2.0 ENVIRONMENTAL SETTING

The project study area encompasses a total of 4,228 acres and is located in Imperial County, California. Imperial County encompasses over 4,597 square miles or 2,942,080 acres of land, bordered by Mexico to the south, Riverside County to the north, San Diego County on the west, and the State of Arizona on the east. The terrain varies from 235 feet below sea level at the Salton Sea to 4,548 feet at Blue Angel Peak.

The climate is hot and dry, ranging from lows in the mid 30s in January to highs of 110 degrees (°) and above in July and August (mean temperatures: low-55.0°; high-89.6°), with little moisture (average annual rainfall: 2.92 inches; 25 percent average relative humidity) (Imperial County, as amended through 2008). Most of the rainfall occurs in conjunction with monsoonal conditions between May and September, with an average annual rainfall of less than 3.0 inches where the project sites are located. The 10-year, 24-hour estimated precipitation amount for the project area is 1.8 inches; while the 100-year, 24-hour estimated precipitation is 3.0 inches (Western Regional Climate Center 2004).

Approximately 20 percent of the land in Imperial County is irrigated for agricultural purposes, most notably the central area known as Imperial Valley (512,163 acres). The rich soils of Imperial County, particularly of the Imperial Valley, were created by periodic flooding of the Colorado River over thousands of years which left deep, rich deposits of silt. Favorable climate, productive soils, and the availability of irrigated water have permitted Imperial County to become a leading producer of agricultural products. Irrigation agriculture in the County is extremely diverse and includes numerous types of vegetable crops including lettuce, carrots, onions, tomatoes, cauliflower, and broccoli; alfalfa, Sudan grass, and other animal feed; sugar beets; wheat and other grains; melons; cotton; various citrus fruits, and nuts. Two resources that are vital to past and future agricultural production are productive soils and adequate water availability (Imperial County, as amended through 2008).

Imperial County is, and will continue for the foreseeable future to be, a predominantly agricultural area; however, a significant increase in urbanization since 2003 has occurred. Most of Imperial County, approximately 50 percent, is still largely undeveloped or under federal ownership. According to the Southern California Association of Governments (SCAG), the population of Imperial County is 174,528 (based on 2010 census data) and has increased by 32,167 within the past decade. The developed area where the County's incorporated cities, unincorporated communities, and supporting facilities are situated comprise less than one percent of the land (Imperial County, as amended through 2008). There are approximately 23 residences scattered throughout the project study area and vicinity.

2.1 LOCATION OF PROJECTS AND STUDY AREA

The proposed sites for the solar generating portion of the project area are located on privately owned, agricultural land encompassing 4,228 acres approximately six miles west of Calexico, California in southern Imperial County (County) (see Figure 3.0-1). The U.S./Mexico border is located immediately south of the project study area. The project study area includes all or portions of Sections 17, 18, 19, 20 Township 17 south, Range 14 east and Sections 12, 13, 14, 15, 16, 17, 22, and 23 Township 17 south, Range 13 east San Bernardino baseline and meridian. The geographic center of the project study area roughly corresponds with 32.671 latitude, -16.600 longitude.

Five separate conditional use permit (CUP) applications and a Variance request which would accompany these applications have been filed with the County, which together define the project study area. The five CUP applications or individual site locations within the project study area consist of the following:

- Mount Signal Solar Farm 1 (MSSF1)
- Calexico Solar Farm 1, Phase A (CSF1(A))
- Calexico Solar Farm 1, Phase B (CSF1(B))
- Calexico Solar Farm 2, Phase A (CSF2(A))
- Calexico Solar Farm 2, Phase B (CSF2(B))

In addition, the project study area includes a linear corridor that could house off-site transmission facilities (OTF). The OTF will traverse private lands (which are internal to the project site) and a portion of the OTF is located within Bureau of Land Management (BLM) lands. Each individual site location comprising the project study area is further described below.

2.1.1 Mount Signal Solar Farm 1

For description of project components, see Section 3.0, Project Description.

2.1.2 Calexico Solar Farm 1

For description of project components, see Section 3.0, Project Description.

2.1.3 Calexico Solar Farm 2

For description of project components, see Section 3.0, Project Description.

2.1.4 Off-site Transmission Facilities

Off-Site Transmission Facilities within Private Land

The project would connect to existing electrical transmission infrastructure to enable the export and sale of electricity via the California Independent System Operator (ISO) grid. This connection would be accomplished through the construction of a new 230 kilovolt (kV) transmission line that would bisect the project study area from east to west along a private road just south of SR 98. The transmission corridor would extend from a point near the intersection of Anza Road and a private road, just east of Ferrell Road, west to the intersection of Pulliam Road and a private access road, just south of SR 98. These transmission facilities would then interconnect to the east-west transmission facilities currently being constructed as part of the recently approved Imperial Solar Energy Center South Project. The proposed interconnection point is located at the intersection of Pulliam Road and a private access road located approximately one-half mile south of SR 98.

