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Appendix M

Socioeconomics Study

Darden Clean Energy Project

Socioeconomics

October 2023

Prepared for IP Darden I, LLC and Affiliates

Final Report

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ECONorthwest prepared this report for IP Darden I, LLC and Affiliates, with the support of staff from IP Darden I, LLC and Affiliates and Rincon Consultants. ECONorthwest is responsible for the content of this report. That assistance notwithstanding, the staff at ECONorthwest prepared this report based on their knowledge of economics and economic tools and models, natural resources, and energy, and on information derived from government agencies, private statistical services, the reports of others, interviews of individuals, and other sources believed to be reliable. Any statements nonfactual in nature constitute the authors' current opinions, which may change as more information becomes available.

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Socioeconomics

This report assesses the Darden Clean Energy Project's (Project) effects on socioeconomic resources. It provides a description of the Project and existing regional conditions including population and social characteristics, housing supply and market conditions, economic characteristics including income and employment, county fiscal resources, public services, and utilities. It then provides a discussion of socioeconomic impacts (and the methodology used to identify and assess them), characterizing impacts qualitatively and quantifying them where data allow. The analysis addresses direct and indirect impacts, then discusses cumulative impacts of the Project in combination with the potential effects of other foreseeable projects. This analysis is consistent with the laws, ordinances, regulations, and standards (LORS) relevant to socioeconomics as identified at the end of this section.

1. Project Description

The Project consists of the construction, operation, and eventual repowering or decommissioning of a 1,150 megawatt (MW) solar photovoltaic (PV) facility, an up-to 4,600 megawatt-hour (MWh) battery energy storage system (BESS), an up-to 1,150 MW green hydrogen facility, a 34.5-500 kilovolt (kV) grid step-up substation, a 10- to 15-mile 500 kV generation intertie (gen-tie) line, a 500 kV utility switchyard along the Pacific Gas and Electric Company (PG&E) Los Banos-Midway #2 500 kV transmission line, and appurtenances. The Project area is shown in Figure 1.

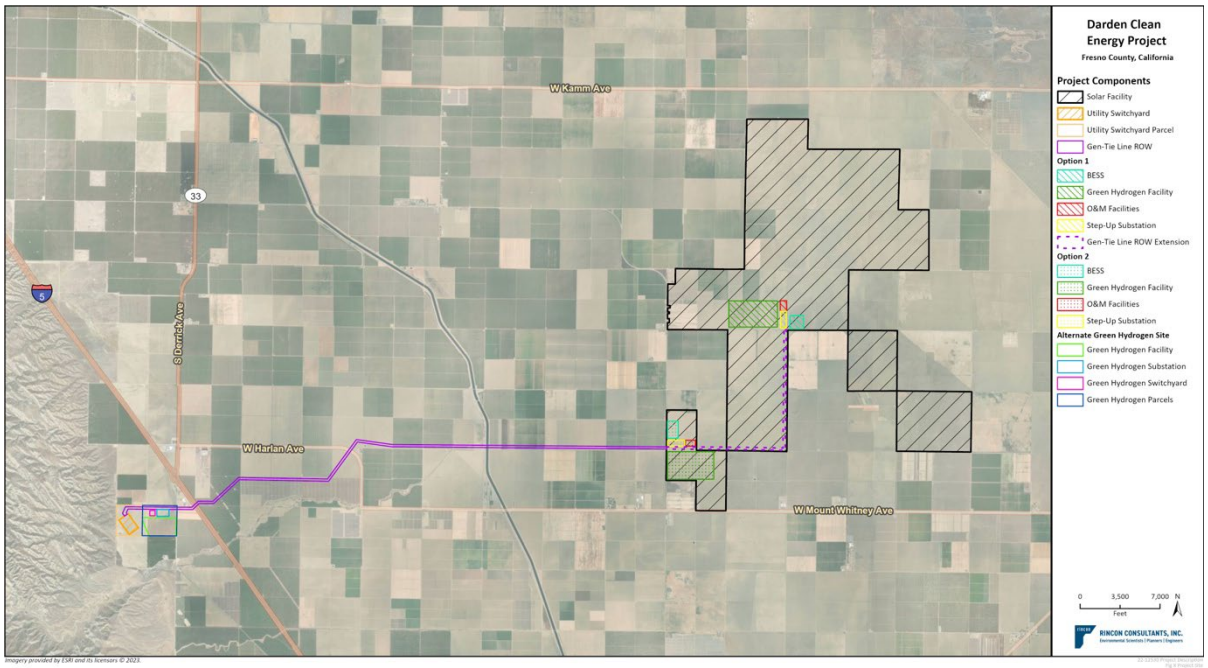
Construction of the Project is anticipated to take between 18 and 36 months to complete and the Project would be operational by 2027 or 2028. The Project would include the following major components:

- **Solar Facility, Step-Up Substation, and Gen-tie**
  - Construct a 1,150 MW solar PV facility, consisting of approximately 3,100,000 solar panels, inverter-transformer stations, and an electrical collection system. The collection cables would be buried underground in a trench about 4 feet deep, with segments installed overhead on wood poles to connect all the solar facility development areas to the onsite step-up substation.
  - Construct a new step-up substation to step up the medium voltage of the PV collector system from 34.5 kV to 500 kV, located on approximately 20 acres. Two locations (Option 1 and 2 sites) are being considered for the step-up substation.
  - Construct operations and maintenance facilities.
  - Construct an approximately 10- to 15-mile 500 kV gen-tie line, consisting of either monopole tubular steel poles or steel H-frame structures and dead-end structures, to interconnect the step-up substation to the new utility switchyard. The gen-tie line would be located within an up to 275-foot-wide corridor.
- **BESS**
  - Construct a battery storage system capable of storing up to 1,150 MW of electricity for four hours (up-to 4,600 MWh), located on approximately 35 acres. Two locations (Options 1 and 2 sites) are being considered for the battery storage system.

- **Green Hydrogen Facility**
  - Construct an up-to 1,150 MW green hydrogen generator, consisting of an electrolyzer and water treatment plant with reverse osmosis and Electrodeionization and ancillary equipment such as filters, storage tanks, backwash systems and chemical dosing systems. Three locations are being considered for the green hydrogen facility. Option 1 or Option 2 sites would be approximately 225 acres in size and would be located within the solar facility. In addition, an approximately 100-acre alternate site located west of Interstate 5 is being considered. If the alternate site is selected, it would include the construction of a substation and switchyard on approximately 20 additional acres.
- **Utility Switchyard**
  - Construct a PG&E-owned switchyard, consisting of high-voltage circuit breakers, switches, and series capacitor line compensation equipment in a breaker-and-half configuration, to electrically connect the Project's generation onto PG&E's 500 kV transmission network. The utility switchyard would be located on approximately 40 acres.

The Project would operate for approximately 35 years, at which time Project facilities would be either repowered or decommissioned. Following decommissioning, the Project site would be restored and reclaimed to the extent practicable to pre-construction conditions consistent with site lease agreements.

Figure 1 Project Site

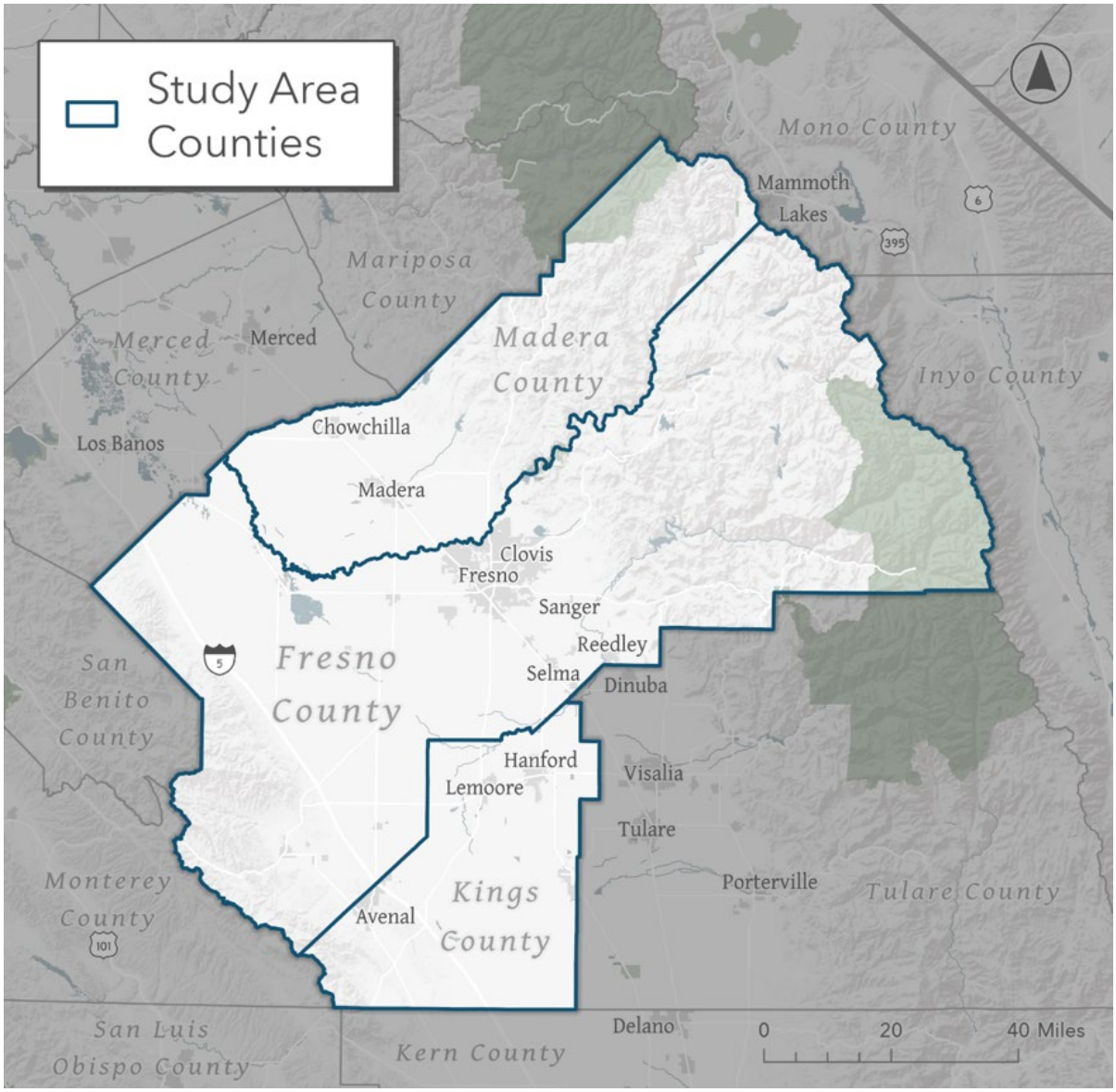


2. Environmental Setting (Existing Regional Conditions)

The existing regional conditions (or environmental setting) are documented in the sections below, as relevant to socioeconomic impact analysis. This section is organized around the categories of socioeconomic resources outlined in California Energy Commission (CEC) guidance (CEC, 2021). The "region" of focus is consistent with the study area used for the impact analysis, shown in Figure 2. It

includes the Fresno-Madera Metropolitan Statistical Area (MSA), which is Fresno and Madera Counties, and also addresses adjacent counties as appropriate for capturing market and network relationships that extend beyond the borders of the MSA.

Figure 2 Study Area



Source: ECONorthwest

A. *Population and Community Character*

Fresno County is in the heart of the Central Valley, the agricultural engine of California and a key agricultural producer for the U.S. and world. Two major transportation routes intersect the county. Interstate 5 runs north-south on the western side and Highway Route 99 runs parallel to the east, through the center of the county. The county shares its border with Madera and Merced counties to the north, Monterey and San Benito to the west, Inyo and Mono to the east, and Tulare and Kings to the south (Figure 22). The Fresno-Madera MSA encompasses Fresno and Madera counties as the cities of Fresno and Madera represent the economic and demographic center of the region.

Fresno County had a total estimated population of 1,015,190 in 2022 (Table 1), ranking it 10th out of the 58 counties in California in terms of population (US Census Bureau, 2022). More than two-thirds (670,000) of the county's population is concentrated in the cities of Fresno (545,000) and Clovis (125,000), in the center of the county. Madera County's population was about 150,000 in 2022, much of which is in the City of Madera (66,000). The closest incorporated communities to the Project site are San Joaquin (3,704), located about 15 miles north-east and Huron (6,222) located about 20 miles south-east (Table 2). The county has a population density of almost 170 people per square mile, less dense than the California state average of roughly 250 people per square mile (US Census Bureau, 2020a). The western part of Fresno County is considerably less-densely populated than the central portion where the major population centers are.

Population in California declined during the COVID-19 pandemic; however, population grew in Fresno County (see Table 1). Annualized population growth in California was 0.6 percent prior to the COVID-19 pandemic (2010-2020). Over the period most affected by the pandemic (2020-2023), the annualized population growth rate in California fell to -0.4 percent. Conversely, Fresno and Madera counties saw population growth during the pandemic, though in Fresno County, the growth rate decreased when compared with the period prior to the pandemic (0.8 percent pre-pandemic to 0.3 percent during the pandemic).

Table 1 Population Trends and Projections, 2010-2060

	Fresno County		Madera County		Kings County		California	
Year	Population	AAGR*	Population	AAGR*	Population	AAGR*	Population	AAGR*
2010	930,450		150,865		152,982		37,253,956	
2020	1,007,344	0.8%	156,141	0.3%	152,200	-0.1%	39,520,071	0.6%
2023	1,015,793	0.3%	158,276	0.5%	152,340	0.0%	38,990,487	-0.4%
2030	1,047,382	0.4%	161,980	0.3%	157,531	0.5%	39,430,871	0.2%
2040	1,083,901	0.3%	163,345	0.1%	161,190	0.2%	40,106,449	0.2%
2050	1,098,206	0.1%	161,937	-0.1%	160,446	0.0%	40,049,519	0.0%
2060	1,095,205	0.0%	159,048	-0.2%	156,194	-0.3%	39,508,492	-0.1%

* AAGR = Annual Average Growth Rate
Source: (California Dept of Finance, 2023), (US Census Bureau, Accessed 2023)

Table 2 Population and Distance from Project Site

Community	Population (2021)	Approximate Distance from Project Site (Driving Miles)
Fresno County		
Fresno	538,678	40
Clovis	118,488	50
Mendota	12,534	34
Kerman	15,817	27
Coalinga	17,560	26
Huron	6,222	22
Tranquility CDP*	645	20
San Joaquin	3,743	15
Cantua Creek CDP*	471	10

Community	Population (2021)	Approximate Distance from Project Site (Driving Miles)
Madera County		
Madera	66,173	45
Kings County		
Hanford	57,359	42
Lemoore Station CDP	6,692	33

*CDP = Census Designated Place
Source: (US Census Bureau, 2021a)

Over the next few decades, population in California is expected to grow modestly at a 0.2 percent annualized rate (2023 to 2040). Similarly in Fresno, Madera, and Kings counties, the population is expected to grow modestly on an annualized basis between 2023 and 2040. In California and the three-county region, population is expected to slow, stagnate, and then decrease between 2040 and 2060 (see Table 1).

