

MEMORANDUM

To: Keith McDaniels, Juniper Energy
From: Josh Saunders, AICP (Dudek)
Subject: Lockhart Solar Project – Visual Impact Analysis
Date: September 23, 2022
cc: David Wickens (Dudek)
Attachment(s): Figures 1-5

1 Purpose

The purpose of this technical memorandum is to provide an impact analysis of potential effects to views and visual resources associated with the proposed Lockhart 1 and Lockhart 2 Solar Projects (project) in the community of Hinkley in west central San Bernardino County, California. For purposes of this report, the Lockhart 1 and Lockhart 2 Solar Projects are assessed as a single project. Located at 315 Powerline Road in the County's expansive North Desert area, the project site is located on Assessor's Parcel Number 0490-171-01-0-000, which consists of primarily undeveloped land crossed by a drainage running from the southwest from the northeast corner of the approximately 75-acre site. While the southern portion of the project site does not support evidence of previous development, the northern portion appears to have previously supported multiple structures and areas of visible disturbance. The project site and surrounding area are depicted on Figure 1, Project Vicinity (all figures are provided in Attachment A).

This analysis is prepared in accordance with County environmental review requirements and the California Environmental Quality Act (CEQA). More specifically, this analysis addresses aesthetics-related significance criteria included in Appendix G of the CEQA Guidelines.

2 Project Description

The project includes the development of an 8 megawatt (MW) solar facility that would include solar panels, inverters, switchgear, battery storage containers ("ESS warehouse"), and electrolyte storage tanks. Development would also include the construction of perimeter and internal access roads and installation of a seven (7-) foot high chain link perimeter fence. Power generated by the project will be transferred to an existing 33 kilovolt (kV) electrical transmission line which is aligned along Roy Street. The proposed interconnection would necessitate an extension of the existing line from the point of interconnection (POI) to the southwest corner of the project site (see Figure 2, Site Plan). Project components are described in additional detail as follows:

- **Solar Panels.** As proposed, long rows or strings of ground mounted panels would be aligned in a north-south orientation across the Project site. Access roads would be constructed on the site and would separate panel rows in to four quadrants of comparable size each on the northern and southern portions of the site. Approximately 15,750 solar panels would be installed across the Project Site on an ATI tracker racking system comprised of anodized aluminum allow that would allow for 180 degree tracking of the sun throughout the day.

- **Power Inverters and Transformers.** Power inverters to convert between alternating current (AC) and direct current (DC) will be included, along with transformers that will step up the voltage.
- **Battery Storage Containers.** Battery storage containers and appurtenances will be constructed that will provide energy storage capacity and dispatch for the electric grid. The energy storage batteries will be housed in containers or purpose-built enclosures (dimensions of approximately 20 feet long by 8 feet wide by 8 feet high) that would be mounted on a concrete pad or equivalent. The battery storage containers/ESS warehouse will be unstaffed, with remote operational control and periodic inspections and maintenance performed as necessary. Containers would be installed along the site's southern boundary and centrally on the project site. See Figure 2, Site Plan.
- **Generator Tie-Line (Gen-Tie Line).** The project's point of interconnection (POI) is an existing 33 kV transmission line located near the intersection of Powerline Road and Harper Lake Road. Approximately six (6) new 30-45 foot high wood poles would be required to extend the existing 33 kV line to the southwest corner of the project site.
- **Telecommunication Facilities.** Telecommunication equipment, including underground and overhead fiber optics or supervisory control and data acquisition (SCADA), will be installed.
- **Site Access and Security.** The project site is primarily accessed from Roy Road via Hinkley Road which is located approximately 7.5 miles to the east of the Project Site. Hinkley Road has direct access to State Route 58 from which Interstates 5 and 40 are accessible near Barstow (located approximately 10 miles to the southeast of Hinkley). A 16-foot wide aggregate on-site access driveway from Edie Road/Roy Road, perimeter security fencing, and ingress/egress point security lighting will be provided for the project. Double gates will be constructed off the main driveway near Edie Road/Roy Road, and off the existing unnamed access road that splits the site in two.