Off-Site Transmission Facilities within BLM Land

A portion of the transmission facilities associated with the Imperial Solar Energy Center South Project is being constructed within BLM lands, the construction and operation of which, were addressed in BLM EA 2010-64/2011-0007 and the Imperial Solar Energy South EIR (SCH No. 2010061038). Transmission facilities currently being constructed in conjunction with the Solar Energy Center South Project would then connect with existing transmission facilities located in BLM lands. However, at this point, new transmission facilities may be required, and are proposed as part of this project. This portion of the off-site transmission facilities associated with the proposed project would be located on BLM lands from the westerly terminus of the Imperial Solar Energy Center South Project transmission line (located within BLM lands) north to the existing Imperial Valley Substation.

2.2 PHYSICAL CHARACTERISTICS

2.2.1 Aesthetics

The solar field component of the project study area is located in southern Imperial Valley, just north of the U.S./Mexico border, and is characterized as an agricultural landscape with generally level topography. Visual features within this portion of the project study area include numerous agricultural canals that supply water to the project study area and agricultural related structures (e.g., silos). The City of Calexico is located to the east of the solar field portion of the project study area with the East Mesa sand dunes

located further east. Areas to the north and south of this area are generally level and characterized by an agriculturally-dominated landscape.

A portion of the off-site transmission facilities proposed as part of the project is located within BLM land and is the Yuha Desert. The Yuha Desert is generally comprised of upland desert landscape that transitions into the Coyote Mountains further west. Mount Signal rises out of the southern Yuha Desert, extending south of the U.S./Mexico border, and is a prominent visual feature in the landscape of this portion the project study area.

2.2.2 Agricultural Resources

Much of the land base in the vicinity of and within the solar field portion of the project study area is considered highly productive farmland where irrigation water is available. Farming operations in this area generally consist of medium to large-scale mono-cropping systems with related operational facilities. Crops generally cultivated in this portion of the project study area may include alfalfa, barley, and/or Bermuda grass in any given year. Row and vegetable crops are also prominent in this portion of the project study area. Areas further to the north are also utilized for irrigated agricultural production and non-irrigated pasture for cattle grazing. No farming occurs in the area proposed for the new 230 kV Transmission Facility within BLM land.

2.2.3 Air Quality

The project study area is located in the Salton Sea Air Basin (SSAB) under the jurisdiction of the Imperial County Air Pollution Control District (ICAPCD). The SSAB, which contains part of Riverside County and all of Imperial County, is governed largely by the large-scale sinking and warming of air within the semi-permanent subtropical high-pressure center over the Pacific Ocean. The high-pressure ridge blocks out most mid-latitude storms, except in winter when the high pressure is weakest and farthest south. When the fringes of mid-latitude storms pass through the Imperial Valley in winter, the coastal mountains create a strong “rainshadow” effect that makes Imperial Valley the second driest location in the United States. The flat terrain near the Salton Sea, intense heat from the sun during the day, and strong radiational cooling at night create deep convective thermals during the daytime and equally strong surface-based temperature inversions at night. The temperature inversions and light nighttime winds trap any local air pollution emissions near the ground. The area is subject to frequent hazy conditions at sunrise, followed by rapid daytime dissipation as winds pick up and the temperature warms.

Currently, the SSAB is either in attainment or unclassified for all Federal and State air pollutant standards with the exception of 8-Hour ozone (O_3), particulate matter less than 10 microns in diameter (PM_{10}), and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$). Imperial County is classified as a "serious" non-attainment area for PM_{10} and a “moderate” non-attainment area for 8-hour ozone for the NAAQS and non-attainment for $PM_{2.5}$ for the urban areas of Imperial County. Air pollutants transported into the SSAB from the adjacent South Coast Air Basin (Los Angeles, San Bernardino County, Orange County, and Riverside County) and from Mexicali, Mexico substantially contribute to the non-attainment conditions in the SSAB. The closest air quality monitoring station to the project study area is the Calexico monitoring station located within the City of Calexico (1029 Belcher Street, Calexico, CA 92231, ARB Station ID 13698). The Calexico monitoring station measures O_3, PM_{10}, $PM_{2.5}$, carbon monoxide (CO), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2).

