



Wister Solar Energy Facility

Visual Resources Technical Report

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Sign-off Sheet

This document entitled Wister Solar Project Visual Resources Technical Report was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of ORNI 21, LLC (the "Client"). The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes.



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1.0 INTRODUCTION

ORNI 21, LLC (ORNI) has retained the services of Stantec Consulting Services Inc. (Stantec) to prepare this technical report assessing the current surrounding conditions and to describe potential changes to the landscape resulting from the Wister Solar Energy Facility (Project) development. The Project would be located on a 640-acre parcel north of Niland in Imperial County, CA (see Figure 1). It would occupy 100 acres of that parcel (see Figure 2).

The 20-megawatt nameplate capacity Project would consist of 3.2 foot by 6.5-foot photovoltaic (PV) modules (or panels) on single-axis horizontal trackers in blocks that each hold 2,520 PV panels, with 90 modules in most rows. The panels would be oriented from east to west for maximum exposure and the foundation would be designed based on existing soil conditions. The PV modules are made of a poly-crystalline silicon semiconductor material encapsulated in glass. A 20-foot wide road with an all-weather surface would surround the panels, and the entire site would be surrounded by a 6-foot tall chain link fence topped with three strands of barbed wire.

The proposed Wister Substation would be a new 92/12 kV unstaffed, automated, low-profile substation. The dimensions of the fenced substation would be approximately 300 feet by 175 feet. The enclosed substation footprint would encompass approximately 1.2 acres of the Project parcel and be located immediately southwest of the solar field.

A proposed above-ground gen-tie line would connect the Wister substation to the Point of Interconnection (POI) at the existing IID 92kV "K" line, approximately 2,500 feet south of the southwest corner of the Project site, along Wilkins Road (see Figure 2). Steel poles, with maximum heights of 70 feet and 300-foot spans, would support the 92kV conductor and fiberoptic cable.

2.0 EXISTING CONDITIONS

The Project site is located within Assessor's Parcel No. 003-240-001, which is currently zoned S-2-G ("Open Space / Preservation" with a geothermal overlay) and designated "Recreational Open Space" by Imperial County's Zoning Map. The Project site is currently undeveloped, though multiple electrical transmission lines extend generally north-south adjacent to and near the Project site.

The Project site is located north-northeast of the intersection of Wilkins and Wiest Roads, about 3 miles north of the unincorporated town of Niland. Niland is the northernmost community within the agricultural portion of the Imperial Valley, which extends from the southeastern portion of the Salton Sea to the United States and Mexico border. The 45-mile-long and 20-mile-wide Salton Sea defines the landscape to the west of the Project site. Elevations within the Project site range from nearly 50 feet below sea level to 30 feet above mean sea level (amsl). With elevations extending to 277 feet below sea level, the Salton Sea sits comparatively lower in the landscape than the Project site, as does much of the agricultural land to the immediate west and south. To the north and east of the Project site are the Chocolate Mountains, which extend to heights of more than 2,000 feet amsl.

Because of this gradual downward slope from east to west, areas to the north and east of the Project site would be more likely to have views of the Project where not impeded by natural or built features. Viewers in this area are associated with land uses. Thus, potential viewers include workers traveling north/south on Gas Line Road, which extends north from Niland Avenue – near Imperial Irrigation District (IID) facilities and an existing solar power facility – to a facility northeast of the Project site. Further away, to the southeast and just slightly higher in elevation than the Project site, are Slab City and Salvation Mountain. Slab City is a former military facility that now serves as the site of an informal community for artists, travelers, and winter-time RV campers. Salvation Mountain is an outdoor art project at the western entrance to Slab City. Both attract tourists and sight-seers. However, topography, structures, and distance limit and obscure visibility of the Project site in direct views from publicly accessible portions of these areas.

Land uses to the west and south include agricultural production and dispersed rural residences, the closest of which are aligned along Wilkins Road and Weist Road. The segments of these roads closest to the southwest corner of the Project site are generally lower than the Project site by approximately 20 feet, which reduces visibility of the site. Areas further away – including the aforementioned IID facilities approximately 2 miles to the south, Niland and the State Route 111 (SR 111) corridor approximately 2 miles to the southwest, and the Wister Waterfowl Management Area approximately 3 miles to the west beyond the SR 111 corridor – are also lower in elevation and thus do not afford direct views toward the Project site.