In addition to 7-foot high perimeter fencing that will be maintained over the operational life of the project, security lighting will be installed. Specifically, permanent motion-sensitive, directional security lights will be installed to provide adequate illumination at the points of ingress/egress. All lighting will be shielded and directed downward to minimize the potential for glare or spillover onto adjacent properties. Security cameras will be placed on site and monitored 7 days a week, 24 hours per day.

The facilities are intended to operate year-round and will be available to receive or deliver energy 24 hours a day, 365 days a year.

3 Existing Conditions

The following discussion is supported by photographs of the site and surrounding area taken in August and September 2022. The location of specific photographs referenced in the discussion is depicted on Figure 3, Existing Conditions – Key Map and photographs of the site and surrounding area are presented on Figure 4, Existing Conditions – Project Site and Figure 5, Existing Conditions – Surrounding Area.

The project site comprises primarily undeveloped, flat desert terrain. Specifically, the southern portion of the project site (approximately 45 acres) is undeveloped (a single steel lattice tower supporting a regional transmission line is located in the southwest corner) and covered by low and dry desert shrubs (generally no taller than 2-4 feet high) that present as a stippled appearance across the site. See Photos A and B on Figure 4. A desert wash/drainage also occurs on the southern portion and generally extends from the southwest to the northeast corner of the two-

parcel site. The northern portion of the site displays a similar terrain and vegetation character as the southern portion however, a former housing compound comprised of two dilapidated structures (and the remnants of up to four others) is also present. See Photo C on Figure 4. The northern portion is also crossed by several dirt access roads associated with the former compound and several trees ostensibly planted to provide wind breaks. In addition to electrical transmission infrastructure, existing trees and dirt roads on the northern portion of the site are shown on Photos C and D (Figure 4).

Land uses in the surrounding area include flat undeveloped terrain (to the immediate east and west of the project site), electrical transmission lines, limited scattered residences (to the north, northwest, and west, Harper Dry Lake, and solar farm development. Existing terrain and electrical transmission lines are shown in Photos E and F, Figure 5. Specifically, multiple utility- scale solar farm developments are located to the east (along Roy Street), north, and northeast and include the 250 MW Mojave Solar Project (a concentrated solar power facility featuring solar steam generators and auxiliary boilers) and the Solar Energy Generating System VIII-IX (SEGS VIII-IX) solar power plants. In total, there is over 2,000 acres of operating solar farm development within a 5-mile area from the Project Site. See Photos F and G which include surrounding solar development to the east and north. Lastly, existing residences along Edie Road to the north of the project site are captured in Photo G, Figure 5.

4 Regulatory Setting

State

California Scenic Highway Program

Caltrans manages the California Scenic Highway Program, which was created in 1963 by the California legislature to preserve and protect scenic highway corridors from changes that would diminish the aesthetic value of lands adjacent to highways. The program includes a list of highways that are designated or eligible for designation as scenic highways. A highway may be designated as scenic based on certain criteria, including how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes on the traveler's enjoyment of the view. State laws governing the Scenic Highway Program are found in Sections 260 through 263 of the Streets and Highways Code.

The nearest state scenic highway (i.e., State Route 58 ,an eligible state scenic highway) is located 4.9 miles to the south and I-15, an eligible state scenic highway, is located 16 miles to the southeast of the Project Site near Barstow]) (Caltrans 2022).

Local

San Bernardino County General Plan

Goal NR-4 of the of the Natural Resources Elements pertains to Scenic Resources. The following policies are applicable to the Project Site and area:

- **Policy NR-4.1 Preservation of scenic resources.** We consider the location and scale of development to preserve regionally significant scenic vistas and natural features, including prominent hillsides, ridgelines, dominant landforms, and reservoirs.

