent System Operator (CAISO)-identified overloads to the Greater Bay Area by increasing transmission reliability for the area and advancing additional renewable generation.

2.1 PROJECT COMPONENTS

The main components of the Proposed Project, as shown on Figure 1, would include:

- A new approximately 11-acre 500/230 kV substation (Collinsville Substation);
- Two approximately 1.5-mile-long single-circuit 500 kV transmission line segments that would interconnect PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line into the proposed Collinsville Substation; [2] and
- A new approximately 6-mile-long double-circuit 230 kV transmission line connecting the proposed Collinsville Substation to PG&E's existing Pittsburg Substation. The new 230 kV transmission line would include:
    - An approximately 1- to 2-mile-long overhead transmission line segment, that would connect the proposed Collinsville Substation to an in-river H-frame structure (north side of the Sacramento River),
    - One steel in-river H-frame structure to transition the overhead conductors to submarine cables on the northern edge of the Sacramento River,
    - Up to six approximately 4.5-mile-long submarine cables running in a northeast to southwest direction installed approximately 6 to 15 feet below the sediment surface, and
    - A utility vault structure near PG&E's existing Pittsburg Substation to connect the submarine cables to underground cables that would terminate at approximately two new riser poles adjacent to PG&E's existing Pittsburg Substation.

2.2 PROJECT CONSTRUCTION

The Collinsville Substation construction would require the approximately 11-acre substation site to be cleared of all vegetation and graded to create a generally flat area for the substation components. In addition, new access roads to the substation would be constructed. Next, the ground grid, equipment foundations, and cable trenches would be installed. Once the below-grade construction is complete, the above ground substation components would be installed. Finally, testing and commissioning would be conducted once the transmission lines are terminated at the substation prior to energization.

The overhead transmission lines would be constructed on land and would first require new temporary access roads and work areas to be established at each structure

[2] PG&E would be responsible for the final configuration of the northern tie in of the 500 kV interconnection between the proposed Collinsville Substation and the existing Vaca Dixon-Tesla 500 kV Transmission Line. LS Power would be responsible for the installation of dead-end structures near the Collinsville Substation to facilitate interconnecting the 500 kV lines.

location. This process would involve vegetation clearing and blading, as required to create a flat area to facilitate construction. For the overhead structures, one or more foundations for each structure would be constructed prior to the erection of lattice steel structures or self-supporting, steel monopoles. The 500 kV structures would utilize a horizontal conductor configuration and the 230 kV poles would use a vertical conductor configuration. Finally, the conductors and two optical ground wires would be strung along the transmission line alignment. Following construction, an approximately 20-foot radius around the new structures would remain cleared to facilitate future operation and maintenance.

In-water work for the transmission lines would include the construction of in-river transition structures mounted on foundations on the northern side of the Sacramento River. The submarine cables would be trenched under the riverbed using a hydroplow and water jetting or vertical injector methods with no backfilling required. Near the southern edge of the Sacramento River and San Joaquin River confluence, open trenching or horizontal directional drilling methods of construction would be used to connect the submarine cables to an on-shore utility vault. The cables would then continue in an underground configuration to designated locations near the fence of PG&E's existing Pittsburg Substation. PG&E would be responsible for connecting the cables to the existing substation equipment.

The Proposed Project would also require the establishment of temporary staging areas, stringing sites, access roads, and construction areas to utilize during construction. All temporarily impacted areas would be restored to near pre-construction conditions after work is complete.

2.3 CONSTRUCTION SCHEDULE

Construction would be anticipated to begin in early 2026 and take approximately 24 to 30 months to complete. The Proposed Project would include construction occurring on land and in water. The construction of in-water transition structures is anticipated to take approximately 6 months and installation of the submarine cables is anticipated to take approximately 7 months. In-water work would be restricted to between June 15 and November 30 and would require approximately 2 years to complete within the work windows. Land-based construction would occur year-round or as authorized by permits and authorizations. Per the CAISO technical specifications, the Proposed Project is required to be energized by June 1, 2028.

2.4 OPERATIONS AND MAINTENANCE

LSPGC would conduct ongoing operations and maintenance of all Proposed Project components. These planned activities would involve regular inspections of all facilities and repairs would be conducted on an as-needed basis, and maintenance of transmission line rights-of-way. The proposed Collinsville Substation would be unstaffed and operated remotely. Maintenance of the buried submarine cables is not anticipated.

2.5 LAND USE DESIGNATIONS AND ZONING

In Solano County, the Proposed Project Area is located on lands with General Plan designations of WDI–Water Dependent Industrial, AG–Agriculture, M–Marsh, and WB–Water Bodies and Courses. The Proposed Project Area is zoned Suisan Marsh Agricultural (ASM-160) and is located within the limits of the Collinsville-Montezuma Hills Area Plan and Suisan Marsh Protection Plan Area.

In the City of Pittsburg, Proposed Project components would be installed on lands with a General Plan designation of Industrial, and zoned IG–General Industrial.

2.6 SURROUNDING LAND USES

The Proposed Project Area would be located in the Montezuma Hills with the surrounding area zoned as Agricultural (Grazing Land), specifically the Montezuma Hills Agricultural Region. General uses for the region are identified as agricultural and energy production. There are significant wind energy projects that have been approved or are in process in the vicinity. While to date it appears dominated by wind, the general plan notes other energy producing options may also be considered.

The Town of Collinsville, which has existed since the 1840s, is zoned Residential-Traditional Community (R-TC).

There is a Commercial Recreation zoning district (CR-L) in the Collinsville area with the Suisun Marsh and includes provisions for outdoor recreation, marinas, interpretive centers, stables, boating and fishing clubs, ecological and agricultural education uses.

Also in the Collinsville area is a Water Dependent Industrial (I-WD) District allowing for waterfront storage facilities, waterfront manufacturing or processing facilities, water-using facilities, support facilities and associated manufacturing and processing uses.

The Marsh Preservation District provides provisions for crop production, marsh-oriented recreation, complementary commercial facilities, and non-conforming uses consistent with the Suisun Marsh Preservation Act.

In the City of Pittsburg, the surrounding land use is industrial, comprising the Pittsburg Generating Station and PG&E's existing Pittsburg Substation.

3.0 REGULATORY SETTING

3.1 FEDERAL

There are no applicable federal regulations, plans, or policies pertaining to aesthetics that are applicable to the Proposed Project.

3.2 STATE

3.2.1 California Environmental Quality Act

Under CEQA, impacts to aesthetic resources resulting from a project must be considered by state and local agencies. Appendix G of the CEQA Guidelines includes a

series of questions that agencies may use when assessing the potential aesthetic impacts of a proposed project.

Appendix G of the CEQA Guidelines states that the potential for aesthetic resource impacts exists if the project would:

- Have a substantial adverse effect on a scenic vista;
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
- In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality;
- Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

The impact on these aesthetic resources are addressed in Section 8 – Impact Analysis of this report.

3.2.2 California Department of Transportation: Scenic Highway Program

The State Scenic Highway Program—a provision of Sections 260 through 263 of the Streets and Highways Code—was established by the Legislature in 1963 to preserve and enhance the natural beauty of California. The State Scenic Highway System includes highways that are either eligible for designation as scenic highways or have been designated as such. The status of a State Scenic Highway changes from “eligible” to “officially designated” when the local jurisdiction adopts a scenic corridor protection program, applies to the California Department of Transportation (Caltrans) for scenic highway approval, and receives the designation from Caltrans. A city or county may propose adding routes with outstanding scenic elements to the list of eligible highways. However, State legislation is required. There are no state-designated or -eligible scenic highways within the Proposed Project Area. State Route 160 crossing the San Joaquin River and travelling along the Sacramento River on the eastern edge of the Montezuma Hills is listed as eligible but has not been designated.

3.3 LOCAL

The CPUC has sole and exclusive state jurisdiction over the siting and design of the Project. Pursuant to CPUC General Order 131-D, Section XIV.B, “Local jurisdictions acting pursuant to local authority are preempted from regulating electric power line projects, distribution lines, substations, or electric facilities constructed by public utilities subject to the CPUC’s jurisdiction. However, in locating such projects, the public utilities shall consult with local agencies regarding land use matters.” Consequently, public utilities are directed to consider local regulations and consult with local agencies, but the county and cities’ regulations are not applicable as the county and cities do not have jurisdiction over the Proposed Project. Accordingly, the following discussion of local land use regulations is provided for informational purposes only.

3.3.1 Solano County General Plan

The Resources Chapter of the Solano County General Plan includes goals, policies, and implementation measures to guide development and protect visual quality within the county on a long-term basis. The Resources Chapter of the Solano County General Plan includes the following policies that are relevant to the Proposed Project:

- Policy RS.G-4: Preserve, conserve, and enhance valuable open space lands that provide wildlife habitat; conserve natural and visual resources; convey cultural identity; and improve public safety.
- Policy RS.G-6: Preserve the visual character and identity of communities by maintaining open space areas between them.
- Policy RS.P-35: Protect the unique scenic features of Solano County, particularly hills, ridgelines, wetlands, and water bodies.
- Policy RS.P-36: Support and encourage practices that reduce light pollution and preserve views of the night sky.
- Policy RS.P-37: Protect the visual character of designated scenic roadways.
- Policy RS.P-58: Require the siting of energy facilities in a manner compatible with surrounding land uses and in a manner that will protect scenic resources.

3.3.2 Sacramento County General Plan

The Circulation Element of the Sacramento County General Plan identifies the following objective to preserve and enhance the aesthetic quality of scenic roads:

- Objective: To retain designation of the River Road (State Route 160) as an Official State and County Scenic Highway and to preserve and enhance its scenic qualities.

3.3.3 Contra Costa County General Plan

The Transportation and Circulation Element of the Contra Costa County General Plan contains policies and implementation measures to identify, preserve, and enhance scenic routes in the county. The following policies from the Transportation and Circulation Element are relevant to the Proposed Project:

- Policy 5-47: Scenic corridors shall be maintained with the intent of protecting attractive natural qualities adjacent to various roads throughout the county.
- Policy 5-49: Scenic views observable from scenic routes shall be conserved, enhanced, and protected to the extent possible.
- Policy 5-50: The existing system of scenic routes shall be enhanced to increase the enjoyment and opportunities for scenic pleasure driving to major recreational and cultural centers throughout this and adjacent counties.

3.3.4 City of Pittsburg General Plan

The City of Pittsburg General Plan does not contain any goals or policies relevant to the Proposed Project.

4.0 ENVIRONMENTAL SETTING

The environmental setting surrounding the Proposed Project components in Solano County are addressed in the following sections; the environmental setting surrounding the PG&E Pittsburg Substation is not addressed as the only visible Proposed Project components—installation of two new riser poles—in this area would result in only a *de minimis* change in this heavily-industrialized, degraded visual environment.

4.1 PROJECT SETTING

The Proposed Project Area is in the Montezuma Hills on the southern edge of Solano County along the Suisun Marsh and San Joaquin–Sacramento River Delta.

The Montezuma Hills consist of gently rolling hills of similar size, texture, and color. The substation would be located along Stratton Lane at approximately 50 feet above mean sea level with the surrounding peaks at generally 150 to 250 feet above sea level. The hills and peaks to the north and west are dotted with wind turbines and related energy infrastructure, an important element of the visual landscape in the Montezuma Hills. The site itself has been recently used for crops and grazing.

The vegetation in the Proposed Project Area is generally annual grassland and used for grazing. There are very few trees in the area, and those trees that appear are associated with the residences in the unincorporated village of Collinsville or the occasional rural farmstead in the hills. Permanent and seasonal wetlands contrast with dry grassland. The Suisun Marsh is located to the southwest and west of the Proposed Project Area covers 85,000 acres of tidal marsh, managed wetlands, waterways, and lowland and upland grassland areas.

4.2 PROJECT VIEWSHED

The Proposed Project Area is gently sloping land in the Montezuma Hills and the viewshed is enclosed by the hills on the north and east, the Antioch and Pittsburg shorelines on the south side of the San Joaquin River, Collinsville, and Suisun Marsh to the west and southwest with Benecia and the Diablo range cutting off the view in the distance. The views to and from the site on Stratton Lane are generally about 4 to 5 miles but the extended views with discernable mountain peaks are about 10 miles. Topography obscures many views within the Proposed Project Area.

Figure 2 presents the theoretical viewshed surrounding the proposed Collinsville Substation based on the height of proposed structures and the topography of the area.

4.3 LANDSCAPE CHARACTER UNITS

A landscape character unit is a portion of the landscape that exhibits consistent elements and features that create a unified view. Five landscape character units have been identified for the Proposed Project viewshed and are illustrated in Figure 3.

4.3.1 Landscape Unit 1, Montezuma Hills Landscape Character Unit

The Montezuma Hills range in elevation from 25 to 350 feet above mean sea level and the portions within the Proposed Project Area contain mainly valley floor grasslands but also some areas that are periodically cultivated for dryland production of oats, wheat, and barley.

The hills are monochromatic in color most of the year due to the limited variation in vegetation. The landscape is honey brown in the dry season and lush green in the wetter season. Wind turbines dot the hills and winding access roads carve through the landscape. The predominate uses are energy production (wind) and grazing. There is little to no residential use within the viewshed.

4.3.2 Landscape Unit 2, Collinsville Shoreline Landscape Character Unit

The Collinsville Shoreline includes the unincorporated village of Collinsville and the Suisan Marsh. The Suisan Marsh is the largest brackish water wetland on the West Coast. It is managed for recreational purposes such as fishing and hunting and is cherished for its biodiversity. It is home to birds, mammals, fish, amphibians, and reptiles.

The visual landscape has a complex texture with a variety of grasses and low growing shrubs with varied colors from light tan to deep brown to vibrant green in the drier season and varying shades of green in the wetter season. It also features larger trees that are absent from the Montezuma Hills Landscape Character Unit. It is less than 25 feet above mean sea level and is therefore subject to tidal influence.

4.3.3 Landscape Unit 3, Pittsburg Shoreline Landscape Character Unit

The Pittsburg shoreline is along the New York Slough on the south side of the Sacramento River. The shoreline features a mix of waterfront uses including a public marina, private yacht club, parks, multiple residential developments, and industrial complexes.

The area is urban in nature, highly developed, with manicured landscaping and a mix of colors and textures from lush green to steel grey. The industrial areas stand in stark contrast to the wetlands, the river, and developed parklands in the Pittsburg area.

4.3.4 Landscape Unit 4, San Joaquin/Sacramento River Landscape Character Unit

The San Joaquin River and Sacramento River come together in the Proposed Project Area.

The water in this area varies in color from bright blue in the marina areas to blue green to green-grey dependent on the water depth and vegetation. The river is used for recreational uses such as fishing and boating but is also a sensitive and key link in California’s ecosystem.

4.3.5 Landscape Unit 5, Wetland Landscape Character Unit

There are many islands in the San Joaquin River and Sacramento River within the Proposed Project Area. Chain Island, Winter Island and Browns Island are along the Proposed Project alignment but Van Sickle Island and Chipps Island are just to the west, all are rich in natural habitat and feature diverse species creating a visually complex landscape with colors varying from tan to brown to vivid green.

None of these islands are inhabited by humans but instead feature diverse plants and wildlife.