The population in the three-county region of Fresno, Madera, and Kings counties is predominantly of Hispanic ethnicity (Table 3), higher in proportion than California as a whole. The three-county region is less than one-third White. (US Census Bureau, 2020a).

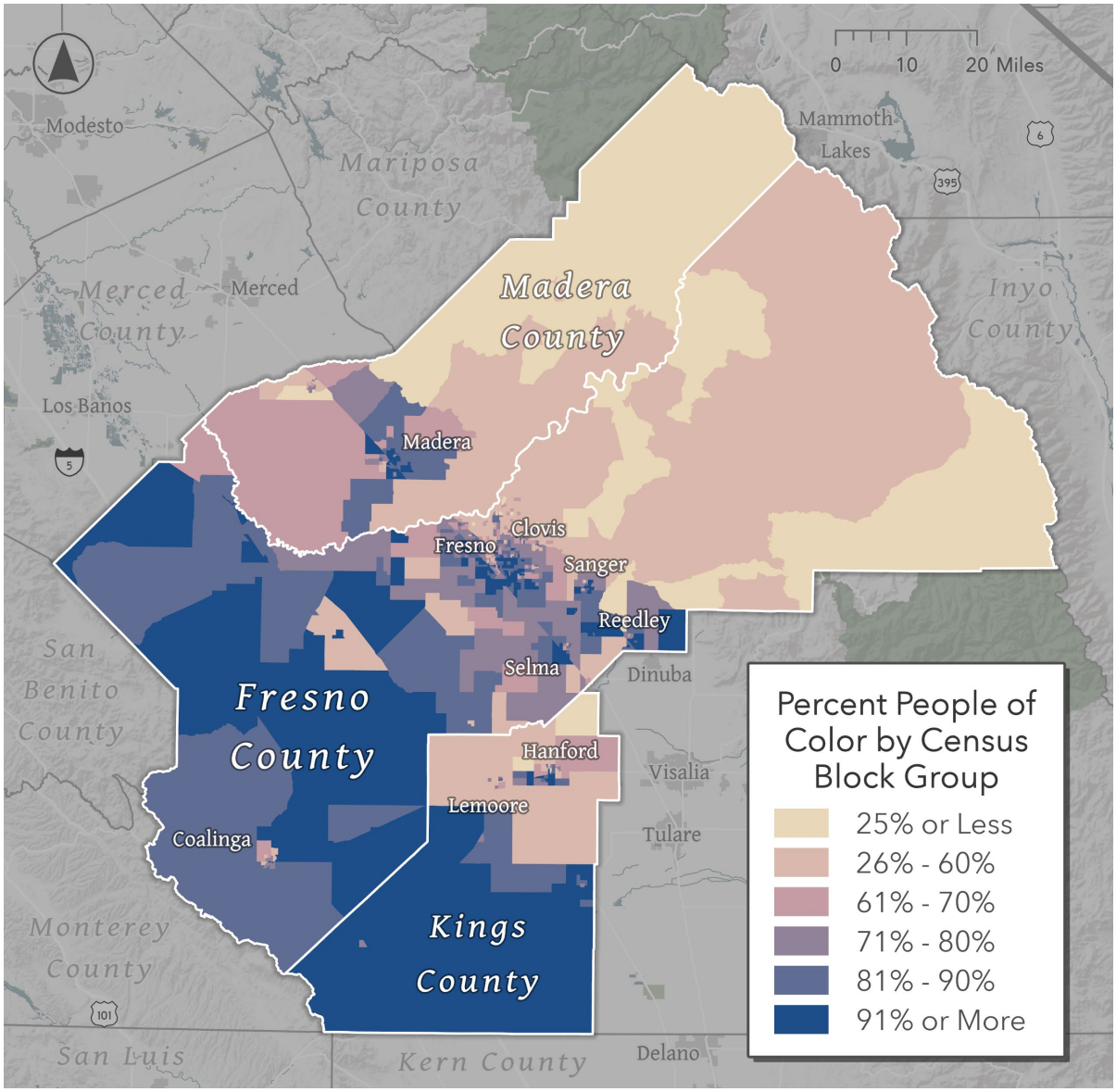
Communities of racially and ethnically diverse populations are prevalent throughout the study area (see Figure 3). While this diversity is generally common, the counties are not universally diverse. The southwestern portion of Fresno and Kings counties are made up of populations that are up to 80 percent racially and ethnically diverse, as compared with the northeast portion of the counties that are significantly less diverse. While concentration of racially and ethnically diverse populations are among the highest in Fresno County's western region, the population density is considerably less than in the urban areas of the Fresno-Madera MSA, meaning fewer people overall live in the large census tracts in the western part of the county shown in Figure 3.

Table 3 Race and Ethnicity, 2022

	Fresno County	Madera County	Kings County	California
Total Population	**1,012,350**	**157,382**	**151,337**	**39,028,571**
White	27.3%	31.7%	29.9%	35.3%
Black	4.6%	3.0%	6.2%	5.6%
American Indian/Alaska Native	0.6%	1.0%	0.9%	0.4%
Hispanic (any race)	54.6%	60.3%	56.7%	40.0%

Sources: (California Dept of Finance, 2023)

Figure 3 Racial and Ethnic Makeup of Fresno, Madera, and Kings Counties



Source: (Environmental Systems Research Institute, Accessed, 2023)

B. Housing

Housing is concentrated where the people are in the study area. This is true of rental housing and transient lodging, two of the housing types evaluated in this section. RV parks, the third housing type considered, are more dispersed throughout the area. This review of housing supply focuses on an area that corresponds to about a 60-mile commute to the Project site (see Appendix A for a map of this area).

Rental Housing

About 43 percent of the total housing stock in the study area is rental housing. This proportion is slightly lower than the overall statewide percentage. The regional housing stock of available rental units is low in the three-county region of Fresno, Madera, and Kings counties as presented in Table

4. Rental housing includes houses, apartments, mobile homes, groups of rooms, and single rooms meant for occupancy (US Census Bureau, Accessed 2023). It does not include dormitories, transient quarters like hotels and motels, or RVs.

The three-county region includes 432,166 total housing units, about three-quarters of which are in Fresno County. Although the rental share is about 44 percent in Fresno County as a whole, in many of the communities in the rural western part of the county the rate is higher, up to 80 percent of total housing units in San Joaquin for example (Table 4).

The vacancy rate for rental housing is relatively low over the entire area ranging from very low to no vacancy in many of the smaller communities to around three percent in urban parts of Fresno County. Overall, for the entire region, the rental vacancy rate is at three percent of rental housing, translating into an aggregated 5,476 vacant rentals in the three-county region. Most of these rental units (4,621 units) are in Fresno County and specifically in the city of Fresno with 3,127 available rental units.

Table 4 Regional Rental Housing Stock

Location	Total Housing Units (Occupied or Vacant)	Rental Housing as % of Housing	Rental Vacancy Rate	Vacant Rental Units
Fresno County	**336,509**	**44%**	**3.1%**	**4,621**
Fresno	183,951	52%	3.3%	3,127
Clovis	40,815	34%	3.8%	521
Mendota	3,065	60%	1.6%*	29*
Kerman	4,492	51%	0.0%*	0*
Coalinga	4,812	40%	3.4%*	66*
San Joaquin	879	80%	3.2%*	22*
Tranquility CDP	218	32%	0.0%*	0*
Cantua Creek CDP	129	64%	0.0%*	0*
Madera County	**49,512**	**31%**	**3.5%**	**535**
Madera	18,588	48%	2.9%	258
Kings County	**46,145**	**43%**	**1.6%**	**320**
Hanford	19,215	38%	0.9%*	66*
Lemoore Station CDP	1,558	93%	0.0%*	0*
Total	**432,166**	**43%**	**3.0%**	**5,476**

Note: * indicates estimate has a large margin of error (using a 90% confidence level) and there is uncertainty in this result.
Source: (ESRI, 2023)

The 2023 Fresno County Regional Housing Needs Assessment identifies that rental housing is in short supply, particularly rental housing accessible to many of the region's residents at lower income levels. Affordable housing comprises a large share of that deficit with 15,592 and 9,143 units needed for those households with incomes at or below 50 percent and 80 percent average median income (AMI), respectively (California Department of Housing and Community Development, 2021).

These findings are generally consistent with county- and municipal-level trends in the region. A 2023 California Housing Partnership report identifies a need for affordable rental housing units to serve those households paying a high share of their income towards rent (California Housing Partnership, 2023). In 2019, there was a gap of about 36,000 units needed for families with low incomes

(California Housing Parthership, 2019). Although there is a severe need for affordable units for lower-income households, there is a more general shortage of rental housing in Fresno, Madera, and Kings counties, indicating a tight rental housing market in the region.

Hotels/Motel Lodging

The hotel overnight lodging market in the Fresno area is extensive. In July 2023 there were an aggregated 11,794 rooms in 168 different hotels. For the past 12 months the average daily rate (ADR) of room nights sold was $122.59.[1] The average occupancy rate was 60.7 percent.[2]

Fresno is a slow growing market. Since January 2015, demand (i.e., number of room nights sold and occupied per day) grew at a rate of 0.95 percent per year. The supply of rooms (i.e., the number of rooms available in hotels each night) grew 0.7 percent, or less than demand and reflects some hotel closures associated with the COVID-19 pandemic. With demand growing faster than supply, real ADRs have been rising. Real ADR is the ADR after taking out the effects of inflation, which has been rising at an annual rate of 0.75 percent since January 2015.

The Fresno hotel market is also very seasonal. Occupancy rates often fall below 50 percent in December and January when agricultural workers go home, tourism is weak, and demand from the business and meeting trades substantially declines (STR, 2023).

Transient lodging availability and occupancy rates are not uniform across the region: communities in the western part of Fresno County have fewer transient lodging options and high local demand during the growing seasons (generally February through June). During this time most hotels/motels are fully booked (personal communication with J. Ramos, Fresno County Economic Development Corporation).

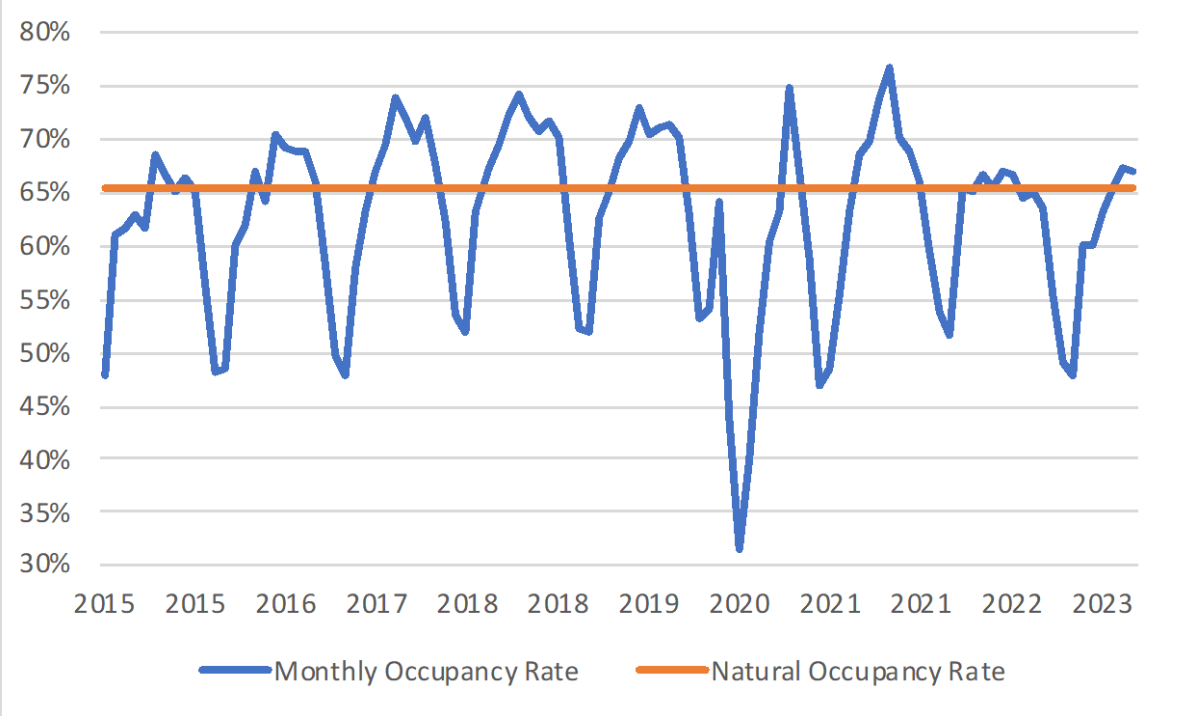
Natural Occupancy Rate

Current market conditions are not predictive of future conditions. When considering hotel markets more than a year or two into the future, the relevant occupancy rate is the one at which long-run supply and demand are in balance, referred to as the natural occupancy rate. Economists calculate it using regression analysis of historical data (DeRoos, 1999).

Figure 4 illustrates the market occupancy rates. Occupancy is highest from February through October, dropping off sharply in the short offseason, a pattern characteristic of an agricultural area. The regression analysis conducted for this report reveals the Fresno MSA has a natural occupancy rate of about 65 percent.

[1] ADR is the average amount paid for a room night before taxes, amenities, and extras.
[2] Occupancy rate is the number of room nights sold as a percentage of rooms available.