San Bernardino County Code

Section 83.07.060 provides standards for outdoor lighting in the mountain and desert regions of the County. For example, Section 83.07.060 (a) requires that all outdoor light fixtures be fully shielded, installed and maintained in such a manner that the shielding does not permit light trespass in excess of amounts set forth in subdivision (f). Further and in accordance with Section 83.07.060 (b), light pollution and trespass shall be minimized through the use of directional lighting, fixture location, height and the use of shielding and/or motion sensors and timers. Regarding light trespass, Section 83.07.060 (f) states that outdoor lighting shall not cause light trespass exceeding one-tenths foot-candles measured with a light meter oriented vertically or horizontally either at the property line of the adjacent property or measured from some other point on the property where light trespass may be reasonably determined to occur due to differences in property or improvement elevations.

5 Impact Analysis

1. *Would the project have a substantial adverse effect on a scenic vista?*

Less-Than-Significant Impact. While specific scenic vistas are not identified, the General Plan does seek to preserve prominent hillsides, ridgelines, and dominant landforms. As stated in Section 3 above, the project site comprises primarily undeveloped flat terrain and thus, proposed development would not result in damage to alteration to hillsides, ridgelines, or dominant landforms. Hillsides and ridgelines do occur to the east, north and west (see Photos A through D on Figure 4) however, these landforms are approximately 20 miles or greater away and due to proposed based the anticipated low vertical profile of panels and racks, future solar panels to be installed on the project site would not substantially adversely effect the quality of existing views from perimeter roads to distant hillside and ridgeline terrain. Solar panels would also be setback from the project site boundary such that their visual prominence and vertical scale (as experienced from perimeter roads) would appear to be lessened. The project does include the installation of battery storage containers and electrolyte storage tanks along the southern site boundary (and through the center of the site in an east west alignment); however, these components would also be setback from Powerline Road such that distant terrain would remain visible in views from Roy Street. Lastly and due to the existing aesthetic context of the area which includes high voltage electrical transmission infrastructure and multiple solar development (and because use of Powerline Road and other local roads is assumed limited), the presence of project components in future views from local roads in the surrounding area would not substantially interrupt views to distant hillside and ridgeline terrain the region. Therefore, impacts to scenic vistas resulting from implementation of the project would be less than significant.

2. *Would the project substantially damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?*

No Impact. Due to distance and occasionally, low intervening hills, clear views to the project site and more specifically, project components including solar panels, battery storage containers, and overhead collection lines are not available from the nearest state scenic highways (i.e., State Route 58 ,an eligible state scenic highway located 4.9 miles to the south and I-15, an eligible state scenic highway located 16 miles to the southeast near Barstow]) (Caltrans 2022). Because the site is not clearly distinguishable from these roadways of the state Scenic Highway System and because proposed development would not result in the

removal of or substantial damage to unique features or resources in the region, no impacts to scenic resources within a designated state scenic highway would occur.

3. ***In non-urbanized areas, would the project 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?***

Less-Than-Significant Impact. Because the project site is within a non-urbanized area, the analysis presented below focuses on whether proposed development would substantially degrade the existing visual quality and character of public views of the site and its surroundings.

As proposed, the project would transform the existing primarily undeveloped 75-acre site into an operating PV solar facility featuring ground-mounted solar panels and battery storage containers. The proposed site plan depicting location of project components is included on Figure 2. While proposed development would alter the existing character of the site and the existing open qualities of views across the site from roads including Powerline Road and Edie Road/Roy Road, the northern portion of the project site presents an unorganized visual appearance due to the effects and presence of previous development which is concentrated in the northwestern corner of the site. As proposed, construction and operation of project would result in an organized scene typified by repeating rows of solar panels and clustered battery storage containers. Furthermore and due to the presence of existing solar development in the immediate area (approximately 2,000 acres of solar development is present within a 5-mile distance of the project site), construction and operation of a PV solar facility would not degrade the existing character of the landscape. Rather, implementation of the project would reflect the growing concentration of solar development in the Lockhart area. As such and based on the analysis presented above, implementation of the Project would not substantially degrade the existing visual character or quality of public views of the site and surroundings. Impacts would be less than significant.