4.4 REPRESENTATIVE VIEWS

Figures 4a through 4k present a set of eleven photographs taken from representative locations along the Proposed Project alignment within the Proposed Project Area and viewshed. Table 4-1, a summary of this set of representative photographs, includes information on the viewpoint location, primary type of viewers, and backdrop conditions to Proposed Project components. Taken together, these photographs convey a general sense of the existing visual character of the landscape within the vicinity of the Proposed Project. The set of photographs also demonstrates that existing energy and industrial facilities are located within the Proposed Project viewshed, including those associated with the Proposed Project. Energy facilities are established elements of the visual setting of the area.

Selection of the representative views began with desktop review of project maps, geographic information system data and review of federal, state, and local plans and policies. Through the desktop study seven locations were selected from which to obtain photographs in the field to characterize the existing visual condition and assess potential use in visual simulations. Site reconnaissance was conducted in August 2023 to obtain the photographs from the representative locations and views. All points are publicly accessible; although, some would not frequently be used by the public as they are located on unpaved roads.

Table 4-1. Summary of Representative Photographs

Photograph Number and Location	Primary Viewers	Predominant Backdrop for Project Structures
1a and 1b. Collinsville Road	Landowners Residents	Landscape and sky. The brown and green grasslands and undulating brown hills dominate the view with the wind turbines prominent in the background.
2. Collinsville Road	Landowners Agricultural and Energy Facility Workers Residents	Landscape and sky. The grey-green and brown grasslands in the foreground open up to brown undulating hills in the middle-ground with wind turbines and sky in the background. Two oak trees interrupt the landscape in the middle-ground.
3. Talbert Lane	Landowners Agricultural and Energy Facility Workers	Landscape and sky. The rolling hills off the side of Talbert Lane feature grasses of brown and green. Dominant in the middle-ground of the view is a lattice tower and associated power lines.
4. Talbert Lane	Landowners Agricultural and Energy Facility Workers	Landscape and sky. The rolling hills provide a short view of brown grasslands. The top of a lattice tower and three wind turbines are visible in the middle-ground.
5a and 5b. Talbert Lane	Landowners Agricultural and Energy Facility Workers	Landscape and sky. The sky and to a lesser extent the green fields form the backdrop for the structures.
6a, 6b, and 6c. Stratton Lane	Landowners Agricultural and Energy Facility Workers	Landscape and sky. Rolling brown grass covered hills with patches of green.
7. Pittsburg Marina	Residents Regional Visitors	Water, landscape, and sky. The manmade marina is in the foreground with the river delta beyond in the middle-ground. The Montezuma Hills dotted with wind turbines form the background.

5.0 METHODOLOGY

5.1 VISUAL ASSESSMENT

The visual impact assessment presented in the following sections employs methods based on those adopted by the U.S. Department of Transportation Federal Highway Administration and other accepted visual analysis techniques.

The impact analysis describes change to existing visual resources and assesses viewer response to that change. Central to this assessment is an evaluation of impacts to views from which the project would be visible to the public; these locations are described as Key Observation Points (KOPs) (see Section 7.1). The visual impact assessment is based on evaluation of the project-related changes to the existing visual resources that would result from construction and operation of the project; the changes were assessed, in part, by evaluating views of the Proposed Project provided by computer-generated visual simulations and comparing them to the existing visual environment.

5.2 VISUAL SIMULATION

The methodology employed for preparing the simulations displayed in Figures 5b, 6b, and 7b includes systematic site photography, computer modeling, and digital rendering techniques. Photographs were taken using a digital single-lens reflex camera with fixed focal length 50-millimeter lens, which represents an approximately 40-degree horizontal view angle. Photography viewpoint locations were documented in the field using photo log sheet notation, global positioning system (GPS) recording, and basemap annotation. Digital aerial photographs and project design information supplied by LSPGC provided the basis for developing three-dimensional computer modeling of the new project components. For each simulation viewpoint, viewer location was input from global positioning system data using 5 feet as the assumed eye level. Computer "wireframe" perspective plots were overlaid on the simulation photographs to verify scale and viewpoint location. Digital visual simulation images were then produced based on computer renderings of the three-dimensional modeling combined with selected digital site photographs; all components of the substation, regardless of potential visibility from any given location, were modeled.

6.0 VISUAL RESOURCES AND VIEWER RESPONSE

6.1 EXISTING VISUAL QUALITY

The *Guidelines for the Visual Impact Assessment of Highway Projects (Federal Highway Administration 2015)* identifies three key concepts or elements of visual quality:

- **Natural Harmony:** What a viewer likes and dislikes about the natural environment. The viewer labels the visual resources of the natural environment as being either harmonious or inharmonious. Harmony is considered desirable; disharmony is undesirable.
- **Cultural Order:** What a viewer likes and dislikes about the cultural environment. The viewer labels the visual resources of the cultural environment as being either orderly or disorderly. Orderly is considered desirable; disorderly is undesirable.
- **Project Coherence:** What a viewer likes and dislikes about the project environment. The viewer labels the visual resources of the project environment as being either coherent or incoherent. Coherent is considered desirable; incoherent is undesirable.

Visual quality is subjective and influenced by the viewer's position and biases. Neighbors and travelers will have different perspectives and value different aspects of the landscape, and even neighbors may vary in how they evaluate the same visual resource.

Table 6-1 presents the rating scale used in this assessment; this scale takes into consideration natural harmony, cultural order, and project coherence.

Table 6-1. Visual Quality Rating Scale

Rating	Description
Low Visual Quality	Landscapes that have low scenic value. They may contain visually discordant human alterations, and often provide little visual interest. Levels of natural harmony, cultural order and/or project coherence are low.
Moderately Low Visual Quality	Landscapes that have below average scenic value. They may contain visually discordant human alterations, but these features do not dominate the landscape. They often lack spaces that people perceive as inviting. Levels of natural harmony, cultural order and/or project coherence are below average.
Moderate Visual Quality	Landscapes that are common or typical landscapes with average scenic value. They usually lack significant human or natural features. Levels of natural harmony, cultural order and/or project coherence are average.
Moderately High Visual Quality	Landscapes that are above average but not of high scenic value. They usually contain interesting or pleasing cultural or natural features. Their level of natural harmony, cultural order and or project coherence are moderate to high.
High Visual Quality	Landscapes that have a high-quality scenic value due to cultural or natural features or the arrangement of spaces creating visual interest. These landscapes have high levels of natural harmony, cultural order, and project coherence and people are attracted to them.
Outstanding Visual Quality	Reserved for landscapes with exceptionally high visual quality. These landscapes are regionally and or nationally significant. Contain exceptional natural or cultural features that contribute to a level of iconic landscape that people are attracted to.

The natural landforms and energy/transmission infrastructure typify the landscape within the viewshed and contribute to the level of visual quality. We have considered the existing visual quality of each of the landscape character units in detail as well as identifying an average rating for each representative photograph (see Table 6-2).

6.1.1 Landscape Unit 1, Montezuma Hills Landscape Character Unit

Natural Harmony (High) – The Montezuma Hills are an iconic landscape in California. The landscape is harmonious and highly valued; however, the dominance of wind turbines keeps it from being outstanding. While the wind turbines are attractive, they provide strong evidence of human alteration and reduce the natural harmony.

Cultural Order (High) – There is very little in the way of cultural resources in this landscape character unit other than the wind turbines. The wind turbines are orderly and majestic in the landscape.

Project Coherence (High) – Overall, the existing landscape reads as coherent. The rolling hills dotted with wind turbines appear harmonious and orderly.

6.1.2 Landscape Unit 2, Collinsville Shoreline Landscape Character Unit

Natural Harmony (High) – The shoreline appears natural and harmonious. Human interference to accommodate recreation and agriculture blend in the landscape and generally appear in harmony. The residential development is small scale and does not overpower the natural landscape.

Cultural Order (Moderately High) – The cultural development is low impact and does not overwhelm the natural landscape. It is orderly and focused along Collinsville Road in a village setting. Although some properties are untidy and have not been rebuilt after previous fire in 2014.

Project Coherence (Moderately High) – Collinsville has been a recreation destination in the past and evidence of this is still present. The low impact housing and the natural landscape is visually desirable, however the lack of maintenance on certain properties keeps the project coherence at moderately high rather than high.

6.1.3 Landscape Unit 3, Pittsburg Shoreline Landscape Character Unit

Natural Harmony (High) – The Pittsburg Shoreline has attractive views of the San Joaquin – Sacramento River Delta and Montezuma Hills.

Cultural Order (Moderate) – There are areas of the shoreline that have high visual quality and others that are of low visual quality when reviewing the cultural elements. The areas around the marinas and parks have a high attention to detail, providing pleasant places for people to participate in recreation activities and enjoy the waterfront views while the areas in between lack cultural order and are unattractive. The percentage of attractive waterfront is far lower than the percentage of unattractive and/or inaccessible waterfront.

Project Coherence (Moderate) – There are areas along the shoreline that have a high level of attractiveness and a greater percentage that have a low level of attractiveness and coherence. Overall, the coherence is moderate.

6.1.4 Landscape Unit 4, San Joaquin/Sacramento River Landscape Character Unit

Natural Harmony (High) – The river has a high level of natural harmony; it is a destination for recreation but requires special equipment to appreciate the views from this landscape unit. Views of this landscape unit may be appreciated from units 1, 2, 3, and 5.

Cultural Order (Moderately High) – The river is mostly a natural landscape with the exception of the shoreline recreation amenities and industrial facilities that interface with the river. The cultural elements related to recreation are generally attractive and in keeping with the overall landscape character of the river, however the industrial facilities along the south shore stand in contrast and reduce the overall attractiveness of the river in the Proposed Project Area.

Project Coherence (Moderately High) – The river unit is generally attractive and coherent, but the attractiveness is reduced by the industrial activities that interact with the river edge.

6.1.5 Landscape Unit 5, Wetland Landscape Character Unit

Natural Harmony (Outstanding) – The wetlands in the Proposed Project Area are highly valued for their aesthetics, diversity, and ecological function. They are a

destination for recreation and research. They appear visually harmonious when viewed at the scale of this project.

Cultural Order (High) – There is little in the way of cultural resources within the wetland. There are cultural elements that support recreation and research, but they are not dominant in the landscape. The unit appears to be orderly with nature being prioritized.

Project Coherence (High) – From the scale of this project the wetland unit appears coherent. The wetland appears natural with minimal cultural features.

Table 6-2. Visual Quality Rating

Representative Photograph Number	Visual Quality Rating	Comments
1a and 1b	High	Typical Montezuma Hills view with existing energy infrastructure on rolling hills with a grassland landscape.
2	High	Typical Montezuma Hills view with existing energy infrastructure on rolling hills with a grassland landscape.
3	Moderately low	Dry grassland, short view with lattice tower dominant.
4	Moderately low	Dry grassland, short view with lattice tower and wind turbines over the crest of the hill.
5a and 5b	Moderately low	Dry grassland, short view dominated by lattice towers, power poles, and wind turbines.
6a, 6b, and 6c	Moderate	Dry annual grassland in foreground and middle-ground. Short view due to topography.
7	High	View of marina in the foreground, river in the middle-ground and Montezuma Hills dotted with wind turbines in the background. This view is higher than average in the area and is a destination for the public.

6.2 VIEWER GROUPS AND SENSITIVITY

Viewer response to changes in the visual environment is based on a combination of viewer sensitivity and viewer exposure.

6.2.1 Potentially Affected Viewers

Accepted visual assessment methods establish sensitivity levels as a measure of public concern for changes to scenic quality. Viewer sensitivity, one of the criteria used to evaluate visual impact significance, can be divided into high, moderate, and low categories. Factors considered in assigning a sensitivity level include viewer activity, view duration, viewing distance, adjacent land use, and special management or planning designation. Visual sensitivity will vary with the type of users. The primary viewer groups within the Proposed Project Area are described below.

Motorists

Motorists include local travelers who are familiar with the visual setting and regional travelers using area roadways on an occasional basis. Local travelers include those commuting to or from work, and residents of Collinsville. Regional motorists include those attending the area for recreational activities. The duration of motorists' views is generally brief due to the topography and winding nature of the local road and averages a few seconds.

Workers

Land use in the Proposed Project Area is largely agricultural and energy production; workers harvesting crops or tending energy facilities are the second largest viewer group. The duration of workers' views can be long depending on the work being performed.

Residents

The largest viewer group would be residents. The Proposed Project Area includes the long-standing village of Collinsville. The village is small with fewer than twenty residential structures. In contrast, the residential area surrounding the Pittsburg Marina includes hundreds of residential structures but is at a greater distance. The views of the Proposed Project from the two residential areas vary greatly, with the Collinsville structures having screened views through intervening topography and vegetation and the Pittsburg residents having a view across the river and at a distance of approximately five miles. Residential views tend to be long in duration**.**

Recreationists

The second largest group of viewers are recreationists who may be local or visiting. For the purposes of the study, boaters have been excluded because the vantage point requires special equipment unavailable to the average member of the public. The study considers recreationists that are walking, biking, fishing, or sightseeing. This group generally places a high value on scenic resources and views tend to be long in duration.

6.2.2 Viewer Exposure

Viewer exposure assesses the number of viewers exposed to a visual change, the type of viewer activity, the viewing distance to the resource change (foreground, middle-ground, or background; see Table 6-3), the duration of their view, the speed at which the viewer moves, and the position of the viewer. They are based on one static point.

Table 6-3. Distance Zones

Distance Zone	Description
Foreground	0 to 0.5 mile from viewer.
Middle-ground	Extends from the foreground zone to 2 to 5 miles from the viewer.
Background	Extends from the middle-ground to infinity.

6.2.3 Viewer Sensitivity

Viewer sensitivity is defined as the extent to which the viewing public would notice or experience a change in visual quality. Viewer sensitivity is based on several factors that can differ in level of importance from one viewer to another. Viewer sensitivity is based on a viewer's ability to perceive the landscape and is affected by their activity on the landscape. Table 6-4 presents the Viewer Sensitivity Rating Scale used in this report.

Table 6-4. Viewer Sensitivity Rating Scale

Rating	Description
Low	Viewers are not sensitive to changes in the landscape and may not notice changes.
Low to Moderate	Viewers may notice changes but will likely be accepting of changes without mitigation.
Moderate	Viewers will notice changes and may accept changes without mitigation, or they may require mitigation.
Moderate to High	Viewers will notice changes and mitigation may be required.
High	Viewers will notice changes and redesign or extensive mitigation may be required.

Table 6-5 presents a summary of viewer response from each representative photograph location. Most of the views in the Proposed Project Area would be from a distance greater than one mile and less than 5 miles. The large majority of viewers would be residents and recreationists—either those traveling for local work purposes and at low to moderate speeds or those moving on foot or by bike and spending significant amounts of time in one area. These viewers are identified as having a moderate to high sensitivity.