2.2.4 Biological Resources

When surveyed as part of the biological resources assessment for the project, the fields associated with the solar farm and transmission facilities within the private lands were planted with alfalfa, Bermuda grass, and sugar beets. Due to the active agricultural and disturbed nature found within this portion of the project study area, no rare or special species plants are known or expected to exist and no federally listed wildlife species were observed during field surveys within the agricultural areas of the project sites.

Although agricultural fields are too heavily disturbed to provide nesting sites, the solar farm portion of the project study area provides suitable foraging habitat and resting conditions for migratory birds. Several burrowing owls (fully protected species) have been observed on-site and within the 500-foot buffer zone surrounding the project study area and the route of the transmission facility within private land. Additionally, loggerhead shrike (CDFG species of special concern) was observed on-site, as they typically forage in agricultural areas. The section of the OTF located with BLM lands traverses desert land mapped as Creosote Bush-White Burr Sage Scrub and Desert Wash, and contains sensitive species including, but not limited to, the flat tailed horned lizard, Parish's desert thorn, yellow warbler, and Thurber's pilostyles.

2.2.5 Cultural Resources

Thousands of prehistoric (aboriginal culture and systems existing prior to 1769) and hundreds of historic (uncovered facts containing no known historical documentation) are found throughout Imperial County. Prehistoric evidence in the form of trails, rock art, geoglyphs, fish traps, and resource procurement and manufacturing locations are found in the regions surrounding the fertile valley portion of the county. From a historical standpoint, the intensive use of Imperial Valley for irrigated agriculture since the beginning of this century has impacted any resources that may have existed on land that is now farmland or under the Salton Sea. Historic resource sites date back to 1540, when the Hernando de Alcaron Expedition discovered Alta California from near the intersection of Interstate 8 (I-8) and Highway 186. The next major historical event occurred in 1775 when Juan Bautista de Anza first passed through the area. The Anza Trail itself constitutes a significant cultural resource in the Yuha Desert, as does the later Sonoran/Southern Emigrant Trail which served as a major route to and from coastal California from 1825 to 1865. Although very few structures or artifacts may remain from the use of these trails, the routes themselves are of historical significance. Various other structures, such as missions (Spanish period 1769-1821) and a fort (Mexican period 1821-1848) are still evident in regions throughout the county (Imperial County). Two cultural resources sites have been identified within the solar field portion of the project area. These sites have been identified as not significant. One significant cultural resources site is identified within the portion of the transmission corridor located within BLM land.

2.2.6 Geology and Soils

The Imperial Valley is a broad, flat, alluviated area that lies partly below sea level, cut off from the Gulf of California to the south by the Colorado River Delta. The valley, also known as the Salton Trough, a geologic structural depression resulting from large-scale regional faulting, is one of the most tectonically active regions in the United States and represents the northward extension of the Gulf of California, containing both marine and non-marine sediments since the Miocene Epoch[1]. The eastern boundary is formed by branches of the San Andreas Fault, while the western boundary is formed by the San Jacinto-Coyote Creek and the Elsinore-Laguna Salada Faults. Specifically, the project study area is located in the Colorado Desert Physiographic province of southern California. Because the project study area is located in a seismically active region, there is a potential for strong ground shaking associated with earthquakes. The Imperial, Brawley, Laguna Salada, Cerro Prieto, and Superstition Hills Fault Zones are all within proximity of the project study area. The Late Pleistocene[2] to Holocene[3] lake deposits are probably less than 100 feet thick and derived from periodic flooding of the Colorado River which intermittently formed the fresh water Lake Cahuilla. Additionally, the predominant surface soil is silty clay.

2.2.7 Hazards and Hazardous Materials

The solar field portion of the project study area is comprised of several agricultural fields that have been in and are currently in crop production since approximately the mid 1940s. A total of four Imperial

[1] The Miocene is a geologic epoch from 24-5 million years before the present.
[2] The Pleistocene is the epoch from 2,588,000 to 11,700 years before present. The end of the Pleistocene corresponds with the end of the last glacial period.
[3] The Holocene is a geological epoch which began at the end of the Pleistocene (around 11,700 years ago) and continues to the present.