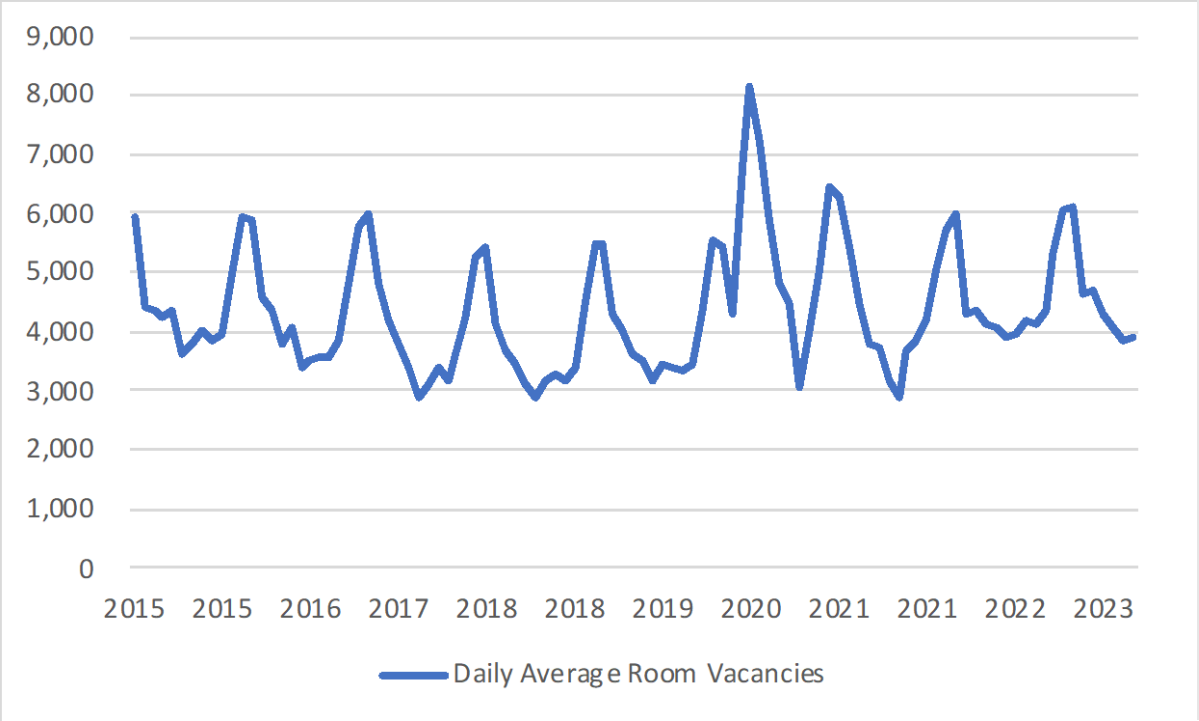
Figure 4 Natural and Actual Hotel Occupancy Rate in the Fresno MSA, January 2015 – July 2023



Source: ECONorthwest Analysis (STR, 2023)

With the current 12-month occupancy rate at about 61 percent, but the natural occupancy rate at 65 percent, Fresno MSA is over-supplied with hotel rooms by approximately 860 rooms (7 percent). Historically, the average number of room vacancies in the Fresno MSA have fluctuated between about 3,000 and 6,000 since January 2015, as shown on Figure 5.

Figure 5 Average Daily Room Vacancies in the Fresno MSA, January 2015 – July 2023



Source: ECONorthwest Analysis (STR, 2023)

RV Parks

There are at least 32 mobile home and RV parks in the Fresno area (Table 5). Collectively, these parks provide about 2,600 individual RV sites. The total number of mobile home and RV sites listed in Table 5 is an underestimate, as capacity for five parks was unavailable. Approximately two-thirds of the mobile home and RV parks offer full hookups, and about one-third offer dump stations. Some parks do not explicitly list these amenities on their websites, although they still may provide them.

Occupancy rates at RV parks that responded to an inquiry ranged from 50 percent to 100 percent. Respondents indicated that occupancy rates typically remain high throughout the year (personal communication with staff of Blackstone North RV Park, Fresno Mobile Home and RV Park, Riverbend RV Park, Lemoore Mobile Home Park, and Country Manor Mobile Home Community). At an average vacancy rate of 25 percent, at least 650 RV sites would be available in the region during the year. However, vacancy rates are likely closer to zero when agricultural labor demand in the region is high (typically February to June).

Table 5 Regional RV Parks and RV Sites, 2023

Location	Total RV Parks	Total RV Sites	Monthly Rate Range
Fresno County	20	1,591	$465-$1200/month
Kings County	4	511	$574-$1340/month
Madera County	3	95	$650-$785/month
Tulare[1]	3	336	$895/month
Merced[1]	2	104	$500-$550/month
Total	**32**	**2,415**	

Notes: These counties include a small area within a 60-mile drive time to the Project area so are included in the housing supply analysis.

Source: (Blackstone North RV Park, 2023), (GoodSam, 2023a), (Campendium, 2023a), (The Riverbend Park, 2023), (Arena RV Park, 2023), (Kings River RV Resort, 2023), (MH Village, 2023a), (Kings Canyon Mobile Home Park , 2023), (MHVillage, 2023b), (MHVillage, 2023c), (Almond Tree Oasis RV Park, 2023), (Country Manor Mobile Home Community, 2023), (Campendium, 2023b), (GoodSam, 2023b), (Parkview Mobilehome and RV Park, 2023), (Three Palms RV Park, 2023), (New Horizons Mobile RV Park, 2023), (Westbrook Mobile Home RV Park, 2023), (Franciscan Mobile Estates, 2023d), (MHVillage, 2023e), (MHVillage, 2023f), (Modern Mobile Home Park, 2023), (MHBO, 2023), (MHVillage, 2023g), (MHVillage, 2023h), (Woodward Bluffs, 2023), (Firebaugh Hacienda & Mobile Home Park, 2023), (Rosewood Glen, 2023), (MHVillage, 2023i), (Madera RV Park, 2023), select RV Park websites

Summary of Available Housing Supply

The analysis of rental and transient lodging supply shows that transient lodging options are more plentiful in urban areas (Fresno, Madera) and during the fall and winter months when agricultural labor demand is lower. The total supply of rental and transient units (units, rooms, sites) within a 60-minute commuting distance from the Project area is likely around 9,000. Hotel/motel and RV site vacancy fluctuations may increase this supply somewhat during the off-season months (Table 6). Most of this supply is in the city of Fresno and its suburbs. All types of rental and transient lodging in smaller communities in western Fresno County are likely extremely limited, especially during the agricultural growing season (February through June).

Table 6 Estimated total Short-term and Transient Housing Supply

Location	Rental Housing Units	Hotel/Motel Rooms	RV Sites	Total Vacant Housing Units[3]
Fresno County	4,600		400	5,000
Madera County	500		100	600
Kings County	300		20	320
Tulare and Merced Counties[1]			100	100
Total	**5,400**	**3,000[2]**	**620**	**9,020**

Note:

[1] These counties include a small area within a 60-mile drive time to the Project area so are included in the housing supply analysis for RV sites.

[2] Lower range of average room vacancies in the study area.

[3] All values rounded.

Source: (Blackstone North RV Park, 2023), (GoodSam, 2023a), (Campendium, 2023a), (The Riverbend Park, 2023), (Arena RV Park, 2023), (Kings River RV Resort, 2023), (MH Village, 2023a), (Kings Canyon Mobile Home Park , 2023), (MHVillage, 2023b), (MHVillage, 2023c), (Almond Tree Oasis RV Park, 2023), (Country Manor Mobile Home Community, 2023), (Campendium, 2023b), (GoodSam, 2023b), (Parkview Mobilehome and RV Park, 2023), (Three Palms RV Park, 2023), (New Horizons Mobile RV Park, 2023), (Westbrook Mobile Home RV Park, 2023), (Franciscan Mobile Estates, 2023d), (MHVillage, 2023e), (MHVillage, 2023f), (Modern Mobile Home Park, 2023), (MHBO, 2023), (MHVillage, 2023g), (MHVillage, 2023h), (Woodward Bluffs, 2023), (Firebaugh Hacienda & Mobile Home Park, 2023), (Rosewood Glen, 2023), (MHVillage, 2023i), (Madera RV Park, 2023), (US Census Bureau, 2021b)

C. Economy and Employment

The local economy in the Fresno area has historically concentrated in agriculture and related industries. Today agriculture is still a leading producer and employer, supporting a variety of other industries. However, the economy is diversifying in Fresno County in particular, with transportation and warehousing a growing industry. Education and health services remains the leading sector from an employment perspective (Table 7).

Table 7 Employment Distribution by Industry in the Study Area Counties

	Employment Share			
Industry	**Fresno County**	**Madera County**	**Kings County**	**California**
Education & Health Services	29%	28%	27%	25%
Wholesale & Retail Trade	13%	8%	9%	13%
Professional & Business Services	10%	6%	4%	16%
Agriculture, Forestry, Fishing and Hunting	10%	22%	14%	2%
Leisure & Hospitality	8%	11%	12%	10%
Manufacturing	7%	6%	11%	8%
Public Administration	6%	6%	6%	6%
Construction	5%	4%	3%	5%
Transportation, Warehousing, & Utilities	5%	2%	4%	5%
Financial Activities	4%	1%	2%	5%
Other Services	3%	3%	3%	3%
Information	1%	1%	0%	4%

Source: (US Census Bureau, 2020b)

There has been a recent decline in agricultural employment in the county. From 2016 to 2020 the share of employees employed in the agriculture sector declined by 2.1 percent (US Census Bureau, 2020b). In 2015, Fresno County published an economic development plan that called for a diversification of the economy away from agriculture and into other higher paying sectors, including healthcare and information technology (Fresno EDC, 2015). It also called for an increase in manufacturing related to agricultural processing. While the manufacturing and information sectors have remained steady in their share of employment over the last four years, the number of healthcare jobs has increased by 1.3 percent (US Census Bureau, 2020b).

Fresno County, as the most populous county, contributes the highest share to the three-county region's employment, labor income, and gross domestic product (GDP). Employment in the three-county area totaled approximately 658,000 with an associated labor income of $42.3 billion in 2021. The three-county area produced $54.8 billion in GDP (Table 8).

Table 8 Economic Indicators in Three-County Area

Measure	Fresno	Kings	Madera	Regional Total
Employment	522,348	66,518	68,862	657,728
Labor Income	$32,891,957,780	$4,757,754,101	$4,610,917,712	$42,260,629,594
Gross Domestic Product	$41,821,044,000	$6,074,335,000	$5,948,983,000	$53,844,362,000

Note: Dollar year 2021

Source: (Bureau of Economic Analysis, 2021); (IMPLAN, 2021)

Agricultural Production Overview

The Central Valley agricultural production area is serviced by the Westlands Water District (District), the largest agricultural water district in the nation (Shires, 2022). The District provides water from the Central Valley Project (CVP) to agricultural producers, businesses, and governments within the District boundaries (Shires, 2022) (Westlands Water District, Accessed 2023). Agricultural production within the District is directly responsible for roughly 25,240 jobs and over $2.86 billion of economic impact (Shires, 2022). The District serves parts of both Fresno and Kings counties. Fresno County was the highest producing agricultural county in California by value in 2020 and second in 2021 with $8.11 billion and $7.97 billion in total agricultural production value, respectively (CDFA, 2022).

Annual crop production[3] in the District varies significantly due to the availability of water delivered to farmers. On average over the past decade, the District only received 31 percent of its contracted allocation of CVP water (Shires, 2022). The share of water allocations received by the District is directly and inversely related to the amount of acreage fallowed by District farmers (Shires, 2022). In 2019[4], crop production totaled $1.95 billion on 409,507 acres planted. Fruit and tree nuts accounted for the largest share of production at $1.01 billion, with 204,507 acres planted that year. Vegetables were the second largest crop category produced in the District by value and acreage. Vegetable production totaled $770 million, roughly 40 percent of the District's total crop production value in 2019 (Shires, 2022). Table 9 presents these data with comparable information from Fresno County and California. The data are not additive as the District resides partially within Fresno County, and both the District and Fresno County reside wholly within California.

Table 9 Agricultural Crop Production Value, 2019

	Westlands Water District	Fresno County	California
Tree Nut + Fruit	$1,009,528,000	$4,426,673,000	$21,419,425,000
Vegetable	$768,193,000	$1,429,003,000	$8,237,276,000
Grain	$11,951,000	$17,940,000	$940,678,000
Other	$157,221,000	$336,738,000	$6,783,093,000
Total Crops	**$1,946,893,000**	**$6,210,354,000**	**$37,380,472,000**

Note:

1/ Figures may not sum due to rounding.

2/ Values are presented in 2019 dollars.

Source: (Shires, 2022) (Fresno County, Department of Agriculture and Weights and Measures, 2019) (CDFA, 2020)

In the District, Fresno County, and California geographies in 2019, fruit and tree nut production accounted for the majority of total crop production value with 52 percent of District production value, 71 percent of Fresno County production value and 57 percent of California production value. In Fresno County, crop production in 2019 totaled $6.21 billion (The County of Fresno Department of Agriculture and Weights and Measures, 2019).[5] Within the county, fruit and tree nut production accounted for 71 percent of that value but only 35 percent of the agricultural crop acreage harvested. Overall, in California, fruit and tree nut production accounted for $21.42 billion of the overall total agricultural production value of $37.38 billion, or 57 percent of total crop production

[3] Includes grain, vegetable/melon, fruit, tree nut, and other farming
[4] The most recent year with data available
[5] Including fruit & tree nut, vegetable, seed and field crops

value in 2019 (CDFA, 2022). Within the state, 22 percent of the total crop production value was associated with vegetable production.

Crop yields and values for selected crops historically present in Fresno County are presented in Table 10. These figures are published in Fresno County crop reports from 2019 through 2021 with resulting values inflated into 2022 dollars using the Producer Price Index (Fresno County, 2019). Yield and values vary anually based on market conditions as well as growing conditions in the County.

Table 10 Agricultural Crop Yields and Values

	2019		2020		2021	
Crop	Yield	Value Per Unit	Yield	Value Per Unit	Yield	Value Per Unit
Almonds	1.17	$4,501	1.24	$3,302	1.27	$4,163
Cotton	1,536	$2.07	1,749	$2.09	1,449	$2.78
Garlic	6.87	$3,176	7.20	$3,152	8.27	$2,316
Lettuce	17.67	$1,948	11.88	$1,849	10	$1,213
Onions	17.19	$878	19.00	$770	17.54	$674
Pistachios	1.36	$3,989	1.43	$3,778	1.48	$3,636
Tomatoes	52.10	$80	52.50	$65	45.92	$107
Winter Wheat	3.08	$468	2.49	$411	3.13	$310

Note:

1/ Values per unit are presented in 2022 dollars.

2/ Barley is represented in crop reports under field crops: other. Yield and values per unit are not given for this category, therefore value was derived from total value divided by harvested acreage. For year 2019 this value was $157, for 2020 $80, and for 2021 $59.

Source: (Fresno County, 2019)

Employment requirements for agricultural production are presented in Table 11. Specific employment figures are not publicly available by crop type, so these figures are generated from published crop enterprise budgets for the crops historically present in Fresno County. Specific crop enterprise budgets were selected based on crop relevance, geographic relevance, and finally, the most recent timeframe. Utilizing published crop enterprise budgets for employment estimates generates reliable employment assumptions when primary data is not available from landowners detailing actual employment numbers. As displayed in the table, employment for crop production varies drastically by crop type. For example, garlic requires 190 hours per acre to produce, while wheat requires only 4 hours per acre. These hourly estimates were transformed into full-time equivalent (FTE) estimates assuming FTE employees work an average of 2,080 hours per year. Table 11 presents the FTEs required per 100 acres of production by crop type as well as the source of each employment assumption.

Table 11 Agricultural Employment per 100 Acres by Crop Type

Crop	Employment Hours Per Acre	FTEs per 100 Acres	Source
Almonds	28	1.33	(UC Davis, 2019)
Cotton	9	0.45	(UC Davis, 2012)
Garlic	190	9.13	(Missouri, 2020)
Lettuce	36	1.73	(UC Davis, 2023)
Onions	44	2.11	(UC Davis, 2016)
Pistachios	15	0.71	(UC Davis, 2020)
Tomatoes	23	1.09	(UC Davis, 2018)
Winter Wheat	4	0.19	(UC Davis, 2016 (2))

Source: Crop budget sources presented in the 'source' column.