Table 6-5. Summary of Viewer Response

Representative Photograph Location	Viewing Distance	Viewer Sensitivity Rating
1a and 1b	Middle-ground	Moderate to High
2	Middle-ground	Moderate
3	Foreground	Low
4	Foreground	Low
5a and 5b	Foreground	Low
6a, 6b, and 6c	Middle-ground	Low to Moderate
7	Background	Moderate

In summary:

- Given the short duration of views and the transience of most viewers, **motorists' viewer sensitivity is considered low to moderate.**
- Given their focus on work tasks while in the Proposed Project Area, **workers' viewer sensitivity is considered low.**
- Given the long duration of views and their connection to place, **residents' viewer sensitivity is considered moderate to high.**
- Given the long duration of views and their value on scenic resources, **recreationists' viewer sensitivity is considered moderate to high.**

With consideration given to viewer groups, activities, and perception-modifying factors such as motorist speed, viewing duration, viewer orientation, viewer occupation, and the existing visual experience, overall viewer awareness of the Proposed Project is anticipated to be moderate.

7.0 VISUAL IMPACT ANALYSIS

7.1 KEY OBSERVATION POINTS

To determine whether the Proposed Project would substantially degrade the existing visual character or quality of the site and its surroundings, three of the representative photographs were chosen as KOPs. The validity of each of the Representative Views was confirmed in the field; from the eleven representative photographs, representative photographs 1, 6, and 7 were selected as KOPs for which a visual simulation was developed.

Selection was made based on:

- Views of the proposed substation.
- Likely views of residents who may see the proposed substation and/or alignment from public roads.
- Likely views of recreationists who may see the proposed substation and/or alignment from public spaces.
- Likely views of motorists who may see the proposed substation and/or alignment from public roads.
- Likely views of workers who may see the proposed substation and/or alignment from public roads.
- Locations and users that would be most sensitive to changes in visual conditions.

The three KOP locations are presented on Figure 3.

The Proposed Project would be visible from Collinsville Road, Talbert Lane, and Stratton Lane. These three roadways are all public but are lightly travelled given their location and condition. Site reconnaissance showed that the Proposed Project would

not be visible from roadways on the south side of the river, however the public recreation area around the Pittsburg Marina would have distant views of the Proposed Project. Most of the viewers would be residents and recreationists, along with a few workers for the wind facilities and agriculture in the Montezuma Hills area.

The set of visual simulations presented in Figures 5 through 7 documents the Proposed Project-related visual change that would occur at the three KOPs and provides the basis for evaluating potential visual effects associated with the Project. The simulations presented on Figures 5, 6, and 7 consist of two full-page images designated “a” and “b,” with the existing views shown in the “a” figure and the visual simulations in the “b” figure.

An evaluation of potential visual effects considered factors such as the extent of change to the visibility of existing power lines, the degree to which the various project elements would contrast with or be integrated into the existing landscape, the extent of change in the landscape’s composition and character; and the number and sensitivity of viewers. An analysis of the visual change to be realized at each KOP is presented in the sections below.

7.1.1 Key Observation Point 1 (Representative Photograph 1)

Proposed Project Features

Proposed Project components visible from KOP1 would include a number of new steel transmission structures and conductor, a new wood pole line and conductor, and the Collinsville Substation. A variety of new steel structures would be visible, including lattice steel towers, single poles, groups of single poles in close proximity to each other, and steel structures that have both vertical and horizonal components. The new steel structures would be constructed of dulled grey galvanized steel. A new wood pole line and associated conductors would also be visible. The substation would be surrounded by a prefabricated interlocking security wall that would be approximately 10 feet tall. Table 7-1 summarizes the change and impact on KOP1.

Table 7-1. Summary of Key Observation Point 1

Project Elements within View	
New steel lattice towers and steel poles supporting conductor and optical groundwire; new wood pole line and conductor; new Collinsville Substation.	
Visual Sensitivity Factor(s)	
Local road for access to small village of Collinsville. A small group of generally long-term residents who would notice changes in the surrounding landscape. Historically an agricultural and holiday home village.	
Pittsburg area is more densely populated with recreation areas and views of the Montezuma Hills.	
Montezuma Hills are associated with energy production and may make the facility more acceptable to residents and visitors.	
Viewing Distance	**Viewers**
Middle-ground	Landowners, Workers, Residents, Recreationists

Table 7-1. Summary of Key Observation Point 1

Viewer Sensitivity Rating	
Moderate to High	
Existing Visual Quality Rating	**Comments**
High Visual Quality	Typical Montezuma Hills view with existing energy infrastructure on rolling hills with a grassland landscape
Proposed Visual Quality Rating	**Comments**
Moderate Visual Quality	The view would be impacted by the addition of the substation and new transmission poles that would be located in the middle-ground of the view. The addition of the substation introduces elements that are discordant.
Change to Visual Quality and Character	
The visual quality would be degraded by the addition of the substation, poles, and transmission structures and conductor within the view. The new steel structures clustered together at the substation would clutter the view more than the existing wind turbines. Some of the structures would daylight the hilltops and work against the generally pleasing pattern of the wind turbines. While the existing view contains energy infrastructure, it is harmonious and rhythmic, while the proposed infrastructure would be dominant and visually discordant creating an inharmonious landscape reducing the quality of the view.	
Resulting Visual Impact	
The viewers in the area of KOP1 are residential landowners, workers, and recreationists. The number of viewers is low as the village is small; however, the residents and recreationist would have views of long duration and would notice the change to the landscape. The view of the river is unaffected. The landowners and agricultural workers would also notice the change but are less likely to be sensitive to the change. Overall, the resulting visual impact at KOP1 would be perceptible and the Proposed Project would reduce the natural harmony and project coherence by introducing a cultural infrastructure (i.e., built by man) into a perceived natural landscape.	

7.1.2 Key Observation Point 2 (Representative Photograph 6)

Proposed Project Features

Proposed Project components visible from KOP2 would include the same as are visible from KOP1, albeit at a much closer range. A new wood pole line and associated conductors would also be visible. Numbers of new steel structures and conductor and the Collinsville Substation would be visible in the foreground. A variety of new steel structures would be visible, including lattice steel towers, single poles, groups of single poles in close proximity to each other, and structures that have both vertical and horizonal components. The new steel structures would be constructed of dulled grey galvanized steel. Also visible in this view would be substation components, including other components, capacitors, and low-profile steel structures that would generally not be visible from KOP1. The substation would be surrounded by a prefabricated interlocking security wall that would be approximately 10 feet tall. The proposed north driveway, final graded slopes, and firebreak were modeled as part of the visual

simulation process; however, these features are obscured from view at KOP2 due to the intervening topography in the foreground.

Table 7-2. Summary of Key Observation Point 2

Project Elements within View	
New steel structures, conductor, and optical groundwire; other Proposed Project elements include foreground views of a new wood pole line and conductor, the wall surrounding the substation, and substation equipment.	
Visual Sensitivity Factor(s)	
Characteristic agricultural landscape with annual grasses and wire fences.	
Unpaved local rural road with no residential, commercial or recreation on it. Low number of viewers, moderate speeds.	
Viewing Distance	**Viewers**
Foreground	Landowners, Workers
Viewer Sensitivity Rating	
Low to Moderate	
Existing Visual Quality Rating	**Comments**
Moderate to High	The view from Stratton Lane is typical to the Montezuma Hills, containing fields of annual grasses and gently undulating topography with views of the river and distant Diablo range at varying points along the roadway. The view from this vantage point of the KOP is average. The levels of natural harmony, cultural order and project coherence are average.
Proposed Visual Quality Rating	**Comments**
Moderately Low to Moderate	The substation, new lattice towers, and wood pole line would all be highly visible from Stratton Lane. The Proposed Project components would change the view measurably from the vantage point of the KOP. From further distances the visibility would decrease due to topography and distance. The substation, lattice towers, and wood pole line are new at this location, with no other vertical features in view on the south side of Stratton Lane; therefore viewers could be sensitive to the change.
Change to Visual Quality and Character	
The visual quality would be degraded by the introduction of the substation, new lattice towers, and wood poles within the view. While this view is typical, it is part of a larger attractive viewshed, and the introduction of the vertical elements contrasts the otherwise horizontal landscape, reducing the coherence and therefore the visual quality. There is currently little to no visible energy infrastructure south of Stratton Lane. The introduction of the Proposed Project would change the agricultural character.	

Table 7-2. Summary of Key Observation Point 2

Resulting Visual Impact
The duration of views would be relatively short and the number of viewers would be low from Stratton Lane. Given the short view duration and the low to moderate viewer sensitivity, the addition of the vertical elements would result in a moderate overall impact. The substation would be visible from certain locations along the road but obscured at others due to changes in topography. Overall, the resulting visual impact at KOP2 would be perceptible and the Proposed Project would reduce the natural harmony and project coherence by introducing cultural infrastructure into a perceived natural landscape.

7.1.3 Key Observation Point 3 (Representative Photograph 7)

Proposed Project Features

Proposed Project components visible from KOP3 include the same components visible from KOP1 and KOP2, albeit at a much greater distance; all Proposed Project components are present in the background when viewed from KOP3.

Table 7-3. Summary of Key Observation Point 3

Project Elements within View	
New steel structures supporting conductor and optical groundwire; new Collinsville Substation.	
Visual Sensitivity Factor(s)	
Public recreation area where views of the Montezuma Hills are likely of high value.	
Views are of long duration with moderate viewer sensitivity.	
Viewing Distance	**Viewers**
Background	Residents, Recreationists
Viewer Sensitivity Rating	
Moderate	
Existing Visual Quality Rating	**Comments**
Moderately High	The view includes the marina and river in the foreground to middle-ground and the Montezuma Hills in the background dotted with wind turbines. The annual grassland hills dotted with turbines has become an iconic landscape within the area.
Proposed Visual Quality Rating	**Comments**
Moderately High	The additional infrastructure would be visible in the background but due to the visual dominance of the wind turbines, the distance from the viewer to the Proposed Project and the vibrancy of the elements in the foreground, the new infrastructure wouldn't change the view measurably. It would be difficult to perceive the additional infrastructure in the landscape from this distance.

Table 7-3. Summary of Key Observation Point 3

Change to Visual Quality and Character
The visual quality and the character would be unchanged.
Resulting Visual Impact
The change to the visual quality would be imperceptible to most viewers and does not measurably change the quality of the view.

8.0 CEQA IMPACT ANALYSIS

The sections below provide an impact analysis for each checklist item identified in CEQA Guidelines Appendix G. The results of the impact analysis are summarized in Table 8-1.

Table 8-1. CEQA Impact Criteria

Would the Project:	Potentially Significant Impact	Less-Than-Significant Impact with Mitigation Measures	Less-Than-Significant Impact	No Impact
Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☑
Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State Scenic Highway?	☐	☐	☐	☑
In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☑	☐
Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	☐	☐	☑	☐

8.1 WOULD THE PROJECT HAVE A SUBSTANTIAL ADVERSE EFFECT ON A SCENIC VISTA?

For the purpose of this evaluation, a “scenic vista” is defined as an area that is designated, signed, and accessible to the public for the express purposes of viewing and sightseeing. This includes any such areas designated by a federal, state, or local agency.

8.1.1 Construction – No Impact

There are no scenic vistas in the Proposed Project Area, and therefore no impacts would be realized.

8.1.2 Operations – No Impact

There are no scenic vistas in the Proposed Project Area, and therefore no impacts would be realized.

8.2 WOULD THE PROJECT SUBSTANTIALLY DAMAGE SCENIC RESOURCES, INCLUDING, BUT NOT LIMITED TO, TREES, ROCK OUTCROPPINGS, AND HISTORIC BUILDINGS WITHIN A STATE SCENIC HIGHWAY?

8.2.1 Construction – No Impact

There are no Eligible or Designated State Scenic Highways in the Proposed Project Area, and thus the Proposed Project would have no impact.

8.2.2 Operations – No Impact

There are no Eligible or Designated State Scenic Highways in the Proposed Project Area, and thus the Proposed Project would have no impact.

8.3 WOULD THE PROJECT SUBSTANTIALLY DEGRADE THE EXISTING VISUAL CHARACTER OR QUALITY OF THE SITE AND ITS SURROUNDINGS?

8.3.1 Construction – Less than Significant Impact

Construction-related visual impacts of the Proposed Project would not substantially degrade the existing visual character or quality of the site and its surroundings. During construction, visual impacts would include the presence of workers, portable buildings, construction equipment, and vehicles associated with the installation of the substation components and new transmission line structures. To varying degrees, construction activity would be noticeable to motorists and the small number of local residents. Most of the construction activity would be limited to locations set back from roadways.

During construction, migration of fugitive dust from the construction sites would be limited by control measures set forth by the regional air quality management district; these measures may include the use of water trucks and other dust control measures.

Disturbance of land within and along the Proposed Project Area would occur as a result from installing transmission structures and the new substation. In addition, minor land disturbance may occur at some of the temporary staging and work areas that would be established as part of the project construction. A limited degree of visual contrast could occur due to land disturbance activity such as creation of newly exposed soil areas; however, the effect would be minimized as much of the area is subject to soil disturbance as a result of agricultural activities, and therefore the disturbed areas would blend in with the surrounding landscape setting, thus reducing visual contrast and potential visibility of these areas.

Due to the above factors, as well as their limited duration, construction-related visual effects would be less than significant.

8.3.2 Operations – Less than Significant Impact

It is anticipated that the permanent Proposed Project components (substation, transmission structures and conductor) would degrade the existing visual character or

quality of the site and its surroundings, but the extent of degradation would not be substantial. Multiple components of the Proposed Project would be installed across the Proposed Project Area from the proposed substation site—visible from all KOPs—to the existing PG&E Pittsburg Substation.

The introduction of the proposed Collinsville Substation would have the largest impact on the aesthetic conditions as seen from KOP1, Figure 5b. The viewers from KOP1 are generally residents of the area and would be sensitive to changes in the landscape. The proposed Collinsville Substation would also be visible from KOP2; however, this viewpoint would have a limited number of viewers with generally low sensitivity. Additionally, the Collinsville Substation would be visible from KOP3. Due to the distance and other more dominant landscape features within the view, the new infrastructure would not change the view of the landscape measurably. The physical operations of the substation would not have an impact on visual resources; impacts would be related to the addition of the physical structure in the existing landscape.

Permanent Proposed Project components such as steel structures and overhead wires would be visible and perceivable from KOP1 and KOP2. At KOP1, viewers would be moving slowly and have familiarity with the landscape. While wind energy infrastructure and electrical distribution and transmission lines are typical in the views to the Montezuma Hills, the new infrastructure would be different in form and/or color than the existing wind and electrical infrastructure, would stand in contrast, and would therefore be highly noticeable. However, because the existing visual character and quality of the site and its surroundings is presently degraded by the presence of dozens of tall, white wind turbines, the extent of degradation associated with the permanent Proposed Project components would not be substantial. KOP2 is accessed by local roads used generally by workers and landowners. The new substation, transmission structures, and wood poles and new overhead wires would be visible from KOP2 but may be expected by this group of viewers. The view from KOP3 is of high quality but is distant so even though views would be long in duration and the substation and towers are visible, the change would likely be imperceptible to most viewers.

As presented in the discussions above, the long-term operations-related visual effects would degrade the existing visual character or quality of the site and its surroundings, but the extent of degradation would not be substantial; therefore, the impacts would be less than significant.

8.4 WOULD THE PROJECT CREATE A NEW SOURCE OF SUBSTANTIAL LIGHT OR GLARE THAT WOULD ADVERSELY AFFECT DAY OR NIGHTTIME VIEWS IN THE AREA?