Views in this area are expansive and are generally characterized by sparse development framed by topographical features. Low-profile, weedy plants, such as salt cedar and russian thistle, typical of this portion of the Colorado Desert, are widespread on undeveloped and unfarmed lands, and ruderal vegetation is along waterways associated with IID canals (Barrett's Biological Surveys, 2018). Individual residences, transmission lines, transportation corridors (including roads and railroads), and agricultural equipment are discernable in the foreground (within 0.25 mile) and middleground (0.25 to 3-5 miles away) views throughout the area. Geothermal plants in the vicinity of the Salton Sea are visible in most views to the west. They are identifiable by their vapor plumes. These views to the west from the Project site are backdropped by the Santa Rosa Mountains and Vallecito Mountains. Views to the east are backdropped by the Chocolate Mountains.

3.0 METHODS

A comparison of the Project site's existing conditions and the change to the landscape with implementation of the Project is based on the production of visual simulations. As a part of this process, Stantec's Visual Resources Team reviewed aerial imagery to identify where the Project would potentially be visible from visually sensitive areas and selected preliminary viewpoints for site photography. Field surveys were conducted by Stantec on February 22, 2019 to photo-document existing visual conditions and views toward the Project site. A representative subset of photographed viewpoints was selected as Key Observation Points (KOPs), which collectively serve as the basis for this assessment. This selection was done in coordination with ORNI. Assessments of existing visual conditions were made based on professional judgment that took into consideration sensitive receptors and sensitive viewing areas in the Project area. The locations of the two KOPs in relation to the Project site are presented on Figure 2.

During the field survey, the view from each KOP was photographed using a 35-millimeter, 53-megapixel, full-frame, single lens reflex camera equipped with a 50-millimeter fixed focal length lens. This configuration is the industry-accepted standard for approximating the field of vision in a static view of the human eye. The camera positioning was determined with a sub-meter, differentially corrected global positioning system (GPS). The camera was positioned at eye-level for each photograph.

The site photos were used to generate a rendering of the existing conditions and a proposed visualization of the implemented Project. The visual simulations provide clear before-and-after images of the location, scale, and visual appearance of the features affected by and associated with the Project. The simulations were developed through an objective analytical and computer-modeling process and are accurate within the constraints of the available site and alternative data (3-dimensional computer model was created using a combination of AutoCAD files and geographic information system [GIS] layers and exported to Autodesk's 3-dimensional Studio Max for production). Design data — consisting of engineering drawings, elevations, site and topographical contour plans, concept diagrams, and reference pictures — were used as a platform from which digital models were created. In cases where detailed design data were unavailable, more general descriptions about alternative facilities and their locations were used to prepare the digital models.

4.0 DESCRIPTION OF POTENTIAL VISUAL EFFECTS

This section describes views from each KOP, first under existing conditions, and then with the proposed Project simulated. The visual simulations illustrate the location, scale, and conceptual appearance of the Project, as seen from each KOP. These visual simulations allow for comparison of pre-Project and post-Project conditions as discussed qualitatively below. KOP locations are shown in Figure 2. Existing and simulated images are included in Figure 3 and Figure 4.

4.1 VIEW FROM WILKINS ROAD (KOP 1)

4.1.1 Existing View

KOP 1 is located along Wilkins Road, at its intersection with Weist Road, adjacent to the southwest corner of the Project site. The view from KOP 1 is to the north, toward the proposed Project's solar arrays and substation (Figure 3a). This viewpoint represents views from an identifiable point along the most proximate roadway, where topography allows visibility of the Project site. This view is characterized by the contrast between the vegetated and relatively flat area in the foreground and middleground of the view and Chocolate Mountains backdrop, which appears multi-colored and defines the skyline with its jagged and irregular form. The tree in the center of the view, as well as other vegetation, partially block views toward the Project site. A utility tie-in pole is visible on the far side of Wilkins Road in the left half of the view.