Household Economic Status and Employment

Table 12 presents several indicators of household economic well-being. Across all of them, the study region's population fares worse than that of the state of California as a whole. The poverty rate in Fresno, Madera, and Kings counties was considerably higher than the state in 2021. Similarly, the median income in the three-county region is lower than the State median.[6] Further pointing at the economic decline in the three-county region, the unemployment rate in the counties was well above the state average. In 2022, the unemployment rate in Fresno, Madera, and Kings counties was between 6 and 7 percent, whereas the average unemployment rate in California the same year was 4.2 percent (US Bureau of Labor Statistics, 2023).

Table 12 Household Income, Poverty, and Unemployment in the Three-County Region and State

	Fresno County	Madera County	Kings County	California
Median Household Income	$65,565	$71,379	$67,696	$89,984
Persons in Poverty (percent)	19.4%	20.4%	17.7%	12.3%
Unemployment Rate	6.4%	6.1%	7.0%	4.2%

Notes: Figures is inflated into 2022 dollars using the CPI (Consumer Price Index)

Source: (US Census Bureau, 2021); (US Bureau of Labor Statistics, 2023)

D. County Fiscal Resources

This section focuses on fiscal conditions in Fresno County, the relevant geography where most fiscal impacts of the Project would occur.

County Revenues

The Fresno County General Fund serves as the County's primary operational financing source. Total general fund revenue in fiscal year (FY) 2022-2023 was about $4 billion. Of the total general fund financing categories of revenue, Fresno County taxes accounted for the largest share of revenues (39.8 percent), followed by federal aid (22.6 percent) and state aid (18.1 percent). General fund financing sources and associated shares are summarized in Table 13 (County of Fresno, 2023a).

[6] Figures are inflated into 2022 dollars using the CPI

Table 13 Freson County General Fund Sources, FY 2022-2023

Financing Source	Revenue	Share of Total General Fund Financing
Fresno County Taxes	$320.6M	39.8%
Federal Aid	$182.2M	22.6%
State Aid	$145.8M	18.1%
Fund Balance	$70.8M	8.8%
Charges for Services	$56.1M	7.0%
Licenses, Permits, & Franchises	$11.1M	1.4%
Other Government Aid	$6.8M	0.8%
Miscellaneous Revenues	$6.4M	0.8%
Fines, Forfeitures, & Penalties	$3.5M	0.4%
Use of Money & Property	$2.5M	0.3%
Total	**$805.7M[1]**	

Note: [1] Excludes Intra-fund Revenues and Operating Transfers. Total General Fund Revenues in 2022-23 were $3.75B

Sources: (County of Fresno, 2023a)

General fund appropriations in FY 2022-2023 totaled $2.2 billion. General fund appropriations by broad service type are summarized in Table 14. Human services and justice services accounted for the largest share of appropriations, at 63.8 percent and 25.7 percent respectively. The top five departments by value of appropriations were the Department of Social Services (CalWORKs), the Department of Behavioral Health, the Sheriff - Coroner, and the Department of Public Health (County of Fresno, 2023a).

Table 14 General Fund Appropriations by Service Type, FY 2022-2023

Financing Source	Revenue	Share of Total Revenues
Human Services	$1,395.5M	63.8%
Justice Services	$561.2M	25.7%
Administration and Fiscal	$114.0M	5.2%
Land Use and Development	$87.6M	4.0%
Contingencies/Reserves Designations	$28.0	1.3%
Total	**$2.2B**	

Source: (County of Fresno, 2023a)

Property Tax

The County Assessor establishes the taxable value of property in Fresno County. Typically, this assessed value corresponds to the market value of the property at the time of transfer. It usually increases annually at a rate of no more than two percent until the property is sold or new construction is completed, at which point the value is reevaluated (County of Fresno, 2023b).

Once the Assessor determines the property's value, the Special Accounting Division within the Auditor-Controller/Treasurer–Tax Collector's office applies the relevant tax rates. These rates encompass the general tax levy, along with special local taxes, and any city or district assessments. The general tax levy adheres to state law guidelines and is capped at $1.00 per $100.00 (1 percent) of a particular property's taxable value. Following the application of these tax rates, the total tax

amount is calculated (County of Fresno, 2023b). The net assessed value of property in 2021-2022 FY was about $90 billion.

In 1980, voters gave the legislature the authority to exclude construction of active solar energy systems from property tax assessment. Commercial, industrial, and utility-scale systems are covered by this exclusion if they are locally assessed and remain under ownership of the developer or first buyer. The new construction exclusion has been renewed through the 2023–2024 fiscal year. The statute is now scheduled to sunset on January 1, 2025 (California State Board of Equalization, 2012).

Sales Tax

Retailers operating within California are required to register with the California Department of Tax and Fee Administration (CDTFA) and remit the state's sales tax, which applies to all retail transactions involving the sale of goods and merchandise, except for those specifically exempted by law (CDTFA, 2023a). In Fresno County, the sales tax rate is 7.975 percent. Within the county, there are ten jurisdictions that impose rates ranging from 8.35 percent to 9.225 percent (CDTFA, 2023b).

Fresno County's annual budget includes line-item revenues associated with four sales taxes: the Bradley-Burnes Sales/Use Tax, the Measure B Sales Tax, the Measure C Sales Tax, and the Local Transportation Sales Tax (Table 15).

The Bradley-Burns Sales/Use Tax is a one-percent local option tax that allows local jurisdictions like cities and counties to impose additional sales and use taxes on top of the statewide rate. In FY2022-2023, revenues from the Bradley-Burnes Sales/Use Tax amounted to $30M representing the third largest contribution to the general fund (County of Fresno, 2023c).

The Measure B Sales Tax is a 0.125 percent sales tax that funds over half of the library's annual budget. In FY2022-2023, revenues from the Measure B sales tax amounted to $23M, representing the largest contribution to the Library – Measure B Special Revenue Fund (County of Fresno, 2023c).

The Measure C Sales Tax of 0.5 percent and the Local Transportation Sales Tax of 0.25 percent fund Fresno County's transportation. In FY2022-2023, the Measure C Sales Tax and the Local Transportation Sales Tax contributed approximately $4.1M and $9.6M to Road Fund revenues, respectively (County of Fresno, 2023c)

The CDTFA also indicates that a Measure Z sales tax of 0.1 percent is collected throughout the county for the support of the Fresno Chaffee Zoo (CDTFA, 2023c). The county budget does not detail the revenues associated with this sales tax.

Table 15 Sales Tax Rates and Revenues, FY 2022

Sales Tax	Tax Rate	Fund	Revenue (2022-23 Adopted)
Bradley-Burns Sales/Use Tax	1%	General Fund	$30,000,000
Measure B Sales Tax	0.125%	Library - Measure B Special Revenue Fund	$23,000,000
Measure C Sales Tax	0.5%	Road Fund	$4,060,140
Local Trans. Sales Tax	0.25%	Road Fund	$9,619,126
Measure Z Sales Tax	0.1%	Fresno Chaffee Zoo	NA
Total			**$66,679,266**

Source: (CDTFA, 2023b), (CDTFA, 2023c)

Lodging Taxes

The City of Fresno charges a Transient Occupancy Tax (TOT) using its regulatory authority as granted by the State Constitution. In California, over 380 cities charge a TOT to individuals staying in hotels, inns, or other lodging facilities for 30 days or shorter. The city of Fresno imposes a 12-percent TOT rate. Revenues from TOT reached an estimated $14 million in fiscal year 2022 (City of Fresno, 2023).

School District Impact Fee

Education Code Section 17620(a)(1) allows any school district to levy a fee, charge, dedication, or other requirement against any construction within the boundaries of the district, for the purpose of funding the construction or reconstruction of school facilities. State and local agencies are precluded from imposing additional fees or other required payments on development projects for mitigating possible enrollment impacts to schools (Office of Public School Construction, 2023).

The Project area is located within the boundaries of the Golden Plains Unified School District and Westside Elementary District. Both school districts are entitled to collect school impact fees for new construction within their district under the California Education Code Section 17620.

The one-time school development fee is calculated at $0.78 per square foot of development on all categories of commercial or industrial development based on chargeable covered and enclosed space (Office of Public School Construction, 2023).

E. Public Services and Facilities

Public services and facilities assessed in this section include law enforcement, fire protection, emergency response, medical facilities, school districts, and other assessment districts.

Law Enforcement

The Fresno County Sheriff's Office provides patrol services for four distinct patrol areas (Table 16), each of which is overseen by a lieutenant who supervises field services from a local substation (Fresno County Sheriff's Office, 2023a). The Project site is situated within Area 1, which encompasses 2,400 square-miles and includes the incorporated communities of San Joaquin, Coalinga, Huron, Kerman, Mendota, and Firebaugh and the unincorporated communities of Tranquility, Biola, Five Points, Helm, Three Rocks, Cantua Creek and Dos Palos. The Area 1 substation is in the city of San Joaquin. Although there are personnel assigned to work out of this substation, it is currently closed to the public (Fresno County Sheriff's Office, 2023b). The level of staffing out of the Area 1 substation typically ranges between 12 and 16 staff members per day working across three shifts. The biggest shift overlap times are between 10:00 pm and 2:00 am. The Sheriff's Office is currently understaffed, with officers regularly being asked to work overtime (personal communications with Lieutenant B. Purcell, Freson County Sheriff's Office).

According to a representative for the Sheriff's Office, common law enforcement concerns in the region include industrial and agricultural theft, trespassing, vandalism, domestic violence, drug abuse, and other 911-related emergencies (personal communications with Lieutenant B. Purcell, Freson County Sheriff's Office).

Fresno County is situated within Mutual Aid Region V. The California Office of Emergency Services (OES) coordinates statewide mutual aid systems for fire response, law enforcement, and telecommunications. Each region in the state has a designated coordinator—in the case of Region V, Sheriff Margaret Mims—who handles mutual aid requests from the state as well as from within the

individual region. During emergencies, OES activates the State Operations Center in Sacramento and the Regional Emergency Operations Centers in areas impacted by the emergency to receive, process, and respond to local requests (Fresno County Sheriff's Office, 2023c).

Table 16 Fresno County Enforcement Area Substations

Station/Substation	Address
Fresno County Sheriff's Office	2200 Fresno Street, Fresno, CA 93721
Substation 1	21925 W. Manning Avenue, San Joaquin, CA 93660
Substation 2	1129 N Armstrong Avenue, Fresno, CA
Substation 3	Not applicable
Substation 4 Northeastern (Temporarily Closed)	33155 Auberry Road, Auberry, CA 93602
Substation 4 Southeastern (Temporarily Closed)	SR-180, Squaw Valley, CA

Source: (Fresno County Sheriff's Office, 2023a)

Fire Protection and Emergency Response

The Project site falls within the jurisdiction of the Fresno County Fire Protection District (FCFPD). FCFPD's District Operations Division includes 15 full-time stations and 48 emergency response personnel consisting of four battalion chiefs, 14 two-to-three-person engine companies, and two three-person truck companies. Full-time stations also include water tenders and patrols. Response services provided by FCFPD include structural fire suppression, wildland fire suppression, response to hazardous materials incidents, urban search and rescue, water rescue, vehicle extrication, technical rescue, and basic life support medical services (Fresno County Fire Protection District, 2023). Table 17 includes a list of relevant battalions and stations closest to the Project site.

Each year, FCFPD responds to approximately 14,000 incidents, about 68 percent of which are medical in nature. All FCFPD personnel are equipped to provide Basic Life Support (BLS) services. In response to emergency calls, FCFPD employs a closest-forces concept, where the closest engine company is dispatched along with an ambulance provider. Depending on the distance of the injured patient to medical facilities, FCFPD may deploy helicopters to facilitate transportation to hospitals (Fresno County Fire Protection District, 2023).

Table 17 Fresno County Fire Relevant Response District Operations

Battalion	Station	Address
Battalion 14	Fresno County Fire Station 93	36421 S. Lassen, Huron, CA 93234
	Fresno County Fire Station 94	24125 W. Dorris, Coalinga, CA 93210
Battalion 15	Fresno County Fire Station 90	2701 W. Tahoe Avenue Caruthers, CA 93609
	Fresno County Fire Station 95	25101 Morton Street, Tranquility, CA 93668
	Fresno County Fire Station 96	101 McCabe Mendota, CA 93640

Source: (Fresno County Fire Protection District, 2023)

The Central California EMS Agency provides EMS services in Fresno, Kings, Madera, and Tulare counties. This Agency is part of Fresno County Department of Public Health and provides planning implementation and evaluation of emergency medical services in the region. 9-1-1 calls are routed to a Public Safety Answering Point, all of which are operated by a designated regional law enforcement agency or by the California Highway Patrol dispatch center. Once a dispatcher has

determined the nature of the emergency, they would dispatch appropriate law enforcement personnel or would transfer callers to a regional fire service or ambulance dispatch center (Fresno County Public Health, 2023a). Table 18 provides a list of ambulance and helicopter provider agencies in the Fresno County area (Fresno County Public Health, 2023b).

Table 18 Ambulance and Helicopter Provider Agencies

Agency	Address	Phone
Ambulance Providers		
American Ambulance	2911 E. Tulare Street, Fresno, CA 93721	(559) 443-5900
California Highway Patrol Helicopter	3770 N. Pierce, Fresno, CA 93727	(559) 488-4121
Coalinga City Fire	300 W. Elm Avenue, Coalinga, CA 93210	(559) 935-1652
Kingsburg City Fire	1880 Bethel, Kingsburg, CA 93631	(559) 897-5457
Sanger City Fire Department	1700 Seventh Street, Sanger, CA 93657	(559) 875-6568
Selma City Fire Department	2857 A Street, Selma, CA 93662	(559) 891-2211
Sequoia Safety Council	500 E. 11th Avenue, Reedley, CA 93654	(559) 406-8211
Helicopter Providers		
Air MethodsSkyLife (Air Ambulance)		(559) 346-1025
California Highway Patrol		(559) 550-8100

Source: (Fresno County Public Health, 2023b)

Hospitals

The city of Fresno's Community Regional Medical Center is the only level-1 trauma center between Los Angeles and Sacramento, serving patients across multiple counties (Community Regional Medical Center, 2023). It is the fifth largest and third busiest hospital in the state (UCSF Department of Emergency Medicine, 2023), with a capacity of 685 licensed beds and an average of approximately 663 inpatients a day (Community Regional Medical Center, 2023). It is also the closest in proximity to the Project site. Table 19 provides the location, trauma levels, and capacity for all hospitals in Fresno County. Most hospitals in the county are situated in the city of Fresno, and a few are in the nearby municipalities of Coalinga, Clovis, Reedley, and Selma. Although most hospitals within a 50-mile radius of the Project site are in Fresno County, four hospitals—Adventist Health Hanford, Adventist Health Tulare, Madera Community Hospital, and Kaweah Health Medical Center—are situated outside the county boundary. The closest hospital in proximity to the Project site is Adventist Health Hanford in Kings County, followed closely by Community Regional Medical Center in Fresno County.