8.4.1 Construction – Less than Significant Impact

Day Views. Construction activities associated with the Proposed Project would not create a new source of light that would adversely affect day views in the area. Glare from construction equipment could result depending upon the time of day and the position of a viewer relative to the construction equipment; however, such glare would be transient and ephemeral, and associated impacts would be less than significant.

Nighttime Views. Most construction would take place during daylight hours; however, at limited times some construction along the Proposed Project alignment may be required or finished at night, and these activities would require lighting for safety. In these situations, portable temporary lighting would be directed exclusively to on-site locations and used to illuminate the immediate work area. Staging yards may be lit for staging and security; lighting at staging yards would be directed on site and shielded to reduce light escape resulting in less than significant impacts.

8.4.2 Operation – Less than Significant Impact

Day Views. Glare occurs when a high degree of contrast is evident between bright and dark areas in a field of view, making it difficult for the human eye to adjust to differences in brightness. As described above, non-specular conductors and non-reflective insulators would be installed under the Proposed Project. The transmission structures would be constructed from non-reflective dulled galvanized steel. The structures and equipment to be installed at the Collinsville Substation would have, as are commercially available, non-reflective finishes and neutral earth-tone colors. These design features would minimize the potential effect of glare, resulting in less than significant impacts.

Nighttime Views. It is anticipated that no aeronautical obstruction lighting would be implemented for the Proposed Project: No structures or wires would exceed 199 feet above ground level, and therefore Federal Aviation Administration (FAA) notification would not be required. The Proposed Project alignment is not located nearer than 8 miles to the nearest airport (Rio Vista Municipal Airport); therefore, analysis using the FAA flight tool would not be required. Thus, the transmission structures would not be a new source of light.

Lighting would be installed at the proposed Collinsville Substation; the lighting would conform to National Electric Safety Code (NESC) requirements and other applicable outdoor lighting codes. NESC recommends, as good practice, illuminating the substation facilities to a minimum of 22 lux or two footcandles. Photocell controlled lighting would be provided at a level sufficient to provide safe entry and exit to the proposed Collinsville Substation and control building. Additional manually controlled lighting would be provided to create safe working conditions at the proposed Collinsville Substation when required. All lighting provided would be shielded and pointed down to minimize glare onto surrounding properties and habitats. Light fixtures would be located near major outdoor equipment, general substation areas, and building exteriors. Lights would be mounted on structures, poles, and supplementary buildings as required. Lights would be motion sensor-activated in order to avoid any unnecessary use or potential disturbance. The Proposed Project would be remotely monitored on a day-to-day basis and would only require monthly inspections. These O&M activities would usually occur during the day; nighttime maintenance activities are not expected to occur more than once per year. Nighttime lighting would be motion-activated and would generally only be used for security purposes and would be shielded and directed to prevent glare and light escape.

Given the design and use of lighting at the proposed Collinsville Substation, the impacts would be less than significant.

9.0 REFERENCES

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10.0 PREPARERS

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Tobi Yarbrough	GIS Analyst 2, Arcadis 28 years of experience

Proposed LSPGC Collinsville Substation

Existing PG&E Pittsburg Substation

LEGEND

- Proposed LSPGC Collinsville Substation
- Existing PG&E Pittsburg Substation
- Existing PG&E 500 kV Overhead Transmission Line
- Proposed LSPGC 230 kV Overhead Transmission Line
- Proposed LSPGC 230 kV Submarine Transmission Cable
- Proposed PG&E 12 kV Overhead Distribution Line
- Proposed PG&E 500 kV Overhead Interconnection

0 3,000 6,000
SCALE IN FEET

LS POWER GRID CALIFORNIA, LLC
COLLINSVILLE 500/230 KV SUBSTATION PROJECT

PROJECT OVERVIEW

ARCADIS

FIGURE
1

CITY: NOVI MI DIV: ENV DB: TRY PIC: PM: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane California II FIPS 0402 Feet
D:\GIS\Project Files\LS_Power\Collinsville_Manning\Documents\Collinsville\VisualizationReport\01_Collinsville_ProjectOverview.mxd PLOTTED: 12/19/2023 12:25:32 PM BY: TYarbrough

Service Layer Credits: Esri, USDA Farm Service Agency

Proposed LSPGC
Collinsville
Substation

Existing PG&E
Pittsburg
Substation

LEGEND

- Proposed LSPGC Collinsville Substation
- Existing PG&E Pittsburg Substation
- Area Not Visible
- Area Visible
- Existing PG&E 500 kV Overhead Transmission Line
- Proposed LSPGC 230 kV Overhead Transmission Line
- Proposed LSPGC 230 kV Submarine Transmission Cable
- Proposed PG&E 12 kV Overhead Distribution Line
- Proposed PG&E 500 kV Overhead Interconnection

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SCALE IN FEET

LS POWER GRID CALIFORNIA, LLC
COLLINSVILLE 500/230 KV SUBSTATION PROJECT

PROJECT VIEWSHED

ARCADIS

FIGURE
2

CITY: NOVI MI DIV: ENV DB: TRY PIC: PM: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane California II FIPS 0402 Feet
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Service Layer Credits: Esri, USDA Farm Service Agency

Representative Photograph 3

Representative Photograph 4

Representative Photograph 5

Representative Photograph 2

Representative Photograph 6/KOP2

Representative Photograph 1/KOP1

Proposed LSPGC Collinsville Substation

Existing PG&E Pittsburg Substation

Representative Photograph 7/KOP3

LEGEND

- Photo Location
- Photo Location Recommended for Visual Simulation
- Proposed LSPGC Collinsville Substation
- Existing PG&E Pittsburg Substation
- Existing PG&E 500 kV Overhead Transmission Line
- Proposed LSPGC 230 kV Overhead Transmission Line
- Proposed LSPGC 230 kV Submarine Transmission Cable
- Proposed PG&E 12 kV Overhead Distribution Line
- Proposed PG&E 500 kV Overhead Interconnection
- Landscape Unit 1 - Montezuma Hills Landscape Character Unit
- Landscape Unit 2 - Collinsville Shoreline Landscape Unit
- Landscape Unit 3 - Pittsburg Shoreline Landscape Character Unit
- Landscape Unit 4 - Sacramento River Character Unit
- Landscape Unit 5 - Wetland Landscape Character Unit

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SCALE IN FEET

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COLLINSVILLE 500/230 KV SUBSTATION PROJECT

LANDSCAPE CHARACTER UNITS AND REPRESENTATIVE PHOTOGRAPHS/KEY OBSERVATION POINTS

ARCADIS

FIGURE 3

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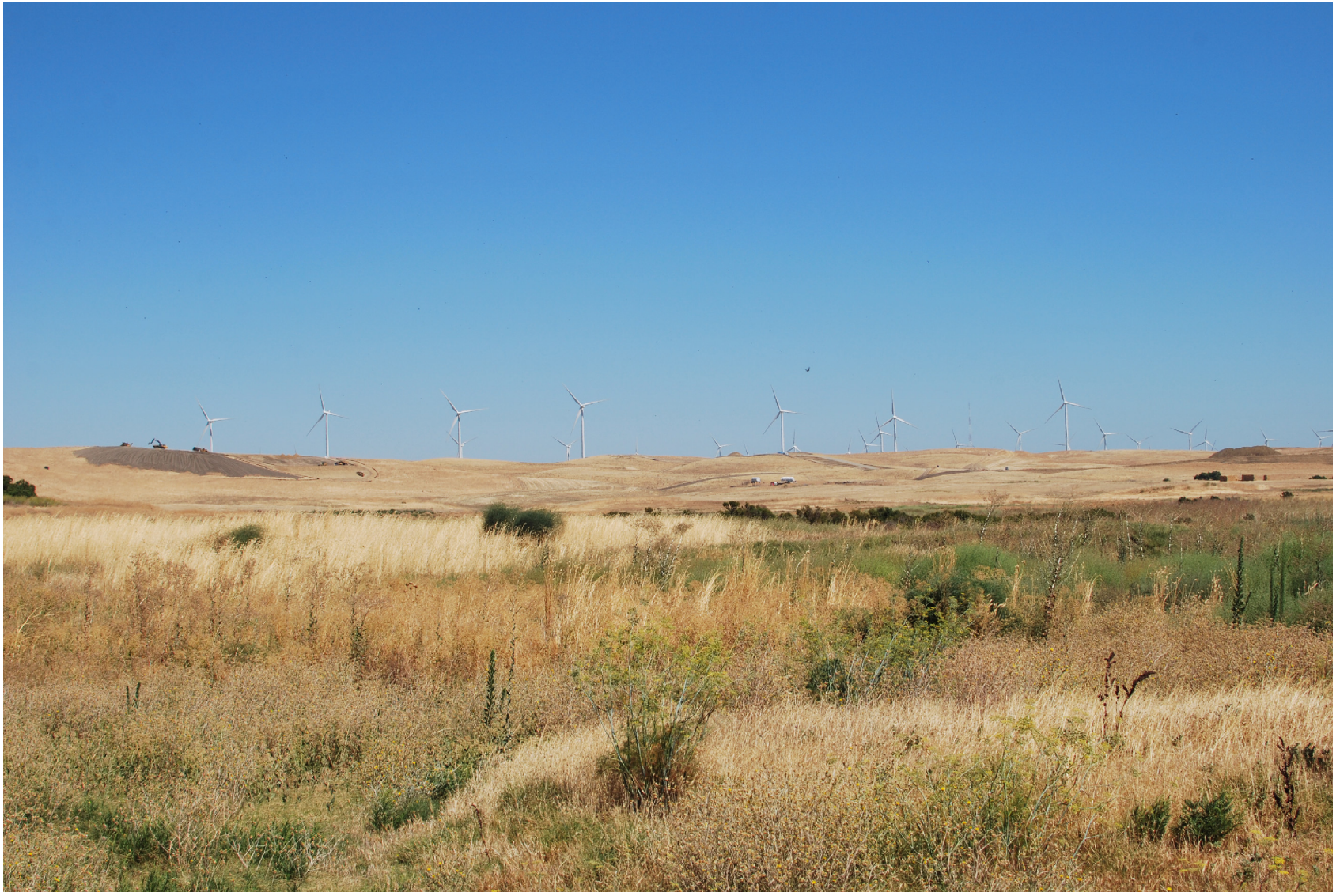

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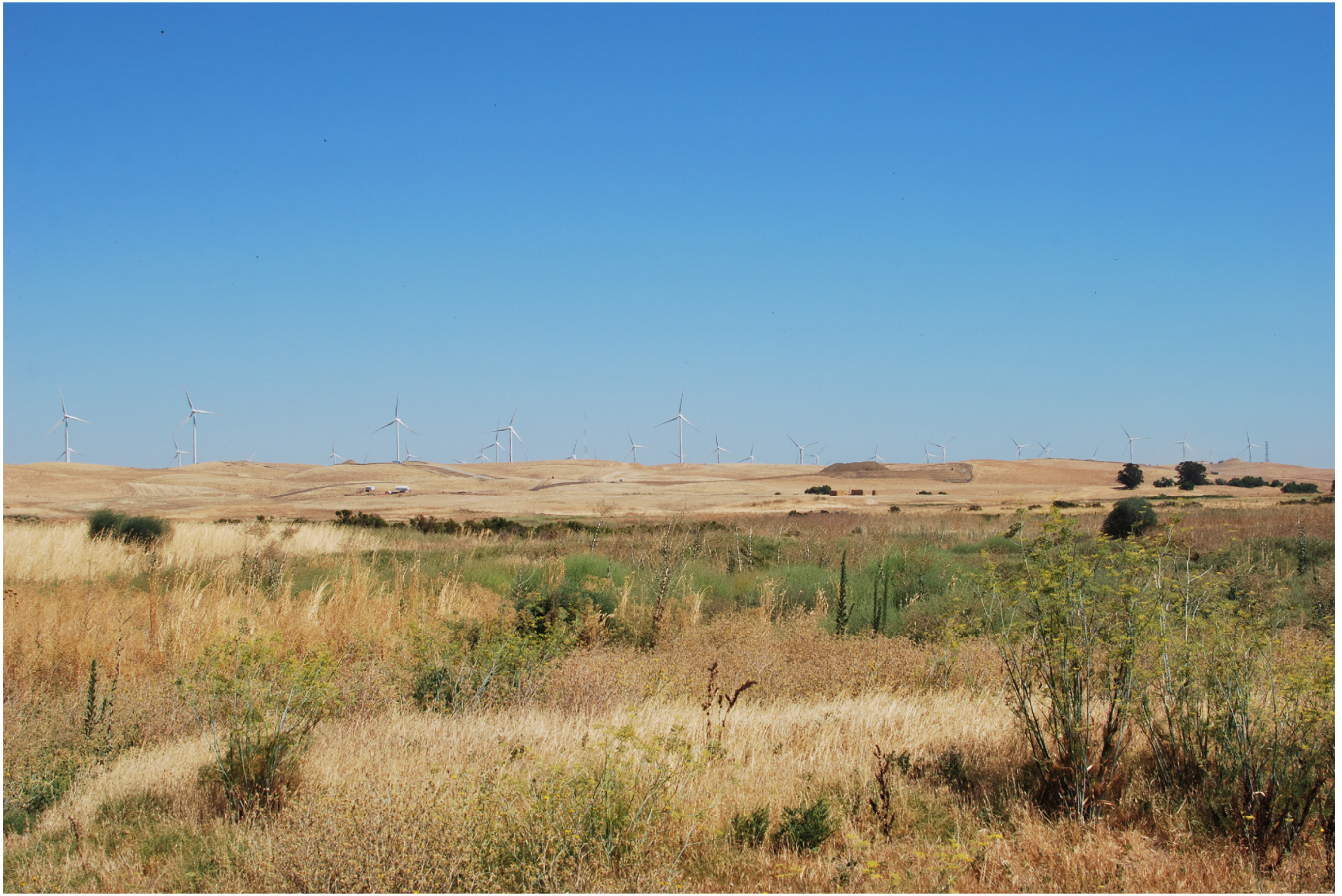
COLLINSVILLE 500/230 KV SUBSTATION PROJECT

REPRESENTATIVE PHOTOGRAPH 1a
(LOOKING NORTHEAST)

ARCADIS

FIGURE
4a



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COLLINSVILLE 500/230 KV SUBSTATION PROJECT

REPRESENTATIVE PHOTOGRAPH 1b/KOP1
(LOOKING EAST)