Irrigation District (IID) sumps are located on the MSSF1 component of the project study area: one at the central northern boundary of Assessor's Parcel Numbers (APNs) 059-130-001 & 059-130-002, one at the southern boundary of APNs 059-130-005 and 059 130-004, one at the northwest corner of 052-190-012, and one on the central southern boundary of APN 052-210-016. There are confirmed hydrocarbon soil stains found on-site and due to the previous common use of pesticides, there have been subsequent findings of below regulatory action levels of pesticides in the soils. Additionally, an aboveground gasoline tank and 55-gallon drums have been found on-site. Further, the project study area is within a seismically active region within proximity to several nearby faults. Additionally, a crop duster airstrip and maintenance yard with storage of pesticides and herbicides is located within 0.5 mile of the MSSF1 boundaries. A crop duster airstrip and operations base transects the eastern portion of CSF2. No hazardous materials have been identified for the portion of the OTF located within BLM land.

2.2.8 Hydrology/Water Quality

The project site is located within the Colorado River Basin Regional Water Quality Control Board (Region 7) which covers 13 million acres and encompasses all of Imperial County. The project sites are located within the Imperial Valley Planning area, one of the six planning areas within the Colorado River Basin. This planning area comprises 2,500 square miles in the southern portion of the Region, almost all of it in Imperial County. The easterly and westerly boundaries are contiguous with the westerly and easterly boundaries of the Colorado River Basin and the Anza-Borrego planning areas, respectively. Its northerly boundary is along the Salton Sea and the Coachella Valley planning area; and its southerly boundary follows the International Boundary with Mexico. The planning area's principal feature is the flat, fertile Imperial Valley. The principal communities are El Centro and Brawley. Additionally, the project sites are located in the Brawley Hydrologic Area (Basin Number 723.10) within the Imperial Hydrologic Unit.

2.2.9 Noise

The predominant sources of noise in the solar field portion of the project study area include vehicular traffic on local roads and highways and agricultural operations; and to a lesser extent airport operations out of Calexico International Airport. Activities involving the use of heavy-duty equipment such as front-end loaders, forklifts, and diesel-powered trucks are common noise sources typically associated with agricultural uses. Noise typically associated with agricultural operations, including the use of heavy-duty equipment, can reach maximum levels of approximately 85 A-Weighted Decibel (dBA) at 50 feet (Caltrans 1998). With the soft surfaces characterizing the agricultural landscape, these noise levels attenuate to approximately 60 dBA at distances over 800 feet. Noise is limited within the BLM land, which includes vehicles traveling on SR 98, and aircraft overflight.

2.2.10 Public Services

Because the solar field portion of the project study area is agricultural land, the need for public services is limited. The portion of the project study area located within private land is located within the Imperial County Fire Department and Office of Emergency Services (ICFD/OES) area of service. There are no parks or libraries in the vicinity of this portion of the project study area.

2.2.11 Recreation

There are no formally designated recreation facilities within the boundaries of the solar field portion project study area or within proximity to the area. The Imperial Sand Dunes Recreation Area is located approximately 30 miles east of the project study area. Additionally, the route of the proposed OTF is would traverse lands under BLM jurisdiction. However, BLM land would be located within an area currently designated by the BLM's California Desert Conservation Area (CDCA) as Utility Corridor "N." The purpose of the Utility "N" Corridor is to provide a designated area within the BLM lands for utility structures such as transmission lines and to group these utilities together in one area rather than allow utilities to be scattered throughout BLM lands.

2.2.12 Transportation/Circulation

The following street segments are located within the project study area: State Route (SR) 98, McCabe Road, La Brucherie Road, Ferrell Road, Brockman Road (S 30), South Clark Road, and Weed Road. As discussed further in Section 4.14 Transportation/Circulation, roads within proximity to the project study area are currently operating at an acceptable level of service (LOS).

2.2.13 Utilities/Service Systems

Water is conveyed to the solar field portion of the project study area via the IID canals. The solar field portion of the project study area is used for agricultural purposes, and contains some residential uses. As a result, there are no wastewater facilities located on-site. Current drainage systems consists primarily of earthen open channels paralleling irrigation canals on the downstream side of the fields. The drains collect excess surface flows from the agricultural fields (tailwater), subsurface flows from a system of tile drains underlying the fields (tilewater), and operational spill from the canals and laterals. IID also provides electricity to the private land portion of the project study area.

2.3 EXISTING LAND USE

The project site is located on agricultural lands and zoned General Agriculture (A-2), General Agriculture Rural (A-2-R), and Heavy Agriculture Rural (A-3) which are areas designated for agricultural uses and promote compatible uses. To the east of the solar field portion of the project study area is the Calexico Urban Area, which is approximately 8,302 acres surrounding the incorporated City of Calexico. Because urban areas typically will be annexed or incorporated, they typically provide a full range of public infrastructure normally associated with cities (Imperial County, as amended through 2008). There are approximately 23 residences scattered throughout the project study area and vicinity. Also, a private airstrip is located in the vicinity of the project sites.