Table 19 Hospitals

Hospital	Address	Trauma Level	Beds
Fresno County			
Coalinga Medical Center	1191 Phelps Avenue, Coalinga, CA 93210	Standby	123
Community Medical Center - Clovis	2755 Herndon Avenue, Clovis, CA 93611	Basic	352
Community Regional Medical Center	2823 Fresno Street, Fresno, CA 93721	Level 1	685
Kaiser Foundation Hospital	7300 N. Fresno Street, Fresno, CA 93720	Basic	169
St. Agnes Medical Center	1303 E. Herndon Avenue, Fresno, CA 93711	Basic	436

Hospital	Address	Trauma Level	Beds
Adventist Health- Selma	1141 Rose Avenue, Selma, CA 93662	Standby	62
Adventist Health- Reedley	372 W. Cypress Avenue, Reedley, CA 93654	Standby	49
VA Medical Center	2615 E. Clinton Avenue, Fresno, CA 93705	NA	174
Kings County			
Adventist Health Hanford	125 Mall Drive, Hanford, CA 93230	Basic	173
Tulare County			
Kaweah Health Medical Center	400 W Mineral King Avenue, Visalia, CA 93291	Basic	435
Adventist Health Tulare	869 N Cherry Street, Tulare, CA 93274	Basic	108

Source: (California Department of Health Care Access and Information, 2023a), (California Department of Health Care Access and Information, 2023b) (California Department of Health Care Access and Information, 2023c), (California Department of Health Care Access and Information, 2023d), (California Department of Health Care Access and Information, 2023e), (Adventist Health Selma, 2023), (California Department of Health Care Access and Information, 2023g), (US Department of Veteran's Affairs, 2023), (California Department of Health Care Access and Information, 2023h), (California Department of Health Care Access and Information, 2023i), (California Department of Health Care Access and Information, 2023j),

School Districts

The Fresno County Office of Education serves 33 school districts and more than 200,000 students (Fresno County Office of Education, 2023) (Education Data Partnership, 2023). The Project site falls within two unified school districts: Golden Plains Unified School District—which includes Cantua Elementary, Helm Elementary, Rio Del Rey High, San Joaquin Elementary, Tranquility Elementary and Tranquility High—and Westside Elementary District, which includes Crescent View South II, Westside Elementary, and Yosemite Valley Charter. Table 20 includes a list of schools with approximate distances from the Project site. The closest school to the Project site is Cantua elementary, at 7.5 miles.

Table 20 School Districts and Schools

School	District	Distance from Project Site
Cantua Elementary	Golden Plains Unified	7.5 miles west
Helm Elementary	Golden Plains Unified	10 miles east
San Joaquin Elementary	Golden Plains Unified	11.5 miles north
Tranquility Elementary	Golden Plains Unified	16 miles north
Tranquility High	Golden Plains Unified	16 miles north
Westside Elementary	Westside Elementary District	10 miles south

Source: (Education Data Partnership, 2023)

F. Utilities

The Project would not be connected to natural gas service, municipal water, or wastewater systems. Project construction would generate solid waste that would be disposed of locally.

Gas

Pacific Gas & Electric is the only provider of natural gas in Fresno County. The Project would not require gas service, so this utility is not assessed.

Water

The Project area is outside of the service area of municipal water providers and would not be connected to a municipal water system. Though the Project would require water for operation, sourcing water for Project operations is ongoing and a specific source has not yet been finalized. Thus, this report does not examine water as part of the utilities analysis.

Wastewater

The Project is outside of the service areas of municipal water providers. All domestic wastewater generated on site at the O&M building would be disposed of through septic systems located within the Project boundary. Thus, wastewater utilities are not examined as part of this analysis.

Solid Waste

Recycling and solid waste disposal services in Fresno County fall under the jurisdiction of the Resources and Parks division. The County's Resource Guide for the Disposal of Construction and Demolition Debris identifies a number of transfer stations and disposal facilities that accept common construction and demolition materials, including but not limited to Asphalt, concrete, cardboard, clean fill dirt, glass, green waste, metals, pallets, wallboard, gypsum, sheetrock, water heaters, wood, permitted construction and demolition processors, and freon (Fresno County, Resources and Parks Division, 2023) The county's regional landfill, American Avenue Disposal Site, and Mid-Valley Disposal & Transfer in Kerman accept construction and demolition materials. (Mid-Valley Disposal, 2023).

3. Impact Analysis

This section addresses the expected direct, indirect, and cumulative impacts arising from the construction, operation, and maintenance of the Project. It begins with an overview of the methods used to assess these potential impacts, both quantitatively and qualitatively.

A. Methodology

This analysis of socioeconomic impacts follows guidelines outlined by CEC (CEC, 2021). This section outlines the methodology for the analysis, including Project assumptions, analytical methods, and data sources used in the analysis. It also identifies the impact evaluation criteria used to assess the "significance" of potential impacts, consistent with California Environmental Quality Act (CEQA) guidelines for assessing the economic and social effects of physical changes resulting from the Project (Association of Environmental Professionals, 2019).

Project Assumptions

ECONorthwest collaborated with IP Darden I, LLC (IP Darden) to develop detailed Project cost, timeline, and employment assumptions used throughout the socioeconomic impact analyses. These assumptions are described in detail as they apply to the analyses below in the Appendices to this report.

Study Area

Figure 2 depicts the geographic extent of the study area related to the Project. The Project location and layout is shown in Figure 1. The local labor market for the Project encompasses a commute of up to one hour as described in Appendix A, a geography that includes portions of Fresno, Madera,

Kings, Merced, Tulare, and Kern counties. Although other counties fall within the one-hour drive time, due to the presence of populated metropolitan areas, only Fresno, Madera, and Kings counties are included in the study area for the local labor market.

Analytical Methods and Data Sources

Economic Impact Modeling

IMPLAN is a regional input-output model widely used to assess the economic impacts of energy and many other types of projects. The IMPLAN model divides the economy into 546 sectors, including government, households, farms, and other industries, modeling the linkages between the various sectors. The linkages are modeled through input-output tables that account for all dollar flows across different sectors of the economy. The economic relationships modeled by IMPLAN allow the user to estimate the overall change in the economy that would result from construction and operation of a proposed project. The dollars spent on Project construction and operation within the selected analysis area (Fresno, Madera, and Kings counties, in this case) are analyzed to determine the total economic impact within that area. The direct investments in Project construction and operation trigger successive rounds of spending that result in an overall increase in employment, labor income, and economic output in the local economy.

Economic multipliers derived from the model are used to estimate total economic impacts. Total economic impacts consist of three components: direct, indirect, and induced impacts.

- The *direct* impact component consists of expenditures made specifically for the proposed project, such as construction labor and materials. These direct impacts generate economic activity elsewhere in the local economy through the multiplier effect, as initial changes in demand "ripple" through the local economy and generate indirect and induced impacts.
- *Indirect* impacts are generated by expenditures on goods and services by suppliers who provide goods and services to the construction project. Indirect effects are often referred to as "supply-chain" impacts because they involve interactions among businesses.
- *Induced* impacts are generated by the spending of households associated either directly or indirectly with the proposed project. Workers employed during construction, for example, would use their income to purchase groceries and other household goods and services. Workers at businesses that supply the project during construction or operation would do the same. Induced effects are also referred to as "consumption-driven" impacts.

Impacts are assessed using the following measures that are reported by the IMPLAN model:

- *Output* – the value of goods and services produced, which serves as a broad measure of economic activity.
- *Jobs* – measured as the average number of employees engaged in full- or part-time work. Model outputs are adjusted to FTEs using coefficients provided by IMPLAN.[7]
- *Personal income* (or labor income) – expressed as the sum of employee compensation and proprietary income.

[7] Each FTE job equates to one full-time job for one year or 2,080-hour units of labor. Part-time or temporary jobs constitute a fraction of a job. For example, if an engineer works just 3 months on a solar project, that would be considered one-quarter of an FTE job.

- Employee compensation (wages) includes workers' wages and salaries, as well as other benefits such as health, disability, and life insurance; retirement payments; and non-cash compensation; expressed as total cost to the employer.
- Proprietary income (business income) represents the payments received by small-business owners or self-employed workers.

Input-output models are static models that measure inputs and outputs of an economy at a point in time. With this information and the balanced accounting structure of an input-output model, an analyst can: 1) describe an economy in a single time-period, 2) introduce a change to the economy, and then 3) evaluate the economy after it has accommodated that change.

This type of "partial equilibrium" analysis permits comparison of the economy in two separate states but does not describe how the economy moves from one equilibrium to the next. In partial equilibrium analysis, the researcher assumes that all other relationships in the economy remain the same (other than the initial changes in spending levels).

Contrary to dynamic models, static models assume that there are no changes in wage rates, input prices, and property values. In addition, underlying economic relationships in input- output models are assumed to remain constant; there are no changes in the productivity of labor and capital, and no changes in population migration or business location patterns.

Input-output models are best suited to understand the impacts of small to medium sized projects (relative to the size of the markets or sectors being affected), when projects are unlikely to affect the underlying supply or demand functions (NRCS, 2014).

Key Informant Interviews

Key informant interviews are undertaken with local agency staff and other local officials to supplement publicly available information on the public utilities and services. The interviews contribute to an analysis of existing conditions and the potential impacts of the Project and its alternatives on demand for public services and utilities and costs of providing services. Some interviews inform other categories of the impact analysis (e.g., fiscal conditions, housing, and workforce availability).

As part of this analysis, interviews with public service providers and regional experts help to characterize the current and expected future capacity of public services the Project may rely on or otherwise affect, and relevant local social and economic conditions that may influence how the Project's construction and operation may affect the local area. Interviews help to verify preliminary information collected about public services and create better understanding around how the Project may affect these resources in the future. ECONorthwest requested interviews with local law enforcement, fire response, EMS, waste management, and regional economic development and workforce experts. ECONorthwest completed interviews with the Fresno County Sheriff, Fresno County EMS, Fresno County Fire District, and Fresno County Economic Development Corporation. These officials are listed in Section 1.4.

Impact Evaluation Criteria

The potential for impacts to socioeconomics were evaluated using the criteria described in Appendix B of the Guidelines for Power Plant Site Certification (CEC, 2021) and Appendix G of the CEQA Guidelines (Association of Environmental Professionals, 2019). The criteria are derived from the CEC requirements and questions in the CEQA checklist addressing population, housing, government

facilities and services. Following the guidance that the questions are" intended to encourage the thoughtful assessment of impacts and do not represent thresholds of significance" the discussion focuses on characterizing the economic and social changes that would result from the Project, both potentially beneficial and adverse. Additional detailed analysis is presented in the Appendices to this report where relevant to support the impact summary provided below.

G. Population

Impact SOC-1 POPULATION

Criteria:	**Would the project induce substantial unplanned population growth in an area, either directly or indirectly?**

Solar Facility, Step-Up Substation, and Gen-Tie

Construction

Population in the study area would temporarily increase by less than one percent during construction of the Solar Facility, Step-Up Substation, and Gen-Tie under Option 1 and Option 2. This would not produce a discernable change in population or represent unplanned population growth. During construction of the Solar Facility, Step-Up Substation, and Gen-Tie, up to 26 workers could temporarily relocate to the study area from elsewhere under the 18-month construction scenario (assuming a high share of *local* workers are attracted to the Project due to labor contracts and the highest peak would occur under the 18-month construction timeline, see Appendix A for a discussion of workforce availability). Most of these workers are not expected to relocate with their families or stay in the area permanently, so this estimate is representative of the likely *temporary* regional population change. The remaining workforce would come from within the study area and already are counted among the region's permanent population.

Operation

Population in the study area would not increase by any discernable amount during operation of the Solar Facility, Step-up Substation, and Gen-Tie under Option 1 and Option 2. Operation of the solar facility, step-up substation, and gen-tie line would employ a workforce of 12 permanent full-time employees for operation, most likely drawing from the existing population of the study area.

BESS

Construction

Population in the study area would temporarily increase by less than one percent during construction of the BESS under Option 1 and Option 2. This would not produce a discernable change in population or represent unplanned population growth. During construction of the BESS, up to 8 workers could temporarily relocate to the study area from elsewhere (assuming a high share of *local* workers are attracted to the project due to labor contracts and the highest peak would occur under the 18-month construction timeline, see Appendix A for a discussion of workforce availability). Most of these workers are not expected to relocate with their families or stay in the area permanently, so this estimate is representative of the likely *temporary* regional population change. The remaining workforce would come from within the study area and already are counted among the region's permanent population.

Operation

Population in the study area would not increase by any discernable amount during operation of the BESS under Option 1 and Option 2. Operation of the BESS under Option 1 and Option 2 would employ a workforce of 4 permanent full-time employees for operation, most likely drawing from the existing population of the study area.

Green Hydrogen

Construction

Population in the study area would temporarily increase by less than one percent during construction of the Green Hydrogen component under Option 1, Option 2, and Alternate Hydrogen Option. This would not produce a discernable change in population or represent unplanned population growth. During construction of the Hydrogen component, up to 18 workers could temporarily relocate to the study area from elsewhere (assuming a high share of *local* workers are attracted to the project due to labor contracts and the highest peak would occur under the 18-month construction timeline, see Appendix A for a discussion of workforce availability). Most of these workers are not expected to relocate with their families or stay in the area permanently, so this estimate is representative of the likely temporary regional population change. The remaining workforce would come from within the study area and already are counted among the region's permanent population.

Operation

Population in the study area would not increase by any discernable amount during operation of the Green Hydrogen component under Option 1, Option 2, and Alternate Hydrogen Option. Operation of the Hydrogen component under Option 1, Option 2, and Alternate Hydrogen Option would employ a workforce of 24 permanent full-time employees for operation, most likely drawing from the existing population of the study area.

Utility Switchyard

Construction

Population in the study area would temporarily increase by less than one percent during construction of the Utility Switchyard. This would not produce a discernable change in population or represent unplanned population growth. During construction of the Utility Switchyard, up to 5 workers could temporarily relocate to the study area from elsewhere (assuming a high share of *local* workers are attracted to the project due to labor contracts and the highest peak would occur under the 18-month construction timeline, see Appendix A for a discussion of workforce availability). Most of these workers are not expected to relocate with their families or stay in the area permanently, so this estimate is representative of the likely *temporary* regional population change. The remaining workforce would come from within the study area and already are counted among the region's permanent population.

Operation

Population in the study area would not increase by any discernable amount during operation of the Utility Switchyard. Operation of the Utility Switchyard would not require its own operational workforce.

Overall Project

Population in the study area would temporarily increase by less than 1 percent during construction under Option 1, Option 2, and Alternate Hydrogen Option. This would not produce a discernable change in population or represent unplanned population growth. During the peak of construction of the Project, up to 80 workers could temporarily relocate to the study area from elsewhere (assuming a high share of *local* workers are attracted to the project due to labor contracts and the highest peak would occur under the 18-month construction timeline, see Appendix A for a discussion of workforce availability). Most of these workers are not expected to relocate with their families or stay in the area permanently, so this estimate is representative of the likely *temporary* regional population change. The remaining workforce would come from within the study area and already are counted among the region's permanent population.