ARCADIS

FIGURE
4b

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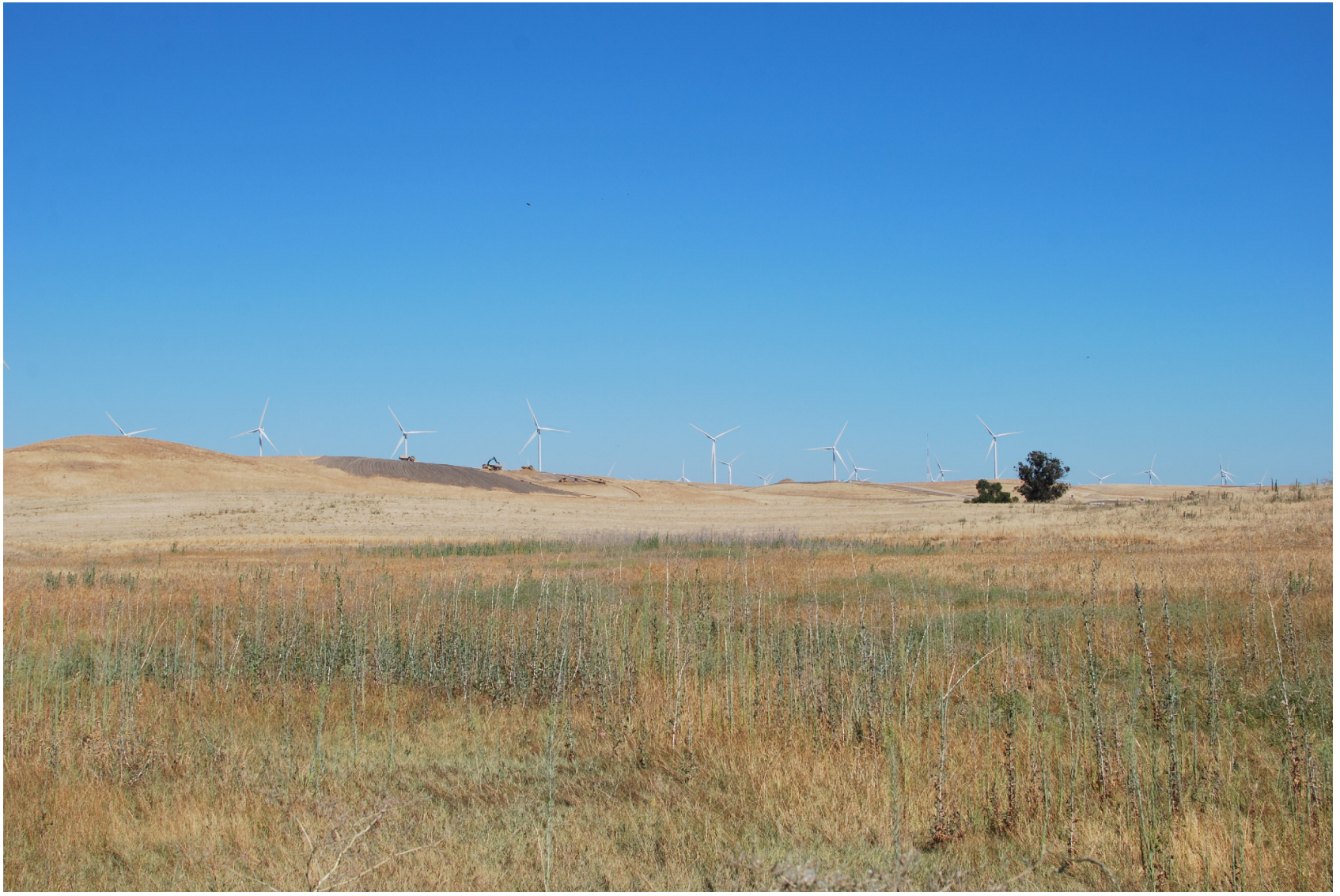
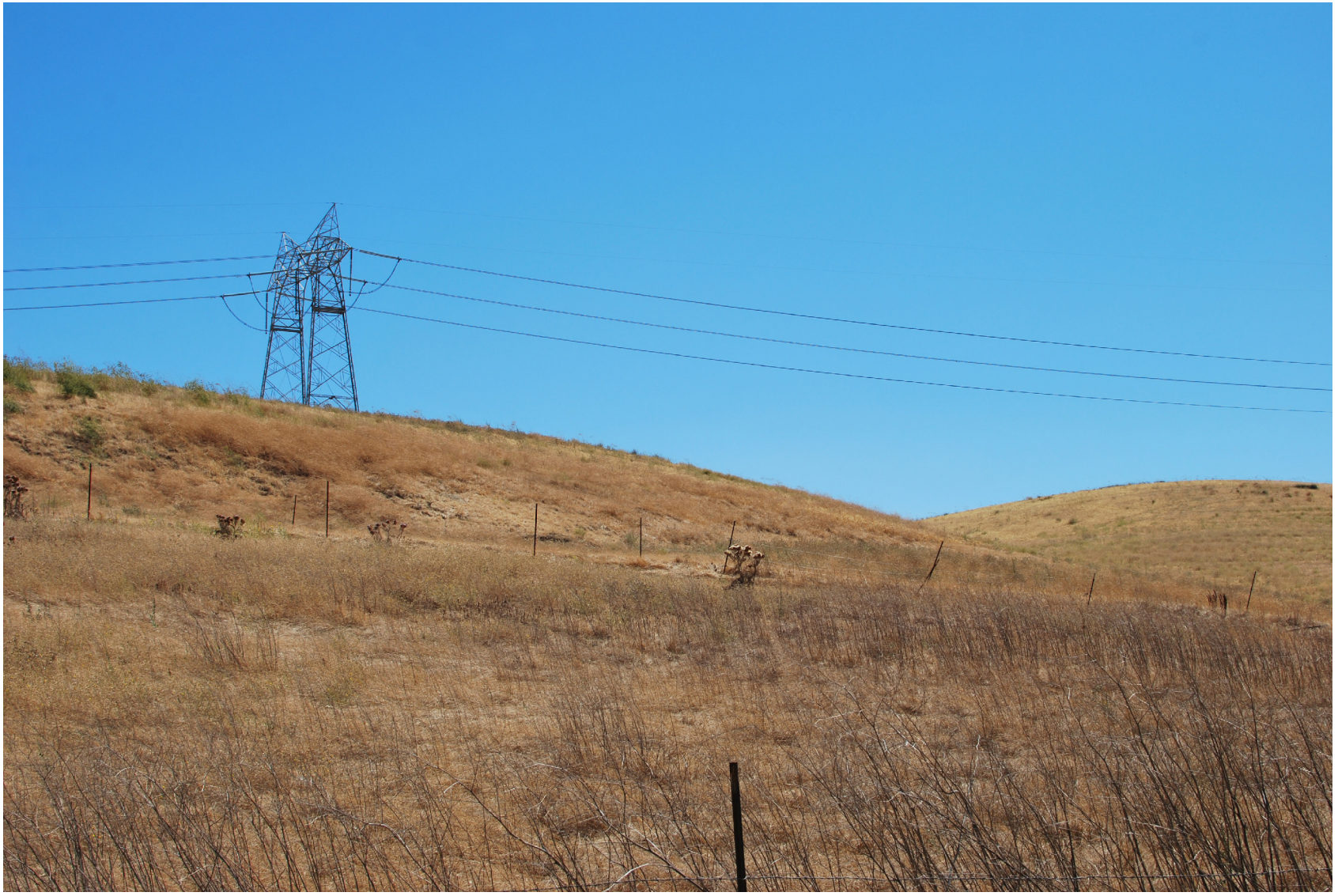


LS POWER GRID CALIFORNIA, LLC
COLLINSVILLE 500/230 KV SUBSTATION PROJECT

REPRESENTATIVE PHOTOGRAPH 2
(LOOKING EAST-SOUTHEAST)

ARCADIS

FIGURE
4c



LS POWER GRID CALIFORNIA, LLC
COLLINSVILLE 500/230 KV SUBSTATION PROJECT

REPRESENTATIVE PHOTOGRAPH 3
(LOOKING SOUTH-SOUTHWEST)

ARCADIS

FIGURE
4d

CITY: Novi DIV: ENV DB: TRY PIC: PM: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM:
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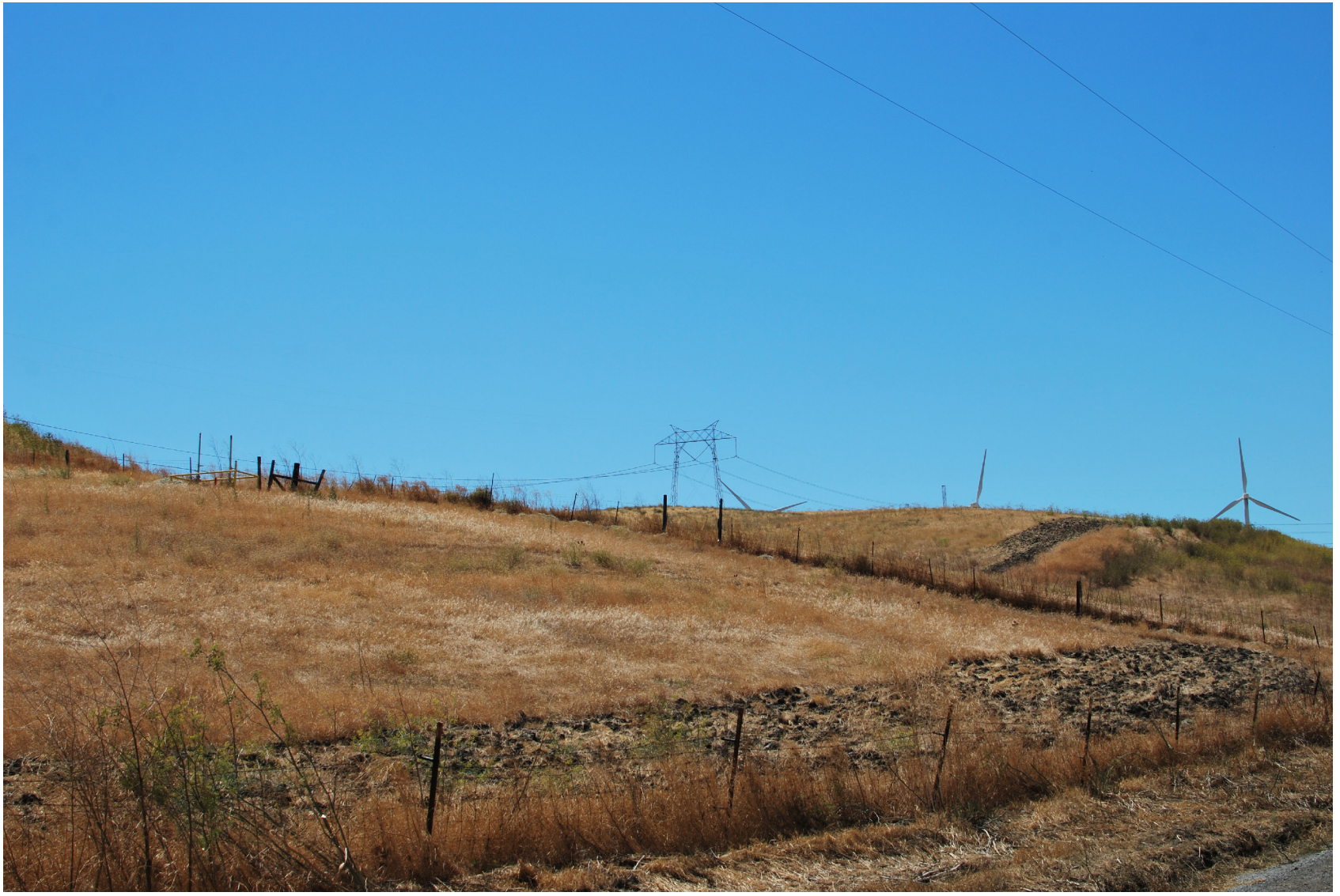

LS POWER GRID CALIFORNIA, LLC
COLLINSVILLE 500/230 KV SUBSTATION PROJECT

REPRESENTATIVE PHOTOGRAPH 4
(LOOKING SOUTHWEST)