4.1.2 View with Project

Figure 3b shows the view from KOP 1 with the proposed Project simulated. The gen-tie structures, which would extend from the Project site approximately 2,500 feet toward the KOP, would be the most prominently visible portion of the Project from this location. As conceptually shown in the simulation, they would be visible in the center of the view and the southernmost structure would connect to the existing IID line in the left edge of the view, replacing the current interconnection to the parcel. While appearing as new and highly visible features, the transmission structures would relate to the numerous lines visible throughout the landscape, including the line to which the Project would interconnect. They would also occupy a relatively narrow portion of the view to the north from KOP 1.

The substation for the proposed Project has not yet been designed. However, the facility shown in Figure 3b is an approximation based on representative examples of substations of similar size and in similar environments. As simulated, the substation would be partially visible in views from KOP 1, alongside the solar arrays, which would appear as a comparatively dark, horizontal bar across a portion of the view's middle ground. Aside from the relatively narrow gen-tie structures, no Project component would substantially obscure or appear above the mountain skyline from this vantage point.

4.2 VIEW FROM GAS LINE ROAD (KOP 2)

4.2.1 Existing View

KOP 2 is located along Gas Line Road, 2.2 miles north of Beal Road and just under 0.5 mile east of the Project site. Multiple transmission lines are visible extending across the view, with a tubular-steel pole in the immediate foreground and the H-frame towers appearing in front of the Project site (see Figure 4a). This viewpoint represents views from workers and travelers along the north-south oriented Gas Line Road as well and from the broader, slightly uphill area to the east. The view is characterized by the visible striations, or the layered qualities of what appear in view as linear elements. Beyond the Project site is another transmission line, an orchard that appears linear in form from this vantage point, and the railroad and SR 111 corridor, which is not discernible in this view. The Salton Sea appears here as a strip of royal blue hue across the middleground of most of the view, beyond which are the Santa Rosa and Vallecito Mountains. While jagged and uneven, the distant mountain skyline's linear qualities are accentuated in this view due to the layer of snow visible along numerous peaks and upper extents of the mountain. The gradual downward slope of the Project site is apparent only by reference to further, observably lower elements in the view.

4.2.2 View with Project

Figure 4b shows the view from KOP 2 with the proposed Project simulated. The proposed Project here would appear within the front portion of the view's middleground, within the layered landscape described for the existing view. From 0.5 mile away and a slightly higher elevation, the Project would appear as a generally uniform line across the view, with solar arrays broken up by internal roads. The substation would be detectable beyond the arrays in the southern portion of the Project site, and the gen-tie structures would be visible extending to the south from the Project site. The land east of the Salton Sea would serve as backdrop to the substation, which the gen-tie poles would appear against the water body, itself.

Portions of the landscape beyond the Project, including the orchard, would be obviated by the Project. The blue-toned color of the arrays under conditions simulated here (morning light, mostly sunny skies) would relate to the Salton Sea, the southeastern shoreline of which would remain visible beyond the Project. This would distinguish the Project from the sea in this view, reinforcing their respective scales. With this definition, the size of the proposed Project relative to the broader landscape, and its visual similarity to – but physical distinction from – a body of water would be observable. The overall effect shown in Figure 4b is the relatively small degree of contrast the Project would have with its broader surroundings, as seen in expansive, slightly uphill views from the east.

5.0 PRELIMINARY CEQA ANALYSIS

This technical report will inform the Project's eventual evaluation of potential environmental effects in order to satisfy the California Environmental Quality Act (CEQA). There are four CEQA criteria for Aesthetics. Each is presented here as a question, with preliminary assessments of impact to visual resources provided.

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

No Impact. Scenic vistas are typically expansive views from elevated areas. They may or may not be part of a designated scenic overlook or other area providing a static vista view of a landscape. There are no designated scenic vistas in the Project vicinity. Views to the west from elevated areas near the Project site, including views from Gas Line Road, could be considered scenic vistas given the expansiveness of the views and distance one can see under favorable conditions. As described above for the view of the Project from KOP 2, the Project would not have a substantial adverse effect on such views. Rather, it would be absorbed into the natural and built features that comprise the existing landscape. Therefore, no impacts to scenic vistas would occur.