The peak combined local and non-local workforce under the 18-month scenario of about 1,500 present on-site would represent a substantial proportion of the resident population surrounding the Project site. This number is approximately three times the size of Cantua Creek's resident population and about half of San Joaquin's resident population, the two communities closest to the Project site. **This population would not contribute to unplanned permanent population growth in the area**.

Population in the study area would not increase by any discernable amount during operation of the Project. Operation of the project would employ a consistent workforce of 40 employees for operation, most likely drawing from the existing population of the study area.

H. Housing

Impact SOC-2 HOUSING

Criteria:	**Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?**

Solar Facility, Step-Up Substation, and Gen-Tie

Construction

Construction of the Solar Facility, Step-Up Substation, and Gen-Tie under Option 1 and Option 2 would increase temporary housing demand in the study area, but sufficient housing is available to meet this demand within commuting distance without displacing existing populations. During construction of the Solar Facility, Step-Up Substation, and Gen-Tie, up to 26 workers would require temporary housing (see population impact discussion and workforce availability analysis in Appendix A). This represents a tiny percent of the approximately 9,000 units of available vacant housing much of which is in hotel/motels. If these workers seek temporary housing in western Fresno County during the harvest season, vacancy rates are very low, and they could displace other migrant workers.

Operation

Housing demand in the study area would not increase by any discernable amount during operation of the Solar Facility, Step-up Substation, and Gen-Tie under Option 1 and Option 2. Operation of the solar facility, step-up substation, and gen-tie line components under Option 1, Option 2, and Alternate Hydrogen Option would employ a workforce of 12 employees for operation, most likely

drawing from the existing population of the study area, so they would not require temporary housing.

BESS

Construction

Construction of the BESS under Option 1 and Option 2 would increase temporary housing demand in the study area, but sufficient housing is available to meet this demand within commuting distance without displacing existing populations. During construction of the BESS, up to 8 workers would require temporary housing (see population impact discussion and workforce availability analysis in Appendix A). This represents a tiny percent of the approximately 9,000 units of available vacant housing much of which is in hotel/motels. If these workers seek temporary housing in western Fresno County during the harvest season, vacancy rates are very low, and they could displace other migrant workers.

Operation

Housing demand in the study area would not increase by any discernable amount during operation of the BESS under Option 1 and Option 2. Operation of the BESS under Option 1 and Option 2 would employ a workforce of 4 employees for operation, most likely drawing from the existing population of the study area, so they would not require temporary housing.

Green Hydrogen

Construction

Construction of the Green Hydrogen component under Option 1, Option 2, and Alternate Hydrogen Option would increase temporary housing demand in the study area, but sufficient housing is available to meet this demand within commuting distance without displacing existing populations. During construction of the Hydrogen Component, up to 18 workers would require temporary housing (see population impact discussion and workforce availability analysis in Appendix A). This represents a tiny percent of the approximately 9,000 units of available vacant housing much of which is in hotel/motels. If these workers seek temporary housing in western Fresno County during the harvest season, vacancy rates are very low, and they could displace other migrant workers.

Operation

Housing demand in the study area would not increase by any discernable amount during operation of the Green Hydrogen component under Option 1, Option 2, and Alternate Hydrogen Option. Operation of the Hydrogen component under Option 1, Option 2, and Alternate Hydrogen Option would employ a workforce of 24 employees for operation, most likely drawing from the existing population of the study area, so they would not require temporary housing.

Utility Switchyard

Construction

Construction of the Utility Switchyard would increase temporary housing demand in the study area, but sufficient housing is available to meet this demand within commuting distance without displacing existing populations. During construction of the Utility Switchyard Component, up to 5

workers would require temporary housing (see population impact discussion and workforce availability analysis in Appendix A). This represents a tiny percent of the approximately 9,000 units of available vacant housing much of which is in hotel/motels. If these workers seek temporary housing in western Fresno County during the harvest season, vacancy rates are very low, and they could displace other migrant workers.

Operation

Housing demand in the study area would not increase by any discernable amount during operation of the Utility Switchyard. Operation of the Utility Switchyard would not require its own operational workforce, so would not generate demand for housing.

Overall Project

Construction of the Project under Option 1, Option 2, and Alternate Hydrogen Option would increase temporary housing demand in the study area, but sufficient housing is available to meet this demand within commuting distance without displacing existing populations. During the peak of construction of the Project, up to 80 workers would require temporary housing (see population impact discussion and workforce availability analysis in Appendix A).[8] This represents a tiny percent of the approximately 9,000 units of available vacant housing much of which is in hotel/motels. If these workers seek temporary housing in western Fresno County during the harvest season, vacancy rates are very low, and they could displace other migrant workers.

Operation

Housing demand in the study area would not increase by any discernable amount during operation of the Project under Option 1, Option 2, and Alternate Hydrogen Option. Operation of the Project under Option 1, Option 2, and Alternate Hydrogen Option would employ a consistent workforce of 40 employees for operation, most likely drawing from the existing population of the study area, so they would not require temporary housing.

I. Economy and Employment

Potential impacts of the Project on the area's economy and employment are presented in sections SOC-3, SOC-4, SOC-5, and SOC-6. The results presented in this section rely on IMPLAN analyses to estimate impacts on employment and the economy. The analyses are presented in their entirety in the Appendix of this document. Results of the workforce analysis during construction and operation are presented in Section SOC-3. The results of the IMPLAN modeling of indirect and induced employment effects and employment impacts of changes in agricultural production are presented in SOC-4. The capital and income costs of the Project are discussed in SOC-5 and the IMPLAN modeling of indirect and induced spending effects is discussed in SOC-6. All estimates of employment and Project spending effects are estimated based on prior solar development experience and currently available information about Project design, which is preliminary. Actual Project effects may vary somewhat from the estimates presented in this section.

[8] The analysis of housing impacts was also run using the high non-local workforce assumptions detailed in Appendix A. Under this assumption, up to 645 workers would require temporary housing in the region at the peak of labor demand. While this is a significantly larger amount of housing than the lower estimates used here, it is less than 10 percent of the total vacant temporary housing supply of 9,000, even assuming every worker had individual accommodations (which is typically not the case, workers often share temporary accommodations, especially if they are in tight supply).

This section provides an overview of anticipated Project impacts. The full impact analyses and discussion is presented in the appendices. The local workforce availability is discussed in Appendix A, Project economic and employment impacts are discussed in Appendix B, and agricultural impacts are discussed in detail in Appendix C.

Impact SOC-3 Economy and Employment: Direct Employment Impacts

Criteria:	**Would the project have adverse impacts on overall employment in the region?** **Estimate the number of workers to be employed each month by craft during construction, and for operations, an estimate of the number of permanent operations workers during a year. [CEC Socioeconomic Requirement]** **Estimate the percentage of non-local workers who will relocate to the project area to work on the project. [CEC Socioeconomic Requirement]**

Solar Facility, Step-Up Substation, and Gen-Tie

Construction

Project construction direct employment impacts under Option 1 and Option 2 would be positive and account for less than 1 percent of the study area workforce. Construction of the proposed Project is expected to employ a workforce of both local and non-local workers. The solar facility, step-up substation, and gen-tie line components under Option 1 and Option 2 would directly support a workforce of 1,520 employees under the 18-month construction period and 1,750 employees under the 36-month construction period. Direct employment encompasses local and non-local on-site construction workers as well as the jobs supported by the non-local workforce per diem spending (which wouldn't be spent in the project area but for the project so represents a direct impact of the project). For this reason, direct employment is larger than the construction workforce estimates describe elsewhere in the application. Non-local employees are assumed to make up 3.8 percent of the workforce for the 18-month construction period and 4.6 percent of the 36-month construction workforce.

Operation

Project operation direct employment impacts under Option 1 and Option 2 would be positive and account for less than 1 percent of the study area workforce. Operation of the solar facility, step-up substation, and gen-tie line components is expected to employ a workforce of all local workers. The solar facility, step-up substation, and gen-tie line components under Option 1 and Option 2 would employ a workforce of 12 permanent full-time employees for operation.

BESS

Construction

Project construction direct employment impacts under Option 1 and Option 2 would be positive and account for less than 1 percent of the study area workforce. The BESS component under Option 1 and Option 2 would directly support a workforce of 100 employees under the 18-month construction period and 80 employees under the 36-month construction period. Non-local

employees are assumed to make up 5.7 percent of the workforce for the 18-month construction period and 10.6 percent of the 36-month construction workforce.

Operation

Project operation direct employment impacts under Option 1 and Option 2 would be positive and account for less than 1 percent of the study area workforce. Operation of the BESS component is expected to employ a workforce of all local workers. The BESS component under Option 1 and Option 2 would employ a workforce of 4 permanent full-time employees for operation.

Green Hydrogen

Construction

Project construction direct employment impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and account for less than 1 percent of the study area workforce. The Green Hydrogen component under Option 1, Option 2, and Alternate Hydrogen Option would directly support a workforce of 160 employees under the 18-month construction period and 150 employees under the 36-month construction period. Non-local employees are assumed to make up 7.2 percent of the workforce for the 18-month construction period and 12.1 percent of the 36-month construction workforce.

Operation

Project operation direct employment impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and account for less than 1 percent of the study area workforce. Operation of the proposed Project is expected to employ a workforce of all local workers. The Green Hydrogen component under Option 1, Option 2, and Alternate Hydrogen Option would employ a workforce of 24 permanent full-time employees for operation.

Utility Switchyard

Construction

Project construction direct employment impacts would be positive and account for less than 1 percent of the study area workforce. The Utility Switchyard component would directly support a workforce of 80 employees under the 18-month construction period and 130 employees under the 36-month construction period. Non-local employees are assumed to make up 6.3 percent of the workforce for the 18-month construction period and 0.0 percent of the 36-month construction workforce.

Operation

No operation employment would be directly required for the Utility Switchyard.

Overall Project

Project direct employment impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and account for less than 1 percent of the study area workforce. This would be a small but beneficial impact to overall employment in the region. The Project would directly support a workforce of 2,420 employees under the 18-month construction period and 2,660 employees under

the 36-month construction period. Non-local employees are assumed to make up 4.3 percent of the workforce for the 18-month construction period and 5.1 percent of the 36-month construction workforce. The operation and maintenance of the Project is expected to consistently employ 40 full-time workers from the study area each year, with additional temporary employment for certain tasks (which are not accounted for in this analysis but are anticipated to have additional positive economic impacts).

Table 21 Estimated Direct Employment Impacts of the Project

Impact	Direct Jobs
Total Option 1	
Construction 18-Mo	2,420
Construction 36-Mo	2,660
Operations[1]	40
Total Option 2	
Construction 18-Mo	2,420
Construction 36-Mo	2,660
Operations[1]	40
Total Alternate Hydrogen	
Construction 18-Mo	2,420
Construction 36-Mo	2,660
Operations[1]	40

Note: [1] Annual employment FTE

Source: IMPLAN 2021, ECONorthwest Analysis

Impact SOC-4 Economy and Employment: Secondary Employment Impacts

Threshold:	**Would the project have adverse impacts on overall employment in the region?** **Would the project change the distribution of employment opportunities in the region so some workers may benefit while others may lose out?** **Estimate the expected direct, indirect, and induced employment effects due to construction, operation, and maintenance of the project. [CEC Socioeconomic Requirement]**

Solar Facility, Step-Up Substation, and Gen-Tie

Construction

Project construction secondary employment impacts under Option 1 and Option 2, and Alternate Hydrogen Option would be positive and account for less than 1 percent of the study area workforce. The construction of the solar facility, step-up substation, and gen-tie line components under Option 1 would support 1,390 jobs in the study area under the 18-month construction period and 1,410 jobs under the 36-month construction period. Under Option 2, these components would support 1,360 jobs in the study area under the 18-month construction period and 1,390 jobs under the 36-month period. Under the Alternate Hydrogen Option, these components would support 1,380 jobs

in the study area under the 18-month construction period and 1,410 jobs under the 36-month period.

Operation

Project operation secondary employment impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and account for less than 1 percent of the study area workforce. The operation of the solar facility, step-up substation, and gen-tie line components under Option 1, Option 2, and Alternate Hydrogen Option would support 33 jobs in the study area.

Agriculture Production

Gen-tie line construction secondary employment impact under Option 1, Option 2, and Alternate Green Hydrogen Option would displace an insignificant amount of agricultural production below support poles with no measurable effect on agricultural employment in the study area. Roughly 2 acres of agricultural production would be displaced by construction and operation of the gen-tie line. This agricultural production is associated with 0 jobs. Agricultural production generates indirect and induced employment impacts in the local economy. This production accounts for 0 jobs (indirect employment impact) and 0 jobs (induced employment impact), with a total impact of 0 jobs potentially displaced.

BESS

Construction

Construction secondary employment impacts for BESS under Option 1 and Option 2 would be positive and account for less than 1 percent of the study area workforce. The construction of the BESS component under Option 1 and Option 2 would support 230 jobs in the study area under the 18-month construction period and 220 jobs under the 36-month construction period.

Operation

Project operation secondary employment impacts under Option 1 and Option 2 would be positive and account for less than 1 percent of the study area workforce. The operation of the BESS component under Option 1 and Option 2 would support 11 jobs in the study area.

Green Hydrogen

Construction

Green Hydrogen construction secondary employment impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and account for less than 1 percent of the study area workforce. The construction of the Green Hydrogen component under Option 1, Option 2, and Alternate Hydrogen Option would support 730 jobs in the study area under the 18-month construction period and the 36-month construction period.

Operation

Green Hydrogen operation secondary employment impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and account for less than 1 percent of the study area workforce. The operation of the Green Hydrogen component under Option 1, Option 2, and Alternate Hydrogen Option would support 30 jobs in the study area.

Agriculture Production

Green Hydrogen in the alternative location construction secondary employment impact under Option 1, Option 2, and Alternate Hydrogen Option would displace agricultural production and a small amount of agricultural production and potentially reduce the agricultural workforce by a very small proportion of overall agricultural employment in the study area. Roughly 169 acres of agricultural production would be displaced by construction and operation of the Green Hydrogen component. This agricultural production is associated with 2 jobs. Additionally, agricultural production generates indirect and induced employment impacts in the local economy. This production accounts for 1 job (indirect employment impact) and 1 job (induced employment impact), for a total impact of 4.5 total jobs.

Utility Switchyard

Construction

Utility switchyard construction secondary employment impacts would be beneficial and account for less than 1 percent of the study area workforce. The construction of the Utility Switchyard component would support 120 jobs in the study area under the 18-month construction period and 130 jobs under the 36-month construction period.

Operation

No operation employment would be directly required for the Utility Switchyard.

Agriculture Production

Utility Switchyard construction secondary employment impact would displace agricultural production and a small amount of agricultural production and potentially reduce the agricultural workforce by a very small proportion of overall agricultural employment in the study area. Roughly 132 acres of agricultural production would be displaced by construction and operation of the Utility Switchyard component. This agricultural production is associated with 3 jobs. Additionally, agricultural production generates indirect and induced employment impacts in the local economy. This production accounts for 1 job (indirect employment impact) and 1 job (induced employment impact), for a total impact of 5 total jobs.