ARCADIS

FIGURE
4e

CITY: Novi DIV: ENV DB: TRY PIC: PM: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM:
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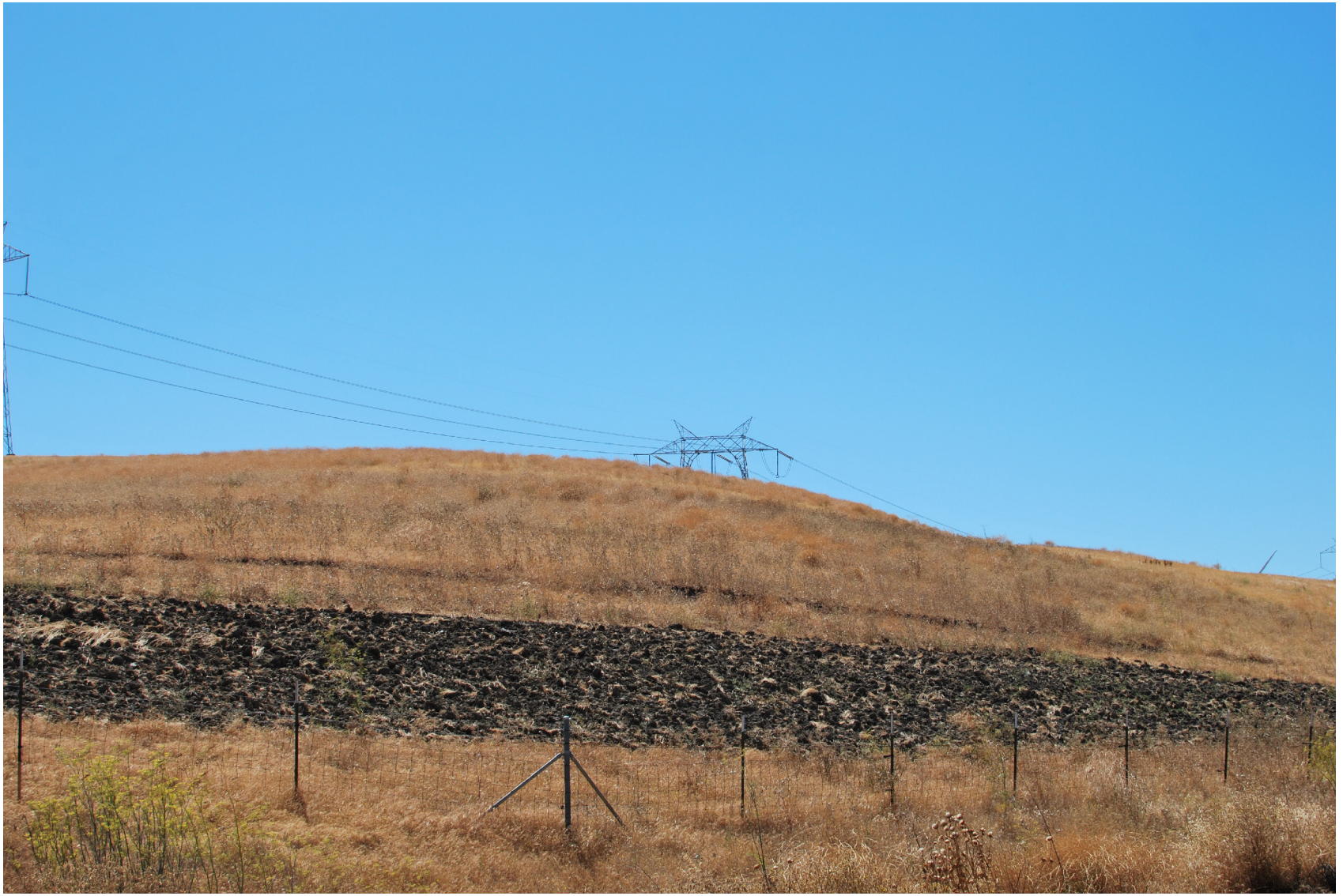
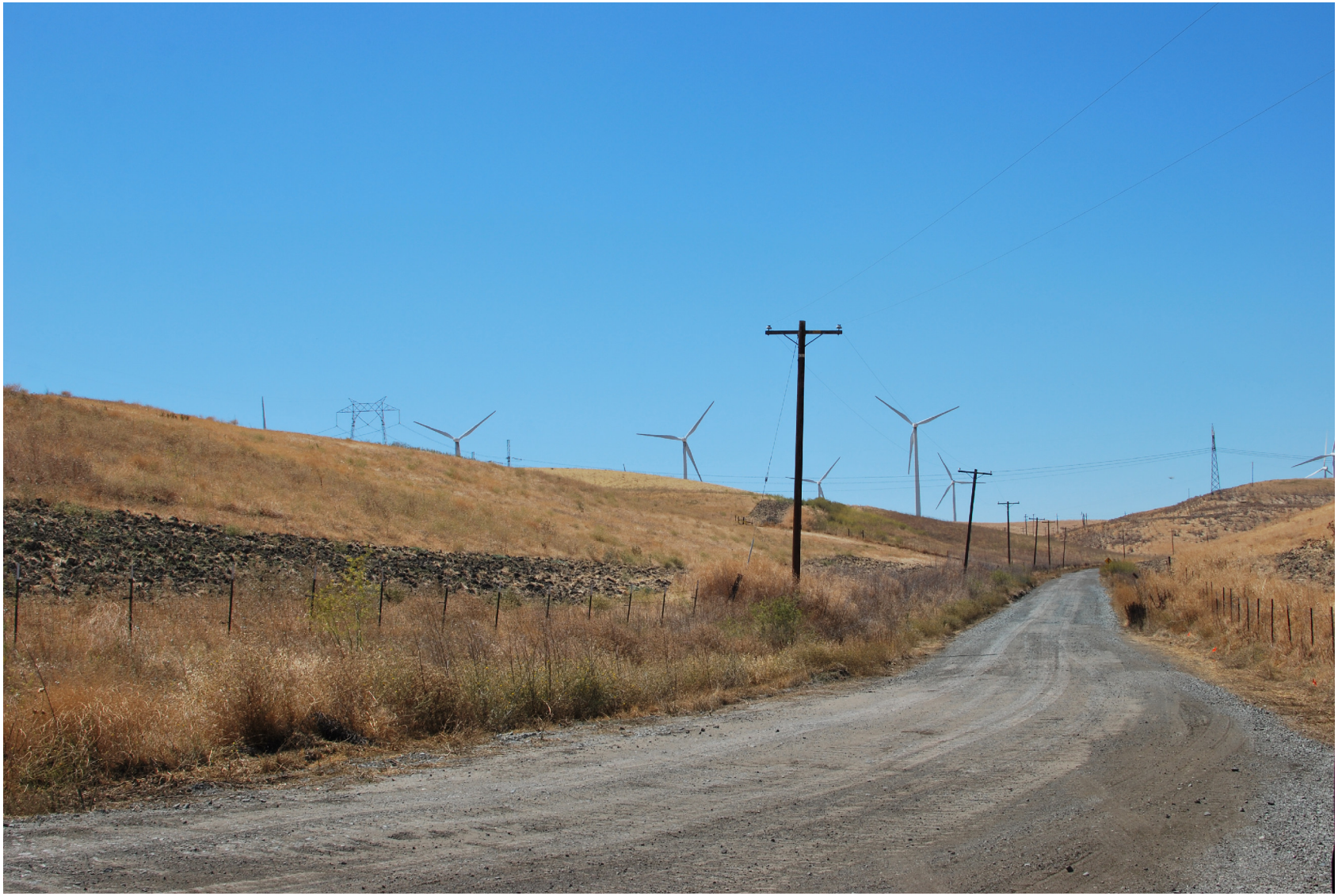


LS POWER GRID CALIFORNIA, LLC
COLLINSVILLE 500/230 KV SUBSTATION PROJECT

REPRESENTATIVE PHOTOGRAPH 5a
(LOOKING SOUTHWEST)

ARCADIS

FIGURE
4f

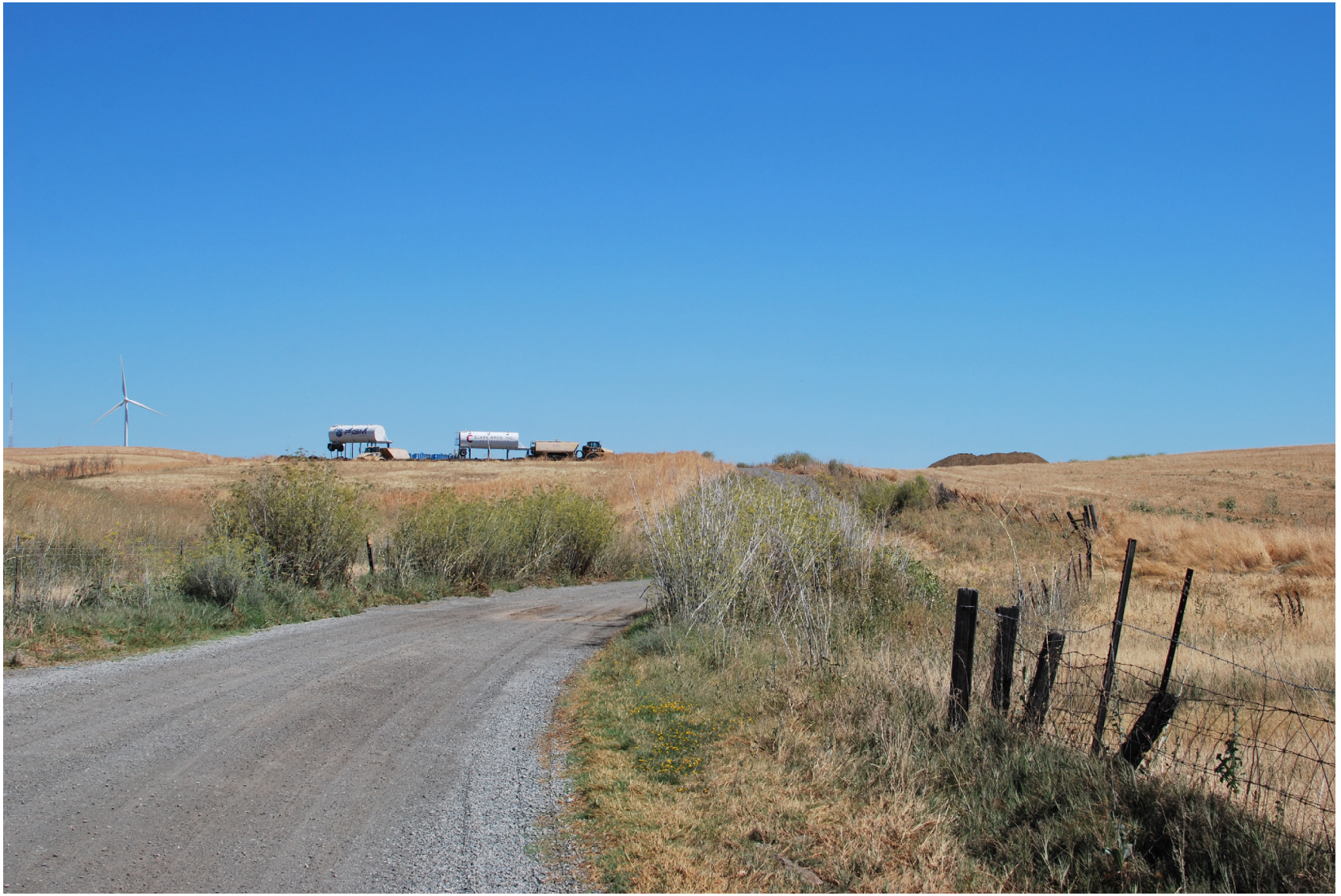


LS POWER GRID CALIFORNIA, LLC
COLLINSVILLE 500/230 KV SUBSTATION PROJECT

REPRESENTATIVE PHOTOGRAPH 5b
(LOOKING WEST)

ARCADIS

FIGURE
4g



LS POWER GRID CALIFORNIA, LLC
COLLINSVILLE 500/230 KV SUBSTATION PROJECT

REPRESENTATIVE PHOTOGRAPH 6a
(LOOKING EAST)

ARCADIS

FIGURE
4h

CITY: Novi DIV: ENV DB: TRY PIC: PM: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM:
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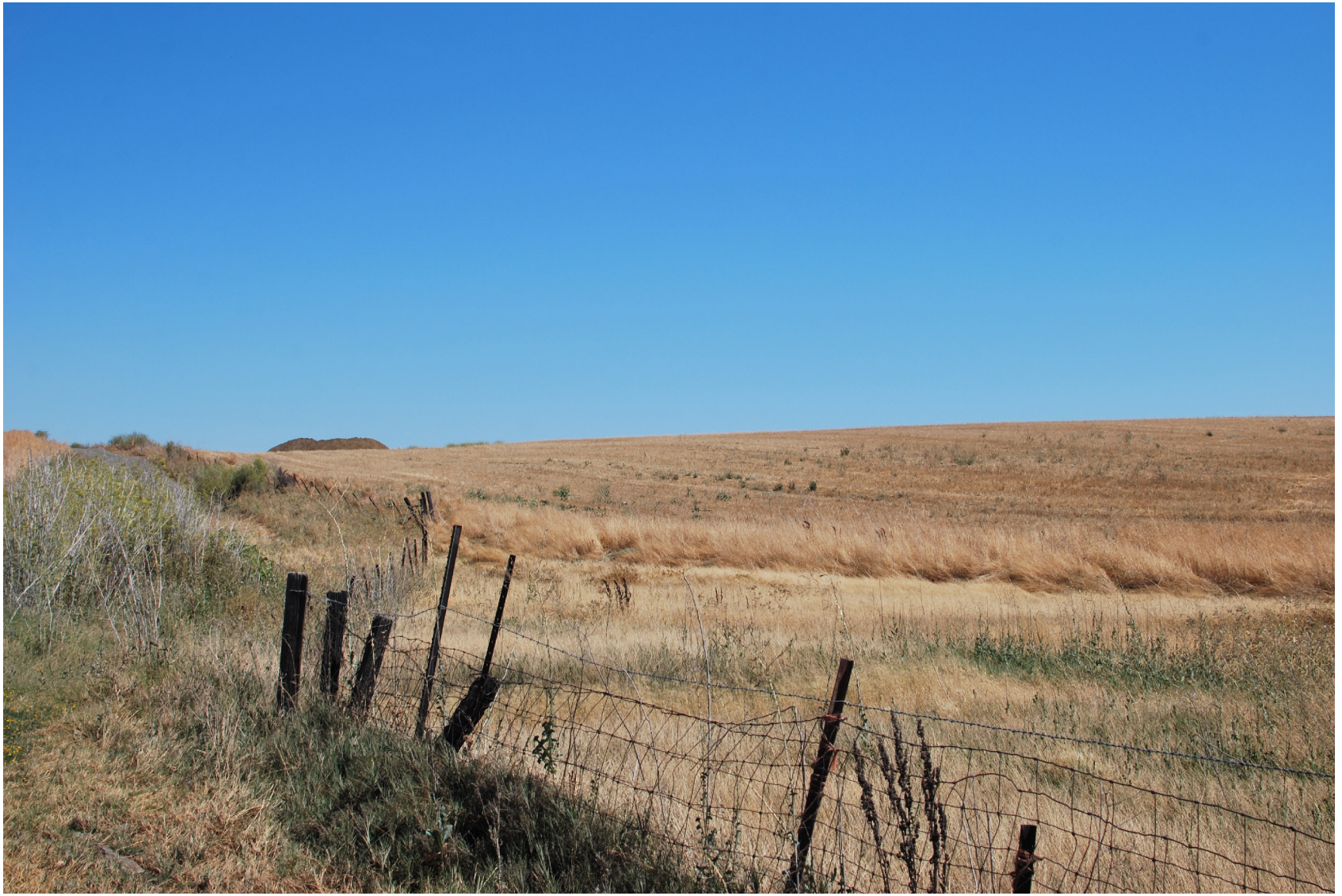

LS POWER GRID CALIFORNIA, LLC
COLLINSVILLE 500/230 KV SUBSTATION PROJECT

REPRESENTATIVE PHOTOGRAPH 6b/KOP2
(LOOKING EAST-SOUTHEAST)

ARCADIS

FIGURE
4i

CITY: Novi DIV: ENV DB: TRY PIC: PM: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM:
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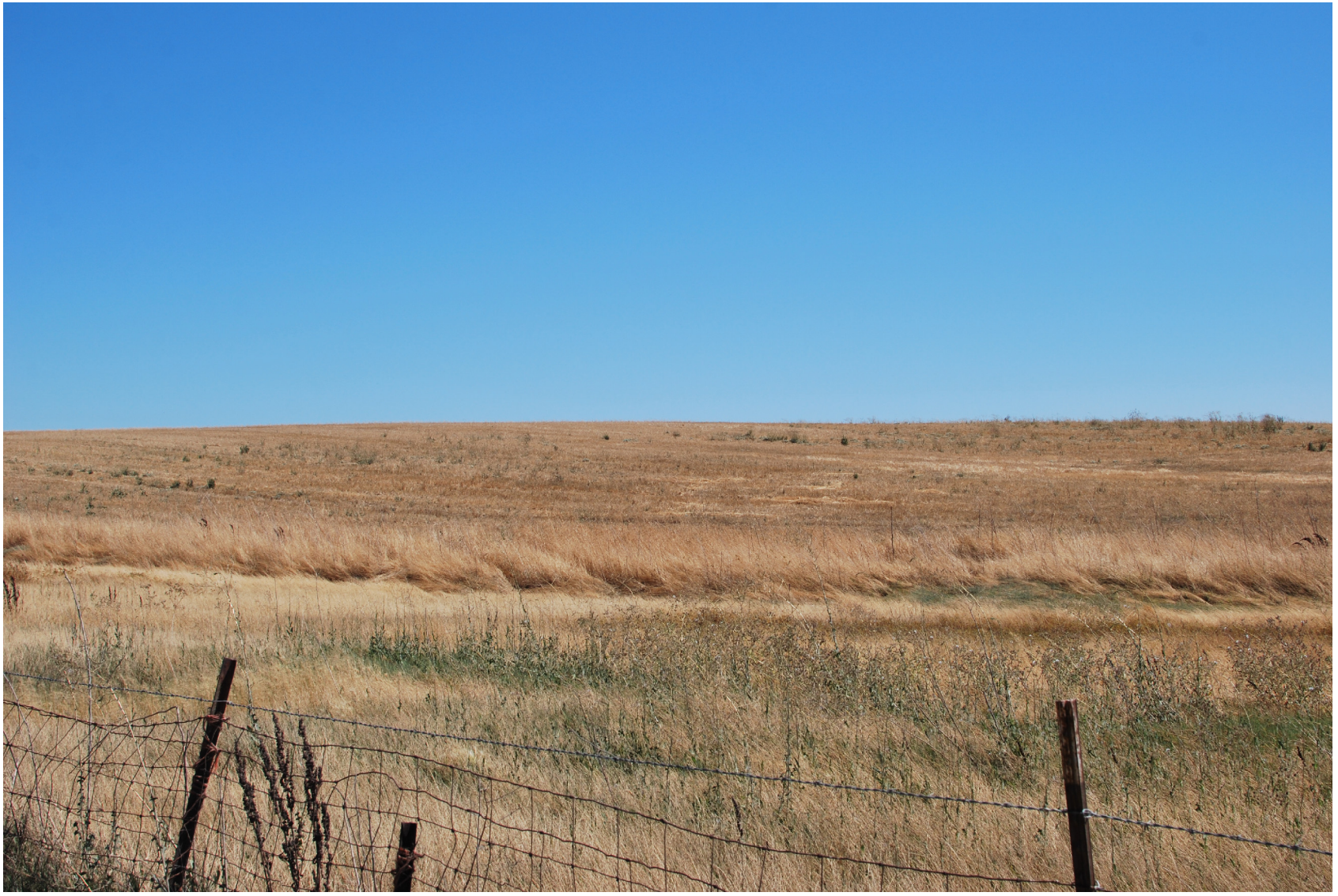