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. There no designated or eligible state scenic highways in the Project vicinity. The nearest road segment among those identified by Imperial County as "having potential as state-designated scenic highways" is the portion of SR 111 from Bombay Beach to the Imperial County / Riverside County boundary. The Project site is approximately 14 miles south of Bombay Beach. Therefore, no impacts to state scenic highways would occur.

3. 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. The existing visual character in views of the Project would not be substantially altered based primarily on the proximity of viewpoints to the Project site. In the view from KOP 1, new, transmission structures that would be part of the Project's interconnection, would appear large in scale, but would be comparable in size and appearance to other structures visible throughout the surrounding landscape in multiple existing transmission lines. The view from KOP 1 shows the Project, and its substation and fence, at a distance of just under 0.5 mile away. The view is partially blocked by roadside vegetation and views from other nearby publicly accessible viewpoints – including from points further north or south along Wilkins Road or east along Weist Road – would be partially to fully obscured by roadside vegetation or berms. Like the view from KOP 1, such views would likely be of short duration given the probability of the viewers being in moving vehicles. The view from KOP 2 represents elevated views from the nearest roadway to the east. As previously described, the Project would not substantially degrade the existing visual character or quality of views from this distance; rather it would appear absorbed into the broader landscape that already includes agricultural

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development, electricity transmission, geothermal power plants, IID facilities and infrastructure, and, 0.5 mile to the south, an existing utility-scale solar facility. These effects 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. The Project would not include any source of substantial nighttime lighting. Any lighting required for safety and security within the Project site would be hooded and oriented downward. It would not be a source of substantial light in the area outside of the Project site.

Stantec produced a Glare Hazard Analysis Report for the Project (Stantec, 2019). It concluded that viewers at Observation Points 1 and 2 (which are the same as KOP 1 and KOP 2), the representative viewpoints relied upon in this technical report (and referred to in the Glare Hazard Analysis Report as Vantage Points 6 and 15), would experience no glare effects from the Project. These effects would be less than significant.

6.0 CONCLUSIONS

The Wister PV Solar Power Plant would result in the construction of solar arrays, a substation, and associated structures on a currently undeveloped site within the Colorado Desert, just southeast and slightly uphill from the Salton Sea and the SR 111 corridor. In views from publicly accessible locations, the proposed Project would be visible and identifiable, though it would not alter existing visual character (see discussion of KOP 1). Further, such views of the proposed Project would be limited in both duration and availability. In most views, much or all of the Project would be absorbed into the broader landscape, its darker hues relating to the appearance of the Salton Sea and nearby vegetation, all of which appear as linear or low, flat polygons from locations of more than 0.5 mile away. The majority of this portion of the Imperial Valley is dedicated to agricultural and power production and transmission. The Project would appear consistent with existing patterns of croplands, orchards, geothermal facilities, utility infrastructure, solar facilities, and other mechanized or industrial-appearing development.

7.0 REFERENCES

Barrett's Biological Surveys. 2018. Wister Solar 640-Acre Project – Habitat Reconnaissance Report.

Imperial County Planning & Development Services Department. 2008. Imperial County General Plan – Circulation and Scenic Highways Element. Available online: <http://www.icpds.com/?pid=571>

Stantec. 2019. Wister Solar Project, Imperial County, California – Glare Hazard Analysis Report.