Overall Project

Project secondary employment impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive, but overall presents a small proportion of the overall employment in the study area. The reduction in agricultural production jobs related to removing agricultural land from production under Option 1, Option 2, and the Alternate Hydrogen Option would impact less than 1 percent of the study area workforce and is thus not considered a significant impact. The total number of jobs created by the Project for both the construction phase and operational phase is significantly greater than the total number of jobs potentially lost due to the Project. Overall distribution of workforce in the Project area would shift from agricultural production workforce to construction workforce in the short term and operational workforce in the long term. Under Option 1 and the Alternate Hydrogen Option, the construction of the Project would support 2,830 jobs in the study area under the 18-month construction period and 2,860 employees under the 36-month construction period. Under Option 2, the Project would support 2,800 jobs in the study area under

the 18-month construction period and 2,840 jobs under the 36-month period. The operation and maintenance of the Project would support 58 jobs annually. Under Option 1 and Option 2, the removal of agricultural land from production would lead to a reduction of 2 direct agricultural jobs, 2 indirect jobs, and 1 induced jobs for a total of 5 jobs impacted. Under the Alternate Hydrogen Option, a total of 8 jobs would be impacted: 3 direct agricultural jobs, 4 indirect jobs, and 1 induced jobs.

Table 22 Secondary Employment Impacts of the Project

Impact	Direct	Indirect	Induced	TOTAL Secondary
Total Option 1				
Construction 18-Mo	N/A	1,680	1,150	2,830
Construction 36-Mo	N/A	1,650	1,210	2,860
Operation	N/A	32	26	58
Agricultural production	2	2	1	5
Total Option 2				
Construction 18-Mo	N/A	1,660	1,140	2,800
Construction 36-Mo	N/A	1,630	1,210	2,840
Operation	N/A	32	26	58
Agricultural production	2	2	1	5
Total Alternate Hydrogen				
Construction 18-Mo	N/A	1,680	1,150	2,830
Construction 36-Mo	N/A	1,650	1,210	2,860
Operation	N/A	32	26	58
Agricultural production	3	4	1	8

Notes: N/A: These impacts are captured in Direct Effects

Source: IMPLAN 2021, ECONorthwest Analysis

Impact SOC-5 ECONOMY AND EMPLOYMENT: DIRECT PROJECT OUTPUT AND INCOME EFFECTS

Criteria:

Would the project reduce income for local businesses?

Estimate of the capital cost (plant and equipment) of the project.

Estimate the total construction payroll and separate estimates of the total operation payroll for permanent and short-term (contract) operations employees. [CEC Socioeconomic requirement]

Estimate of the expenditures for locally purchased materials for the construction and operation phases of the project. [CEC Socioeconomic requirement]

Note: Detailed discussion of the assumptions related to project capital and operating costs, including payroll and local expenditures are in Appendix B. [CEC Socioeconomic requirement]

Solar Facility, Step-Up Substation, and Gen-Tie

Construction

Direct Solar Facility, Step-Up Substation, and Gen-Tie construction spending impacts under Option 1 and Alternate Hydrogen Option would be positive and represent around 1.5 percent of the study area GDP. Direct Project construction spending impacts would also be positive under Option 2 and represent approximately 1.1 percent of the study area GDP. The direct output associated with the construction of the solar facility, step-up substation, and gen-tie line components under Option 1 would total approximately $620.4 million under the 18-month construction period and $621.8 million under the 36-month construction period. Under Option 2, direct output associated with these components would total $606.8 million under the 18-month construction period and $608.1 million under the 36-month period. Under the Alternate Hydrogen Option, direct output associated with these components would total $617.8 million under the 18-month construction period and $619.1 million under the 36-month period.

Direct Solar Facility, Step-Up Substation, and Gen-Tie construction income impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area total income. The direct income associated with the construction of the solar facility, step-up substation, and gen-tie line components under Option 1, Option 2, and the Alternate Hydrogen Option would total approximately $144.1 million under the 18-month construction period and $166.3 million under the 36-month construction period.

Operation

Direct Solar Facility, Step-Up Substation, and Gen-Tie operation spending impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area GDP. The direct output associated with the operation of the solar facility, step-up substation, and gen-tie line components under Option 1, Option 2, and Alternate Hydrogen Option would total $12.1 million annually.

Direct Solar Facility, Step-Up Substation, and Gen-Tie operation income impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area total income. The direct income associated with the operation of the solar facility, step-up substation, and gen-tie line components under Option 1, Option 2, and Alternate Hydrogen Option would total $2.3 million annually.

BESS

Construction

Direct BESS construction spending impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area total GDP. The direct output associated with the construction of the BESS component under Option 1, Option 2, and the Alternate Hydrogen Option would total approximately $112.8 million under the 18-month construction period and $112.9 million under the 36-month construction period.

Direct BESS construction income impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area total income. The direct income associated with the construction of the BESS component under Option 1, Option 2, and the

Alternate Hydrogen Option would total approximately $10.1 million under the 18-month construction period and $7.9 million under the 36-month construction period.

Operation

Direct BESS operation spending impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area GDP. The direct output associated with the operation of the BESS component under Option 1, Option 2, and Alternate Hydrogen Option would total $4.1 million annually.

Direct BESS operation income impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area total income. The direct income associated with the operation of the BESS component under Option 1, Option 2, and Alternate Hydrogen Option would total $774,000annually.

Green Hydrogen

Construction

Direct Green Hydrogen construction spending impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area total GDP. The direct output associated with the construction of the Green Hydrogen component under Option 1, Option 2, and the Alternate Hydrogen Option would total approximately $370.7 million under the 18-month construction period and $371.2 million under the 36-month construction period.

Direct Green Hydrogen construction income impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area total income. The direct income associated with the construction of the Green Hydrogen component under Option 1, Option 2, and the Alternate Hydrogen Option would total approximately $14.9 million under the 18-month construction period and $14.9 million under the 36-month construction period.

Operation

Direct Green Hydrogen operation spending impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area GDP. The direct output associated with the operation of the Green Hydrogen component under Option 1, Option 2, and Alternate Hydrogen Option would total $5.8 million annually.

Direct Green Hydrogen operation income impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area total income. The direct income associated with the operation of the Green Hydrogen component under Option 1, Option 2, and Alternate Hydrogen Option would total $1.7 million annually.

Utility Switchyard

Construction

Direct Utility Switchyard construction spending impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area total GDP. The direct output associated with the construction of the Utility Switchyard component under

Option 1, Option 2, and the Alternate Hydrogen Option would total approximately $56.3 million under the 18-month construction period and $56.0 million under the 36-month construction period.

Direct Utility Switchyard construction income impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area total income. The direct income associated with the construction of the Utility Switchyard component under Option 1, Option 2, and the Alternate Hydrogen Option would total approximately $8.6 million under the 18-month construction period and $13.1 million under the 36-month construction period.

Operation

No operation spending or income would be directly required for the Utility Switchyard.

Overall Project

Direct Project construction spending impacts under Option 1 would be positive and account for 2.35 percent of the study area GDP. Direct Project construction spending impacts under Option 2 would also be positive and represent 2.32 of the study area GDP. Direct Project construction spending impacts under the Alternate Hydrogen Option would represent 2.34 percent of the study area GDP. This spending is expected to increase income for local businesses. The direct output associated with the construction of the Project under Option 1 would total approximately $1.263 billion under the 18-month construction period and $1.265 billion under the 36-month construction period. Under Option 2, direct output would total $1.250 billion under the 18-month construction period and $1.251 billion under the 36-month period. Under the Alternate Hydrogen Option, direct output would total $1.261 billion under the 18-month construction period and $1.263 billion under the 36-month period.

Direct Project construction income impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area total income. The direct income associated with the construction of the Project under Option 1, Option 2, and the Alternate Hydrogen Option would total approximately $220.95 million under the 18-month construction period and $245.4 million under the 36-month construction period.

Direct Project operation spending impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area GDP. This spending is expected to increase income for local businesses. The direct output associated with the operation of the Project under Option 1, Option 2, and Alternate Hydrogen Option would total $22 million annually.

Direct Project operation income impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area total income. The direct income associated with the operation of the Project under Option 1, Option 2, and Alternate Hydrogen Option would total $4.8 million annually.

Table 23 Estimated Direct Output and Income Impacts of the Project

Impact	Total Direct Output	Total Direct Income
Total Option 1		
Construction 18-Mo	$1,263,601,000	$220,950,000
Construction 36-Mo	$1,265,287,000	$245,442,000
Operation	$21,985,000	$4,780,000
Total Option 2		
Construction 18-Mo	$1,249,951,000	$220,950,000
Construction 36-Mo	$1,251,637,000	$245,442,000
Operation	$21,985,000	$4,780,000
Total Alternate Hydrogen		
Construction 18-Mo	$1,260,951,000	$220,950,000
Construction 36-Mo	$1,262,637,000	$245,442,000
Operation	$21,985,000	$4,780,000

Source: IMPLAN 2021, ECONorthwest Analysis

Impact SOC-6 Economy and Employment: Secondary Output and Income Effects

Criteria:	**Would the project reduce income for local businesses?** **Estimate the expected indirect and induced [secondary] income effects due to construction, operation, and maintenance of the project. [CEC Socioeconomic Requirement]**

Solar Facility, Step-Up Substation, and Gen-Tie

Construction

Solar Facility, Step-Up Substation, and Gen-Tie construction spending secondary impacts under Option 1, Option 2, and the Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area GDP. The secondary output associated with the construction of the solar facility, step-up substation, and gen-tie line components under Option 1 would total approximately $305 million under the 18-month construction period and $306.8 million under the 36-month construction period. Under Option 2, secondary output associated with these components would total $298.6 million under the 18-month construction period and $300.4 million under the 36-month period. Under the Alternate Hydrogen Option, secondary output associated with these components would total $303.7 million under the 18-month construction period and $305.5 million under the 36-month period.

Solar Facility, Step-Up Substation, and Gen-Tie construction income secondary impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area total income. The secondary income associated with the construction of the solar facility, step-up substation, and gen-tie line components under Option 1 would total approximately $87.97 million under the 18-month construction period and $89.1 million under the 36-month construction period. Under Option 2, secondary income associated with these components would total $86.2 million under the 18-month construction period and $87.4 million

under the 36-month period. Under the Alternate Hydrogen Option, secondary income associated with these components would total $87.6 million under the 18-month construction period and $88.8 million under the 36-month period.

Operation

Solar Facility, Step-Up Substation, and Gen-Tie operation spending secondary impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area GDP. The secondary output associated with the operation of the solar facility, step-up substation, and gen-tie line components under Option 1, Option 2, and Alternate Hydrogen Option would total $24.8 million annually.

Solar Facility, Step-Up Substation, and Gen-Tie operation income secondary impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area total income. The secondary income associated with the operation of the solar facility, step-up substation, and gen-tie line components under Option 1, Option 2, and Alternate Hydrogen Option would total $1.4 million annually.

Agricultural Production

Gen-tie line construction would reduce agricultural production under support poles and result in a secondary output impact from reduced spending on agricultural inputs under Option 1, Option 2, and Alternate Green Hydrogen Option. This loss is insignificant accounting for less than one percent of the study area agricultural GDP. The annual agricultural production is associated with about $10,000 in economic output. Additionally, agricultural production generates indirect and induced output impacts in the local economy. This production accounts for about $3,000 (indirect output impact) and another $3,000 (induced output impact), for a total impact of about $16,000 in output.

Gen-tie line construction would reduce agricultural production and result in no significant secondary income impact from reduced spending on agricultural labor under Option 1, Option 2, and Alternate Hydrogen Option. This loss is insignificant and would account for less than one percent of the study area agricultural GDP. This agricultural production is associated with about $4,000 in income. Additionally, agricultural production generates indirect and induced output impacts in the local economy. This production accounts for about $1,000 (indirect income impact) and another $1,000 (induced income impact), for a total impact of about $6,000 in income.

BESS

Construction

BESS construction spending secondary impacts under Option 1, Option 2, and the Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area GDP. The secondary output associated with the construction of the BESS component under Option 1, Option 2, and the Alternate Hydrogen Option would total approximately $53.6 million under the 18-month construction period and $53.2 million under the 36-month construction period.

BESS construction income secondary impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area total income. The secondary income associated with the construction of the BESS component under Option 1, Option 2, and the Alternate Hydrogen Option would total approximately $15 million under the 18-month construction period and $14.8 million under the 36-month construction period.

Operation

BESS operation spending secondary impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area GDP. The secondary output associated with the operation of the BESS component under Option 1, Option 2, and Alternate Hydrogen Option would total $1.6 million annually.

BESS income secondary impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area total income. The secondary income associated with the BESS component under Option 1, Option 2, and Alternate Hydrogen Option would total $460,000 annually.

Green Hydrogen

Construction

Green Hydrogen construction spending secondary impacts under Option 1, Option 2, and the Alternate Hydrogen Option would be positive and represent than 1 percent of the study area GDP. The secondary output associated with the construction of the Green Hydrogen component under Option 1, Option 2, and the Alternate Hydrogen Option would total approximately $174.6 million under the 18-month construction period and $174.2 million under the 36-month construction period.

Green Hydrogen construction income secondary impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area total income. The secondary income associated with the construction of the Green Hydrogen component under Option 1, Option 2, and the Alternate Hydrogen Option would total approximately $48.1 million under the 18-month construction period and $48.0 million under the 36-month construction period.

Operation

Green Hydrogen operation spending secondary impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area GDP. The secondary output associated with the operation of the Green Hydrogen component under Option 1, Option 2, and Alternate Hydrogen Option would total $7.7 million annually.

Green Hydrogen operation income secondary impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and represent than 1 percent of the study area total income. The direct income associated with the operation of the Green Hydrogen component under Option 1, Option 2, and Alternate Hydrogen Option would total $2.3 million annually.

Agricultural Production

Green Hydrogen construction in the alternative location would reduce agricultural production and spending and would result in a reduced secondary output impact under Option 1, Option 2, and Alternate Hydrogen Option. This would represent a very small amount of the study area agricultural GDP. This agricultural production is associated with $583,000 in economic output. Additionally, agricultural production generates indirect and induced output impacts in the local economy. This production accounts for $148,000 (indirect output impact) and $196,000 (induced output impact), for a total impact of $927,000 in output.

Green Hydrogen construction in the alternative location would reduce agricultural production and spending and would result in a reduced secondary income impact under Option 1, Option 2, and Alternate Hydrogen Option. This would represent a very small amount of the study area agricultural income. This agricultural production is associated with $229,000 in income. Additionally, agricultural production generates indirect and induced output impacts in the local economy. This production accounts for $83,500 (indirect income impact) and $64,000 (induced income impact), for a total impact of $377,000 in income.