LS POWER GRID CALIFORNIA, LLC
COLLINSVILLE 500/230 KV SUBSTATION PROJECT

REPRESENTATIVE PHOTOGRAPH 6c
(LOOKING SOUTHEAST)

ARCADIS

FIGURE
4j

CITY: Novi DIV: ENV DB: TRY PIC: PM: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM:
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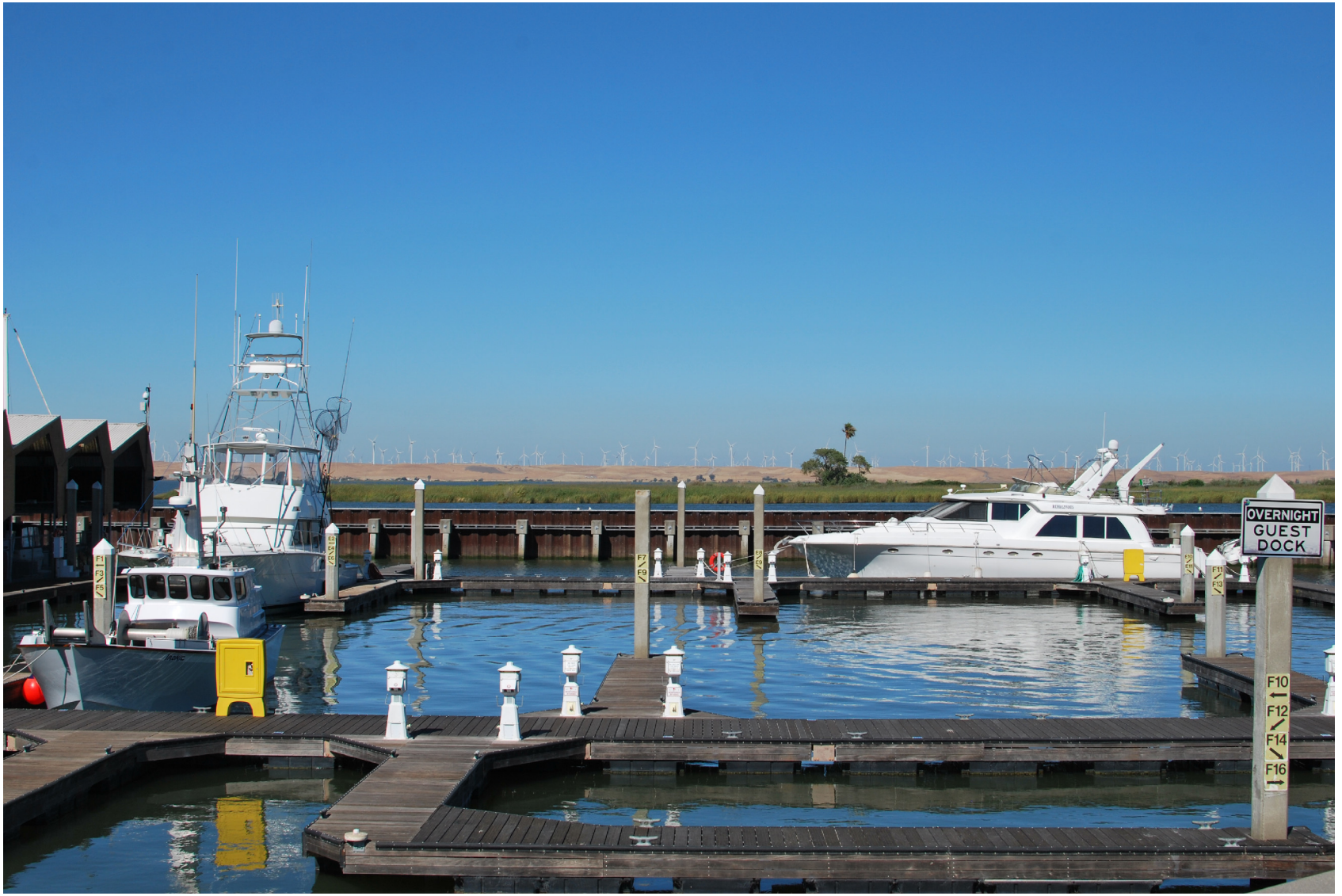
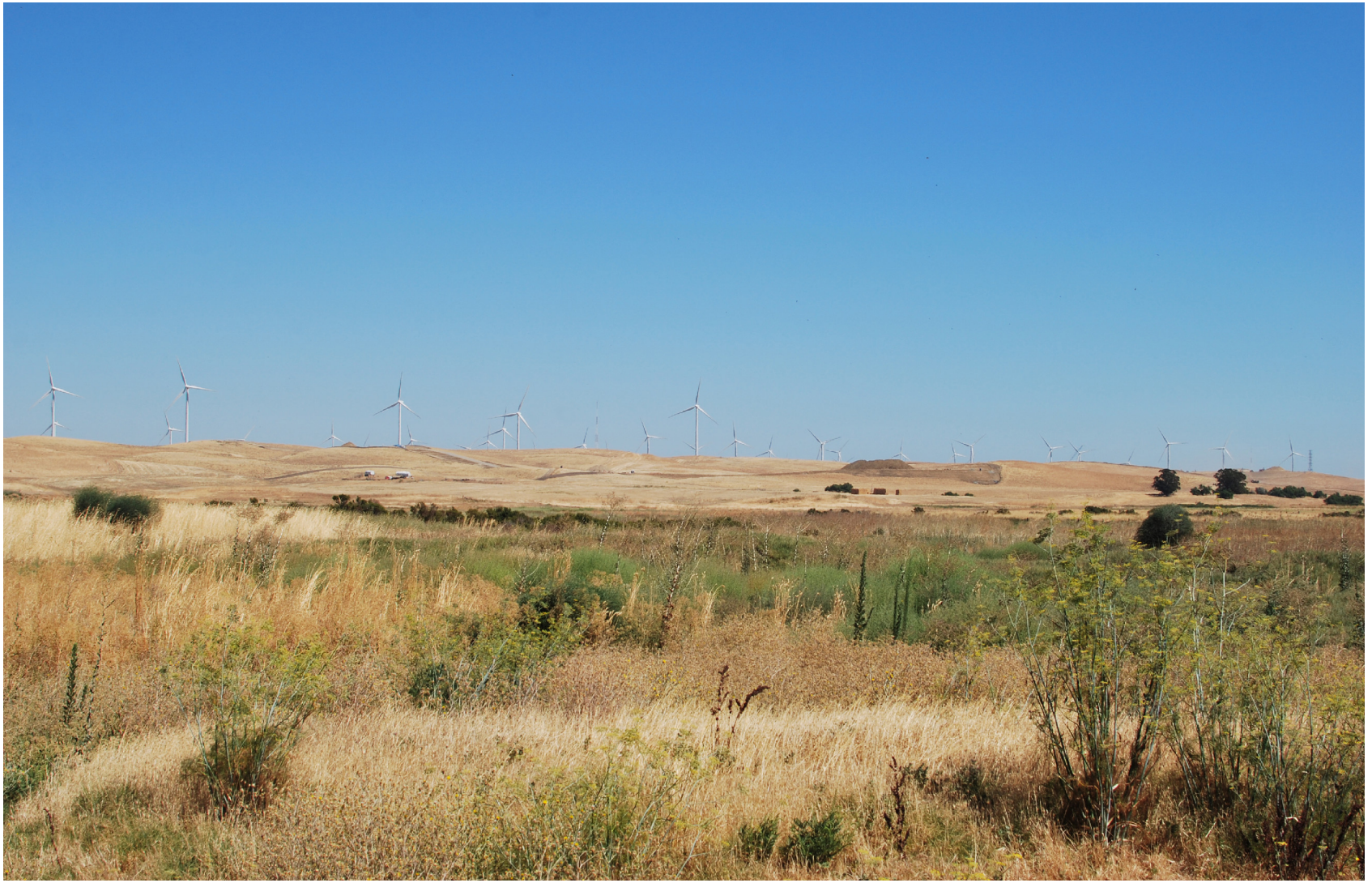


LS POWER GRID CALIFORNIA, LLC
COLLINSVILLE 500/230 KV SUBSTATION PROJECT

REPRESENTATIVE PHOTOGRAPH 7/KOP3
(LOOKING NORTHEAST)

ARCADIS

FIGURE
4k



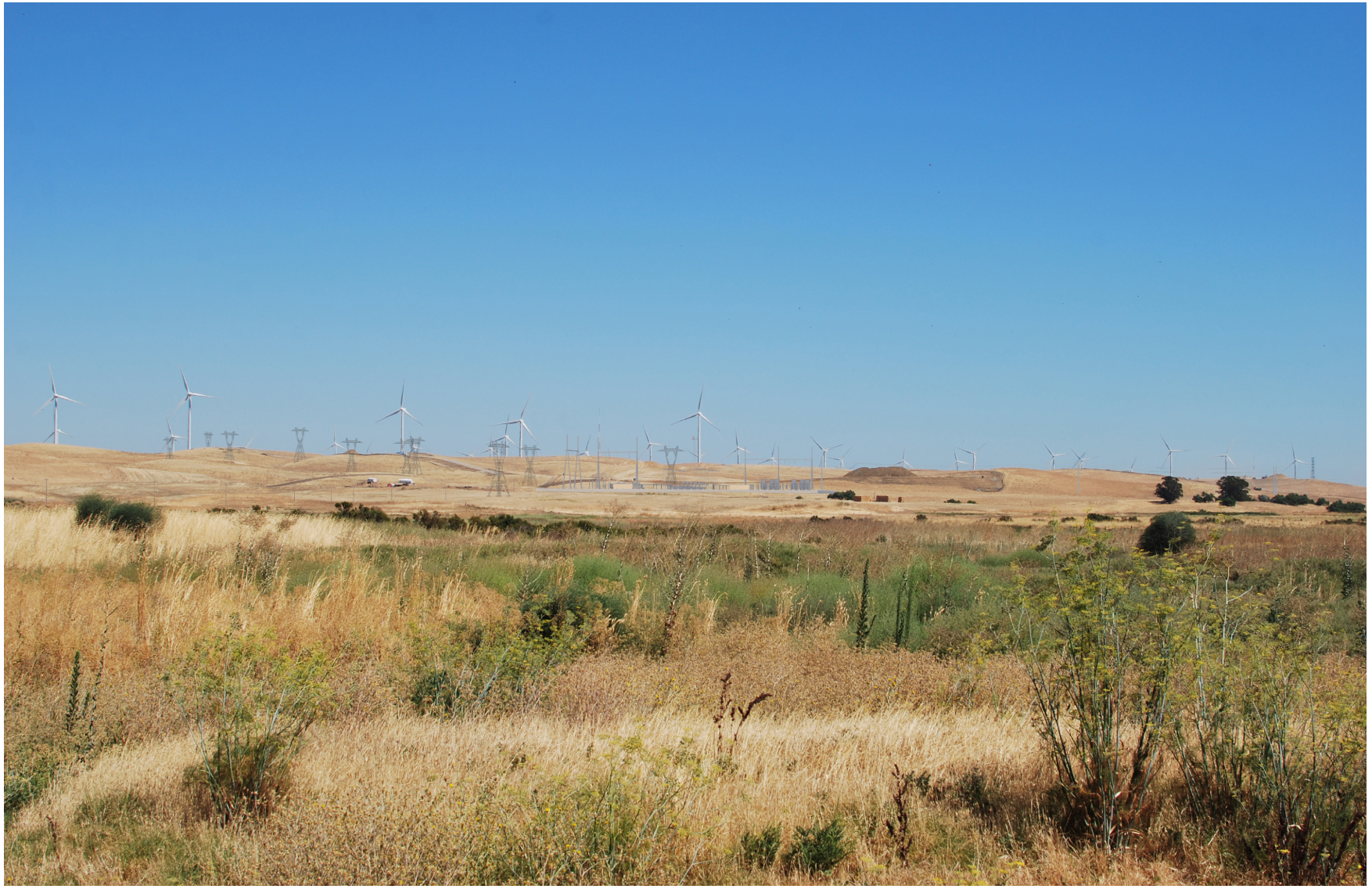
LS POWER GRID CALIFORNIA, LLC
COLLINSVILLE 500/230 KV SUBSTATION PROJECT

COLLINSVILLE ROAD
LOOKING EAST - EXISTING VIEW

ARCADIS

FIGURE
5a

CITY: Novi DIV: ENV DB: TRY PIC: PM: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM:
D:\GIS\Project Files\LS_Power\Collinsville_Manning\Documents\Collinsville\Visualization Report\05a_Collinsville_ProjectRepresentativePhoto1.mxd PLOTTED: 12/19/2023 1:57:37 PM BY: TYarbrough