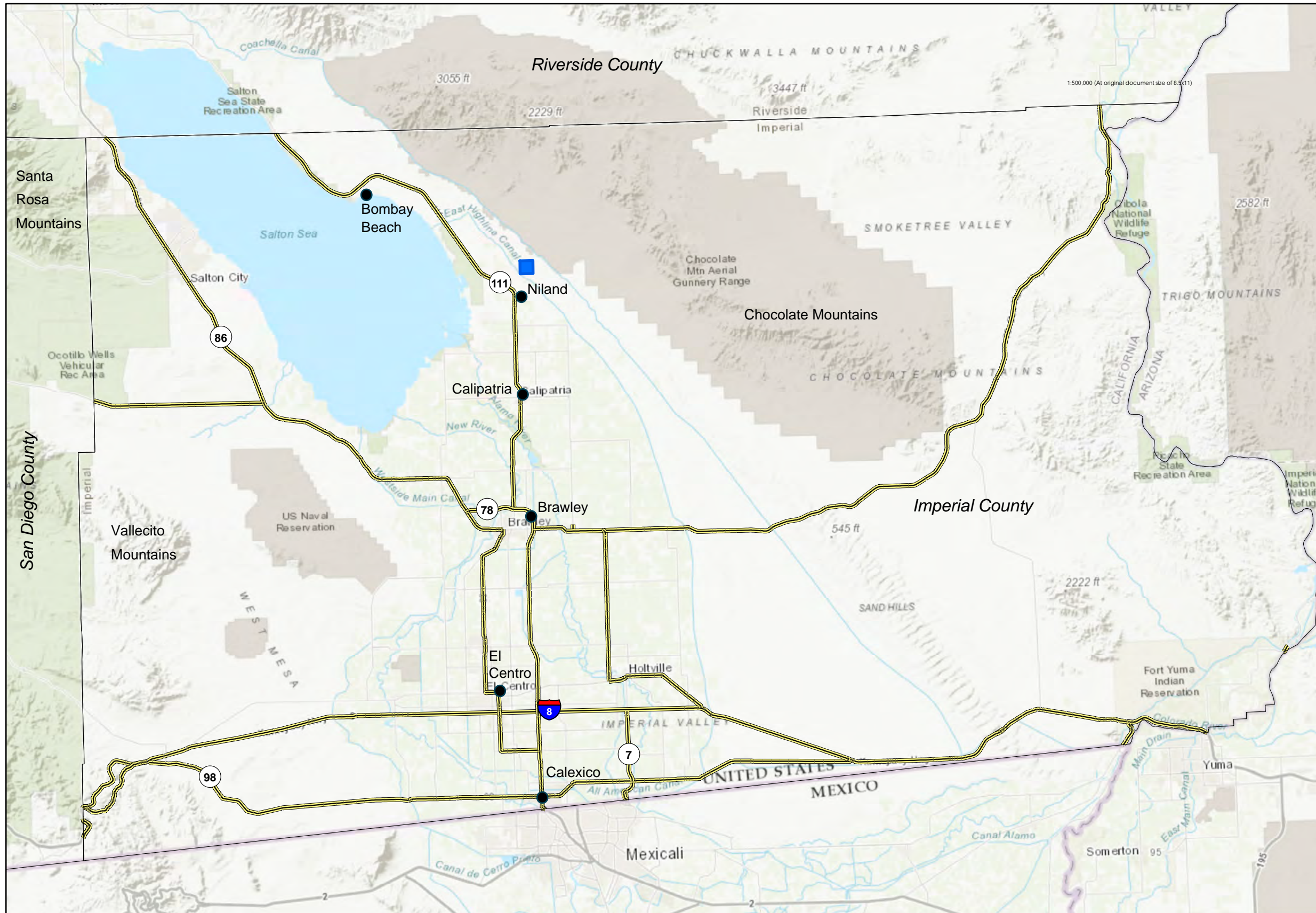


Figure No.
1

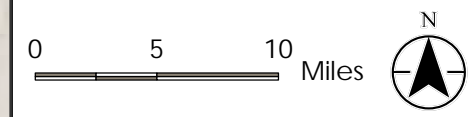
Title
Project Location

Client/Project
Orni Wister Solar Project

Project Location
Imperial County, CA

Prepared by DC on 2019-3-28

- Project Location
- County Boundaries
- Highways



Notes
 1. NAD 1983 COR596 StatePlane California V FIPS 0405 FT US
 2. Service Layer Credits: Sources Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS



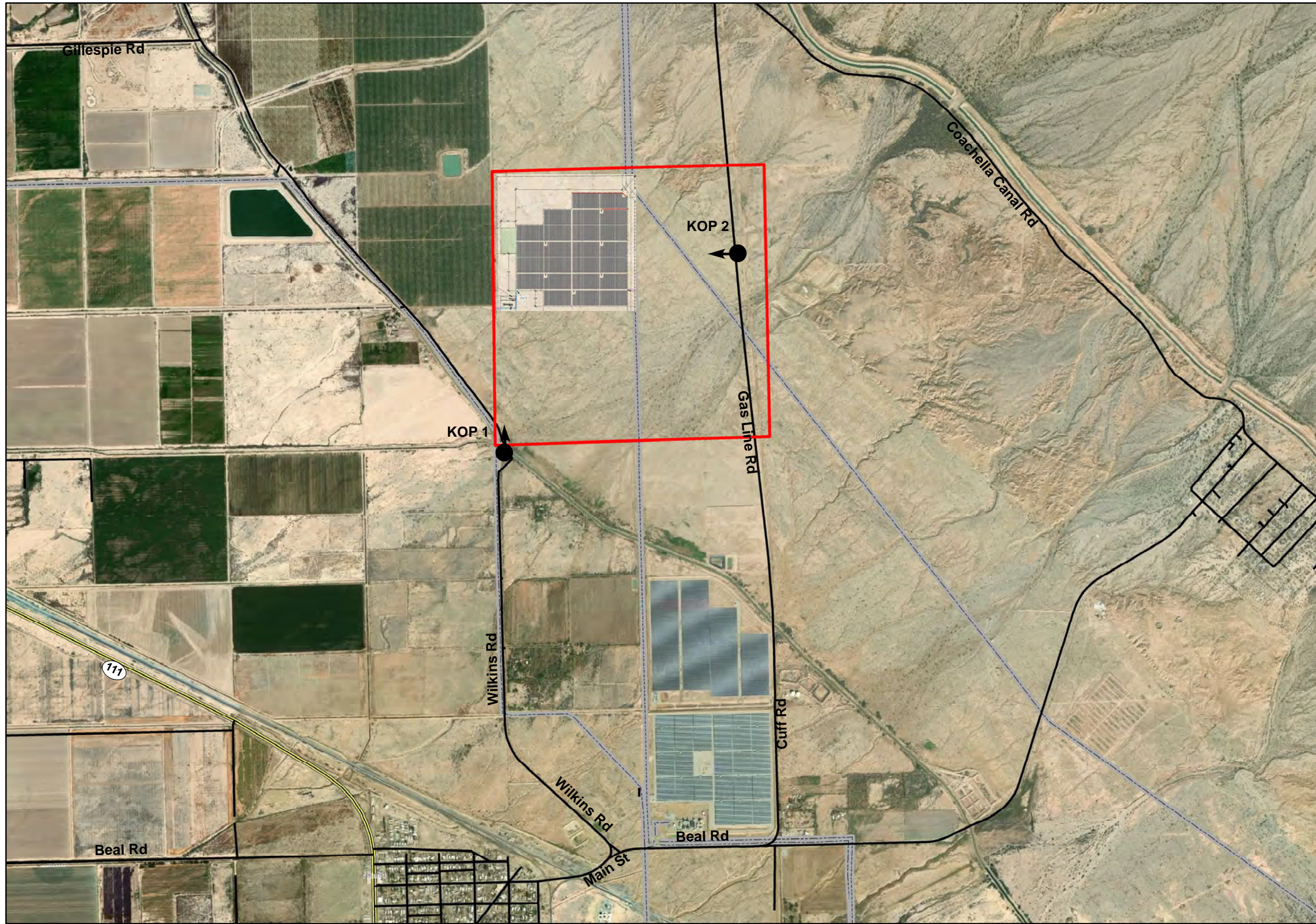







Figure No.
2

Title
Project Site and
Key Observation Points

Client/Project
Orni Wister Solar
Project

Project Location
Imperial County, CA

Prepared by DC on 2019-3-28

-  Key Observation Points
-  Project Boundaries
-  Roads
-  State Highways
-  Transmission Lines


0 0.25 0.5 Miles 





Figure 3a. Existing view to the northeast from KOP 1, located near the intersection of Wilkins Road and an unnamed private road.



Figure 3b. Simulated view from KOP 1: The Project would appear in the center of the view, with the gen-tie line, as conceptually simulated, extending from the Project site toward the Project interconnection at Wilkins Road.



Figure 4a. Existing view to the west-southwest from KOP 2, located along Gas Line Road, east of the Project site.



Figure 4b. Preliminary simulated view from KOP 2. The Project would appear beyond the H-frame transmission structures visible across the view.