4. ***Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?***

Less-Than-Significant Impact - Lighting. Construction of the project would primarily occur during daylight hours, Monday through Friday. Weekend construction work is not expected to be required, but may occur on occasion, depending on schedule considerations and site conditions. During evening hours and in the event that nighttime construction activities occur due to unanticipated schedule delays or to complete critical activities, the use of construction lighting may occur. During these infrequent occurrences, the minimum amount of lighting needed to ensure a safe work environment and provide adequate illumination of work areas would be used. In addition, all lighting in use would be shielded and directed downward to avoid unnecessary illumination of (and light trespass of) adjacent properties and the night sky.

The project site is currently undeveloped and does not support lighting source or elements that produce glare. Development of the project will introduce new sources (albeit limited) of lighting and glare on the project site. New light and glare sources within the project site will generally be limited to low-elevation security lighting at a site ingress/egress gate(s). All lighting installed on the Project Site will be directed downwards and shielded to control illumination of off-site areas (including nearby residential lands) and reduce skyglow

Section 83.07.010 of the County's Zoning Ordinance comprises the County's Light Trespass Ordinance. Applicable requirements of the Light Trespass Ordinance are listed in Section 3 above. As required by the County, all lighting installed on the Project Site will conform to Light Trespass Requirements for Mountain and Desert Areas (see Section 83.07.060). Specifically, all outdoor light fixtures would be fully shielded, managed with automated control systems, and feature a correlated color temperature of 3,000 Kelvin or less. In addition, the operation of outdoor lighting on the Project Site would not exceed the allowable light trespass standards established by County Code Section 83.07.060(f) ("outdoor lighting shall not cause light trespass exceeding one-tenths foot-candles measured with a light meter oriented vertically or horizontally either at the property line of the adjacent property or measured from some other point on the property where light trespass may be reasonably determined to occur due to differences in property or improvement elevations"). Lastly, no blinking, flashing, or high-intensity lighting would be installed on the Project Site.

Therefore, based on the analysis presented above, lighting impacts associated with the Project would be less than significant

Less-Than-Significant - Glare. As described above, the majority of construction activities would occur during daytime hours wherein lighting would not be required. Potential glare associated with infrequent use of stationary and mobile lighting fixtures during nighttime construction would be minimized through use of the minimum amount of lighting needed to ensure a safe work environment and use would be shielded and directed downward lighting. With the exception of solar panels and energy storage containers, the project would not contain large expanses of material, such as glass or particularly reflective metal, that will result in glare. Solar panels and more specifically, the glass surface of solar panels, represent a potential source of glare during project operations. Inbound sunlight could potentially reflect off the panel surface and be received by an assume limited number receptors/viewers in the surrounding area. However, potential glare produced by panels is not anticipated to result in visual discomfort or impairment of views for residents or motorists. Panel reflectivity is reduced by efficiencies in the glass panel manufacturing process, and panels are designed to absorb as much sunlight as possible. Further, panels would be angled and tilted such that reflected light from inbound sun rays would be projected at a similar angle and would generally be "above" the typical height of residences and the assumed limited number of vehicles on roads in the immediate surrounding area of the Project Site. Lastly and as previously stated, potential glare associated with site lighting would be minimized by limiting the overall number of lighting fixtures to be installed and through compliance with County Code Section 83.07.060 (see Lighting discussion above). Therefore, based on the analysis presented above, glare impacts associated with the Project would be less than significant.