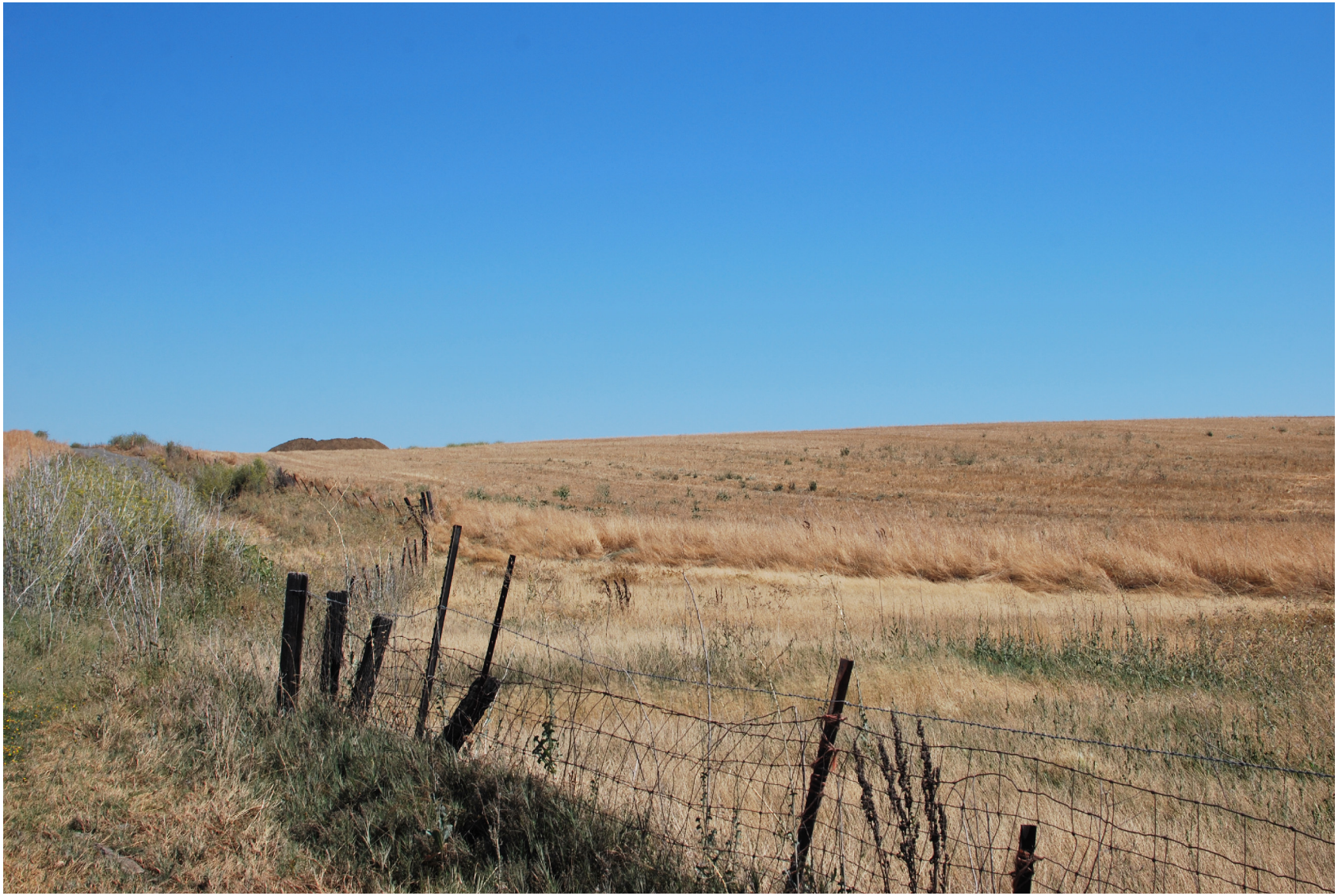


LS POWER GRID CALIFORNIA, LLC
COLLINSVILLE 500/230 KV SUBSTATION PROJECT

COLLINSVILLE ROAD
LOOKING EAST - SIMULATED VIEW

ARCADIS

FIGURE
5b

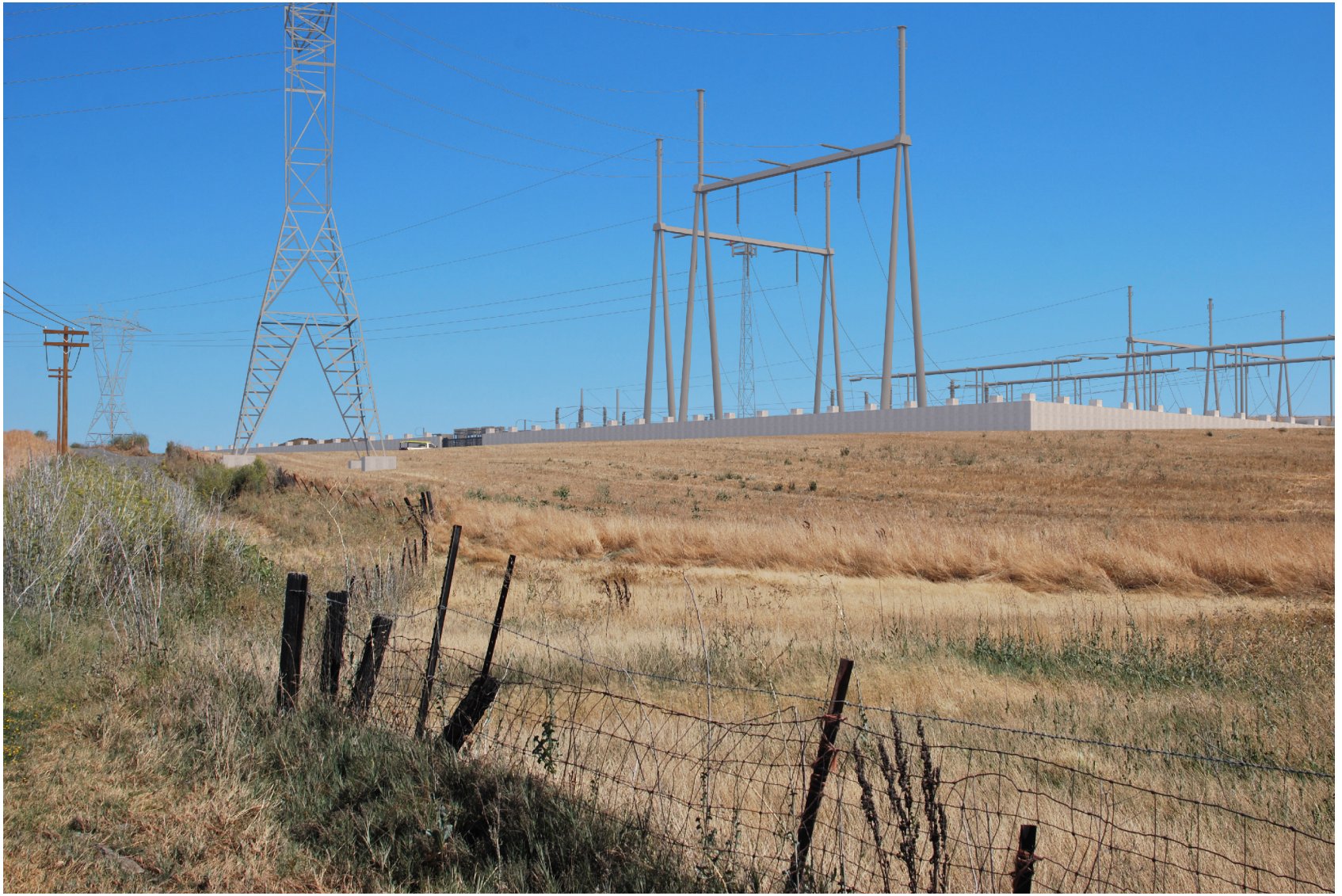


LS POWER GRID CALIFORNIA, LLC
COLLINSVILLE 500/230 KV SUBSTATION PROJECT

STRATTON LANE
LOOKING EAST-SOUTHEAST - EXISTING VIEW

ARCADIS

FIGURE
6a



LS POWER GRID CALIFORNIA, LLC
COLLINSVILLE 500/230 KV SUBSTATION PROJECT

STRATTON LANE
LOOKING EAST-SOUTHEAST - SIMULATED VIEW

ARCADIS

FIGURE
6b

CITY: Novi DIV: ENV DB: TRY PIC: PM: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM:
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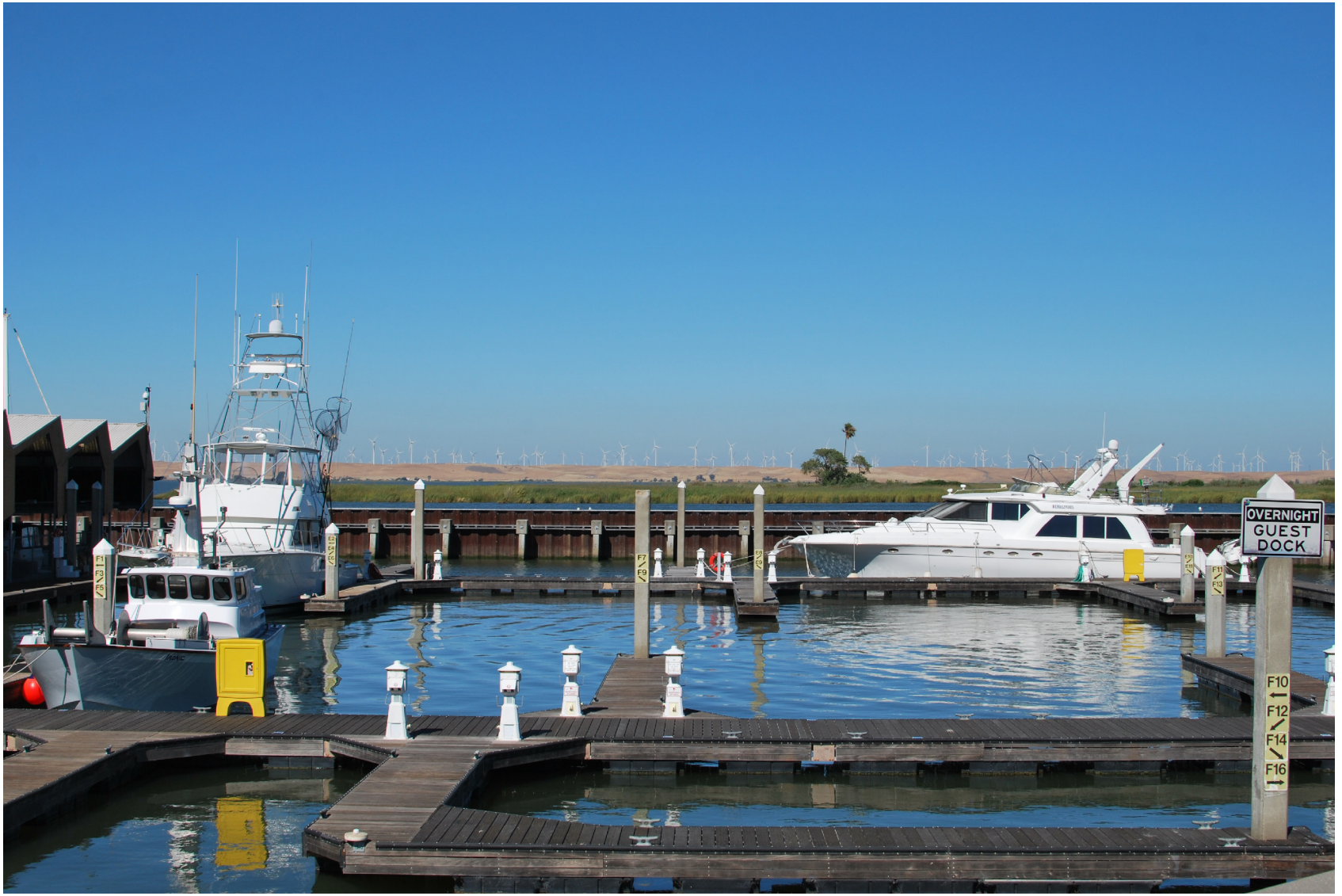
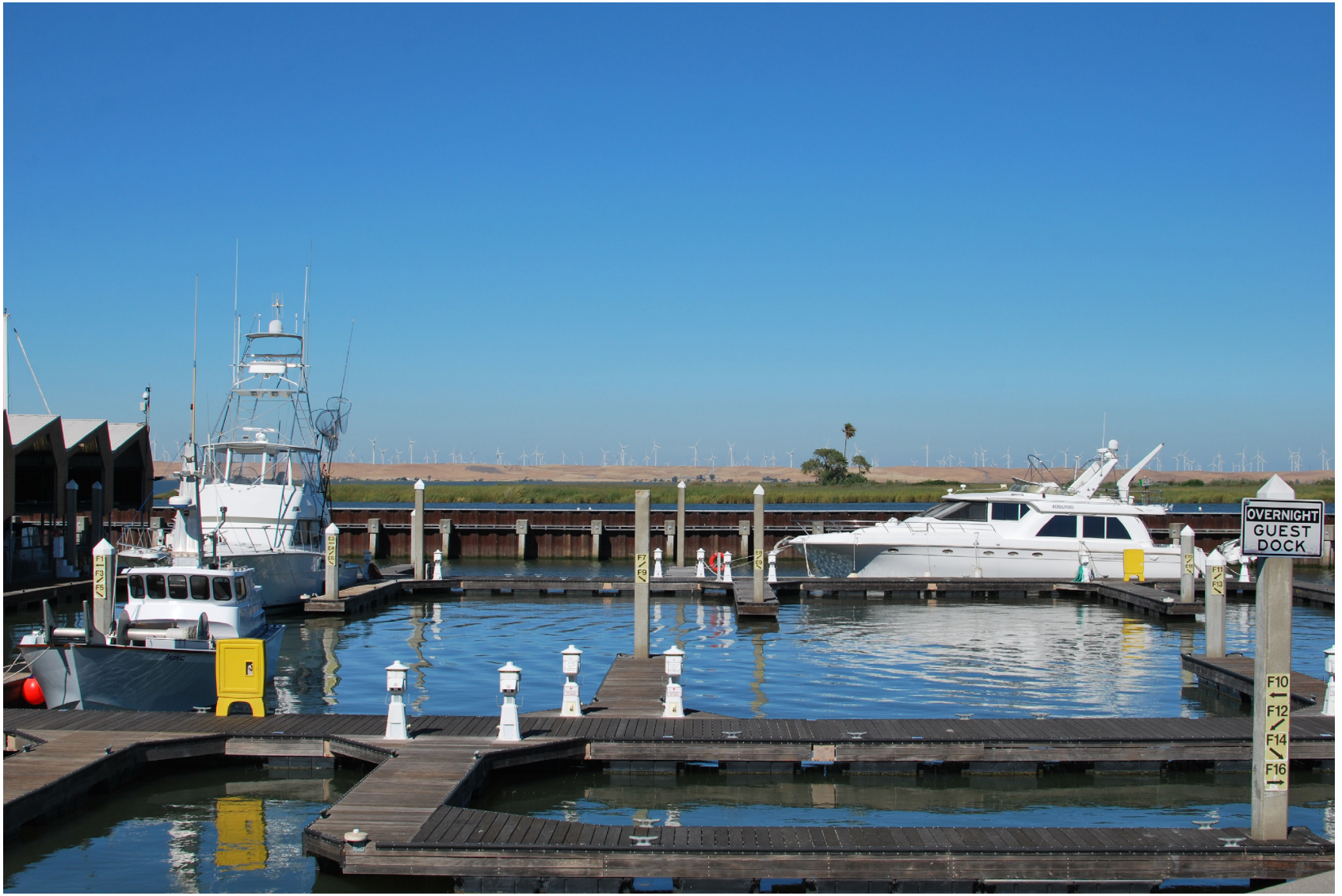


LS POWER GRID CALIFORNIA, LLC
COLLINSVILLE 500/230 KV SUBSTATION PROJECT

PLAZA MARINA
LOOKING NORTHEAST - EXISTING VIEW

ARCADIS

FIGURE
7a



LS POWER GRID CALIFORNIA, LLC
COLLINSVILLE 500/230 KV SUBSTATION PROJECT

PLAZA MARINA
LOOKING NORTHEAST - SIMULATED VIEW

ARCADIS

FIGURE
7b