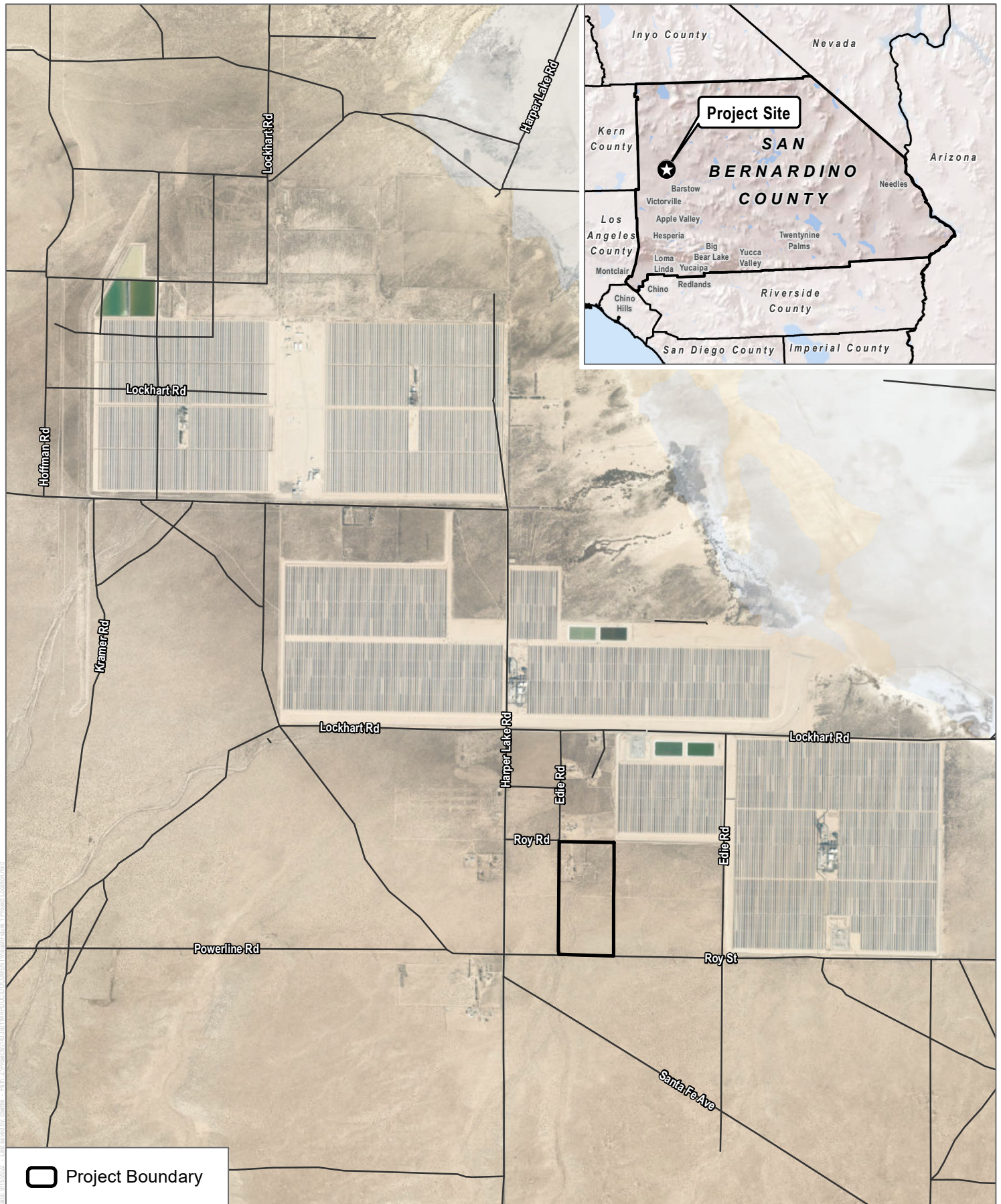
6 References Cited

Caltrans (California Department of Transportation). 2022. *Scenic Highways: California State Scenic Highways*. Accessed September 4, 2022. <https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways>.

County of San Bernardino. 2020. Countywide Plan. October.

Appendix A

Figures 1-5

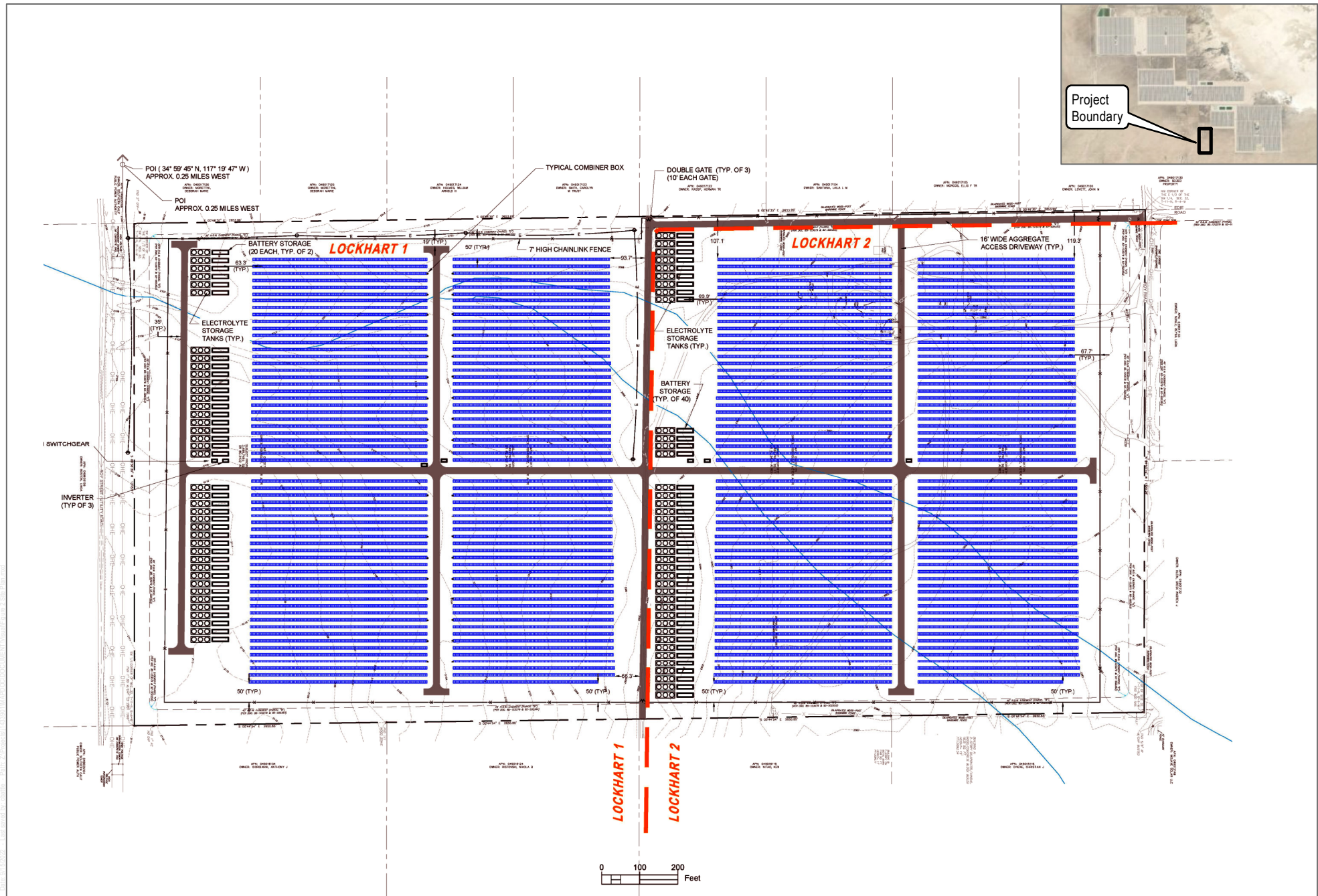


SOURCE: ESRI Imagery 2022, County of San Bernardino 2021

FIGURE 1

Project Location

Visual Impact Analysis - Lockhart Solar Project



SOURCE: Partners Engineering & Science, Inc. 2022

FIGURE 2
Site Plan



SOURCE: ESRI Imagery 2022, County of San Bernardino 2021



Photo A



Photo B



Photo C



Photo D

FIGURE 4

Existing Conditions - Project Site

Lockhart Solar Project



Photo E



Photo F



Photo G



Photo H

Photo: Dudek and Associates, Inc. (11/20/2019) 11/20/2019 11:20:00 AM (UTC-7) [11/20/2019]