Utility Switchyard

Construction

Utility Switchyard construction spending secondary impacts under Option 1, Option 2, and the Alternate Hydrogen Option would be positive and represent than 1 percent of the study area GDP. The secondary output associated with the construction of the Utility Switchyard component under Option 1, Option 2, and the Alternate Hydrogen Option would total approximately $27.1 million under the 18-month construction period and $27.97 million under the 36-month construction period.

Utility Switchyard construction income secondary impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area total income. The direct income associated with the construction of the Utility Switchyard component under Option 1, Option 2, and the Alternate Hydrogen Option would total approximately $7.7 million under the 18-month construction period and $8.1 million under the 36-month construction period.

Operation

No operation employment would be directly required for the Utility Switchyard.

Agricultural Production

Utility Switchyard construction would reduce agricultural production and spending and would result in a reduced secondary output impact under Option 1, Option 2, and Alternate Hydrogen Option. This would represent a very small amount of the study area agricultural GDP. This agricultural production is associated with $645,000 in economic output. Additionally, agricultural production generates indirect and induced output impacts in the local economy. This production accounts for $162,000 (indirect output impact) and $216,000 (induced output impact), for a total impact of $1.0 million in output.

Utility Switchyard construction would reduce agricultural production and spending and would result in a reduced secondary income impact under Option 1, Option 2, and Alternate Hydrogen Option. This would represent a very small amount of the study area agricultural GDP. This agricultural production is associated with $253,000 in income. Additionally, agricultural production generates indirect and induced output impacts in the local economy. This production accounts for $92,000 (indirect income impact) and $71,000 (induced income impact), for a total impact of $416,000 in income.

Overall Project

Project construction spending secondary impacts under Option 1 and the Alternate Hydrogen Option would be positive and represent 1.15 percent of the study area GDP. Project construction spending secondary impacts under Option 2 are also positive and would represent 1.14 percent of the study area GDP. The secondary output associated with the construction of the Project under Option 1 would total approximately $620.1 million under the 18-month construction period and $621.8 million under the 36-month construction period. Under Option 2, secondary output would total $613.7 million under the 18-month construction period and $615.5 million under the 36-month period. Under the Alternate Hydrogen Option, secondary output would total $618.9 million under the 18-month construction period and $620.6 million under the 36-month period.

Project operation spending secondary impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area GDP. The secondary output associated with the operation of the Project under Option 1, Option 2, and Alternate Hydrogen Option would total $14 million annually.

The project would reduce agricultural production and spending under Option 1, Option 2, and Alternate Hydrogen Option. These reductions would represent a very small amount of study area GDP (and less than one percent of agricultural output in the Westlands Water District). Overall, the secondary output impacts related to the Project would be significantly greater than the output lost due to the cessation of agriculture on the Project site. Option 1, Option 2, and the Alternative Green Hydrogen Option would reduce agricultural output by $1.06 million, $1.06 million, and $1.92 million, respectively.

Table 24 Estimated Secondary Output Impacts of the Project

Impact	Direct Output	Indirect Output	Induced Output	Total Secondary Output
Total Option 1				
Construction 18-Mo	N/A	$422,163,000	$197,955,000	$620,118,000
Construction 36-Mo	N/A	$413,028,000	$208,843,000	$621,871,000
Operation	N/A	$9,538,000	$4,513,000	$14,051,000
Agricultural production	$676,00	$238,000	$143,000	$1,057,000
Total Option 2				
Construction 18-Mo	N/A	$416,664,000	$197,066,000	$613,730,000
Construction 36-Mo	N/A	$407,530,000	$207,954,000	$615,484,000
Operation	N/A	$9,538,000	$4,513,000	$14,051,000
Agricultural production	$676,000	$238,000	$143,000	$1,057,0009
Total Alternative Hydrogen				
Construction 18-Mo	N/A	$421,095,000	$197,782,000	$618,877,000
Construction 36-Mo	N/A	$411,961,000	$208,670,000	$620,631,000
Operation	N/A	$9,538,000	$4,513,000	$14,051,000
Agricultural production	$1,225,000	$434,000	$259,000	$1,919,000

Notes: N/A: Direct Output for these categories are captured in Table 23

Source: IMPLAN 2021, ECONorthwest Analysis

Project construction income secondary impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area total income. The secondary income associated with the construction of the Project under Option 1 would total approximately $181.1 million under the 18-month construction period and $182.3 million under the 36-month construction period. Under Option 2, secondary income would total $179.4 million under the 18-month construction period and $180.6 million under the 36-month period. Under the Alternate Hydrogen Option, secondary income would total $180.8 million under the 18-month construction period and $181.9 million under the 36-month period.

Project operation income secondary impacts under Option 1, Option 2, and Alternate Hydrogen Option would be positive and represent less than 1 percent of the study area total income. The secondary output associated with the operation of the Project under Option 1, Option 2, and Alternate Hydrogen Option would total $4.2 million annually.

Overall, the secondary income impacts related to the Project would be significantly greater than the income lost due to the cessation of agriculture on the Project site. However, potential losses of income, however minor would be concentrated among agricultural workers, while gains would be concentrated in other occupations. It is not clear that agricultural workers would have access to the employment and income earning opportunities the Project would support. Annual income reduction associated with the removal of agricultural land from production under Option 1, Option 2, and the Alternate Hydrogen Option is estimated at $282,000, $282,000 and $513,000, respectively. This estimate accounts less than 0.01 percent of total labor income in the three-county region.

Table 25 Secondary Income Impacts of the Project

Impact	Direct Income	Indirect Income	Induced Income	Total Secondary Income
Total Option 1				
Construction 18-Mo	N/A	$115,884,000	$65,236,000	$181,120,000
Construction 36-Mo	N/A	$113,506,000	$68,826,000	$182,332,000
Operation	N/A	$2,685,000	$1,488,000	$4,173,000
Agricultural production	$100,00	$135,000	$47,000	$282,000
Total Option 2				
Construction 18-Mo	N/A	$114,433,000	$64,944,000	$179,377,000
Construction 36-Mo	N/A	$112,055,000	$68,533,000	$180,588,000
Operation	N/A	$2,685,000	$1,488,000	$4,173,000
Agricultural production	$100,000	$135,000	$47,000	$282,000
Total Alternative Hydrogen				
Construction 18-Mo	N/A	$115,602,298	$65,179,639	$180,781,937
Construction 36-Mo	N/A	$113,225,000	$68,769,000	$181,994,000
Operation	N/A	$2,685,000	$1,488,000	$4,173,000
Agricultural production	$182,000	$245,000	$85,000	$513,000

Notes: N/A: Direct income for these categories is captured in Table 23

Source: IMPLAN 2021, ECONorthwest Analysis

J. Fiscal Impacts

Impact SOC-7 FISCAL IMPACTS

Criteria:	Would the project induce changes in fiscal resources for local governments that result in a reduction of service levels, budget cuts, or other fiscally destabilizing effects?

Solar Facility, Step-Up Substation, and Gen-Tie

Construction

Construction of the Solar Facility, Step-Up Substation, and Gen-Tie would result in positive fiscal impacts under Option 1, Option 2, and the Alternate Hydrogen Option. Construction spending in Option 1 and the Alternate Hydrogen Option could result in sales tax benefits in the study area amounting to $16.7 million over the 18-month construction schedule and $16.5 million over the 36-month construction schedule. The sales tax collections for Option 2 would total $16.3 million over the 18-month construction schedule and $16.1 million over the 36-month construction schedule. The sales tax collections for PV Solar, Step-up Substation, and Gen-tie components in Option 2 would total $16.3 million over the 18-month construction schedule and $16.1 million over the 36-month construction schedule. Sales tax revenue is estimated based on current knowledge of purchases, however future supply chain conditions could alter the amount of local purchases, leading to a change in sales tax benefits associated with the project.

Operation

Operation of the Solar Facility, Step-Up Substation, and Gen-Tie would result in positive fiscal impacts under Option 1, Option 2, and the Alternate Hydrogen Option. Spending on operations and maintenance would result in sales tax benefits in the study area amounting to $1.3 million annually.

School Districts in California are entitled to charge a school impact fee on new construction based on the total area of the Project's covered and enclosed structures.[9] The Project owner would pay a one-time fee to the school districts. This analysis assumes that the only relevant structure within the Project area that this fee could potentially be applied to is the operation and maintenance building, part of the Solar Facility. Under Option 1 and the Alternate Hydrogen Option the building has 499,503 square feet, which would incur a one-time impact fee payment of about $390,000. Under Option 2, the operation and maintenance building is planned as 455,682 square feet, which would produce a one-time impact fee payment of about $355,000. The actual determination will be made by the office issuing the building permit. The payment of the fee to the school districts would be made in compliance with Education Code section 17620 (Office of Public School Construction, 2023).

Any land in agricultural production and currently under contract to receive reduced property tax assessments through California's Williamson Act may no longer be eligible once it is removed from agricultural production. This may result in increased property tax revenues for Fresno County (and services that depend on property tax revenues, including the Fire Protection District). Improvements related to the Solar Facility may be partially exempt from property tax assessment based on the

[9] Chargeable covered and enclosed space are defined as "the covered and enclosed space determined to be within the perimeter of a commercial or industrial structure, not including any storage areas incidental to the principal use of the construction, garage, parking structure, unenclosed walkway, or utility or disposal area." (California Legislative Information, 2015; Office of Public School Construction, 2023).

provisions of California's assessment rules for new construction of solar facilities that are locally assessed. Over the life of the Project, operation of the Solar Facility, Step-Up Substation, and Gen-Tie are likely to contribute to an increase in property tax revenue collections to Fresno County, although too many uncertainties exist to quantify the expected increase and when it would occur.

BESS

Construction

Construction of the BESS would result in positive fiscal impacts under Option 1, Option 2, and the Alternate Hydrogen Option. Construction spending would result in sales tax benefits in the study area amounting to $3.2 million.

Operation

Operation of the BESS would result in positive fiscal impacts under Option 1, Option 2, and the Alternate Hydrogen Option. Spending on operations and maintenance would result in sales tax benefits in the study area amounting to $451,000 annually.

Green Hydrogen

Construction

Construction of the Green Hydrogen component would result in positive fiscal impacts under Option 1, Option 2, and the Alternate Hydrogen Option. Construction spending would result in sales tax benefits in the study area amounting to $10.8 million.

Operation

Operation of the Green Hydrogen component would result in positive fiscal impacts under Option 1 and the Alternate Hydrogen Option. Operation of the Green Hydrogen component could result in increased sales taxes from operation, although they are unquantifiable at this time. It could also result in an increase in property tax revenue collections through change in status of agricultural lands through the Williamson Act and potentially through assessment of improvement value, although too many uncertainties exist to quantify the expected increase and when it would occur.

Utility Switchyard

Construction

Construction of the Utility Switchyard would result in positive fiscal impacts under Option 1, Option 2, and the Alternate Hydrogen Option. Construction spending would result in sales tax benefits in the study area amounting to about $1.6 million.

Operation

Operation of the Utility Switchyard would result in positive fiscal impacts under Option 1, Option 2, and the Alternate Hydrogen Option. Operation of the Utility Switchyard could result in an increase in property tax revenue collections through change in status of agricultural lands through the Williamson Act and potentially through assessment of improvement value, although too many uncertainties exist to quantify the expected increase and when it would occur.

Overall Project

Construction

Construction of the Project would result in positive fiscal impacts under Option 1, Option 2, and the Alternate Hydrogen Option. The Project's effects on fiscal resources for local governments—particularly Fresno County and the City of Fresno—would be positive. Spending on materials and labor during construction would generate taxes and fees in a variety of categories that would augment existing revenue collections. These taxes include sales tax and transient lodging tax. For state and local governments, sales tax generated from the construction of Option 1 could total $33.9 million across the 18-month construction schedule or $33.6 million across the 36-month construction schedule. In Option 2, sales tax collections from construction spending could total $33.5 million over the 18-month construction schedule or $33.2 million over the 36-month construction schedule. Sales tax collections from construction of the Alternate Green Hydrogen Option could total $33.8 million over the 18-month construction schedule or $33.5 million over the 36-month construction schedule.

Operation

Operation of the Project would result in positive fiscal impacts under Option 1, Option 2, and the Alternate Hydrogen Option. The indirect and induced effects of Project operation as the direct spending ripples through the economy would also produce sales tax revenue. Some offsetting revenue reductions may occur from displaced spending related to lost agricultural production. The net effect would be neutral to positive for County revenues depending on how much new spending occurs locally. **Annual sales tax impacts** for state and local governments are estimated to total $1.8 million.

Under Option 1, Option 2, and the Alternate Hydrogen, the only covered enclosed space would be associated with operation and maintenance buildings. These structures total about 18,400 square feet. At the $0.78 per square foot rate potentially assessed on covered enclosed space, the **one-time school impact fee payment** to the school district would be about $14,000. The actual determination would be made by the office issuing the building permit. The payment of the fee to the school district would be made in compliance with Education Code section 17620 (Office of Public School Construction, 2023).

Operation of the Project could result in an **increase in property tax revenue collections** through change in status of agricultural lands through the Williamson Act and potentially through assessment of improvement value of Project components (some of which may be partially tax-exempt), although too many uncertainties exist to quantify the expected increase and when it would occur.

Table 26 Fiscal Impacts of the Project

Impact	Property Tax	Sales Tax[1]	School Impact Fee[2]
Total Option 1			
Construction 18-Mo	Not Calculated (Positive)	$33.9M	N/A
Construction 36-Mo		$33.6M	N/A
Operation		$1,800,000/yr	$14,000 (one-time)
Agricultural production		Small Loss	N/A

Impact	Property Tax	Sales Tax[1]	School Impact Fee[2]
Total Option 2			
Construction 18-Mo	Not Calculated (Positive)	$33.5M	N/A
Construction 36-Mo		$33.2M	N/A
Operation		$1,800,000/yr	$14,000 (one-time)
Agricultural production		Small Loss	N/A
Total Alternate Green Hydrogen			
Construction 18-Mo	Not Calculated (Positive)	$33.8M	N/A
Construction 36-Mo		$33.5M	N/A
Operation		$1,800,000/yr	$14,000 (one-time)
Agricultural production		Small Loss	N/A

Source: 1/ IMPLAN 2021, 2/ ECONorthwest Analysis

K. Public Services and Facilities

Impact SOC-8 PUBLIC SERVICES AND FACILITIES

Criteria:	**Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services: fire protection, police protection, schools, parks; and/or other public facilities?**

Solar Facility, Step-Up Substation, and Gen-Tie

Construction

Construction of the Solar Facility, Step-Up Substation, and Gen-Tie under Option 1, Option 2, and the Alternate Hydrogen Option could result in increased demand on law enforcement, fire protection, and EMS services. It would not result in any adverse impacts on schools or other public facilities. The increased concentration of workers in western Fresno County required to construct the Solar Facility, Step-Up Substation, and Gen-Tie under Option 1, Option 2, and the Alternate Hydrogen Option would increase the risk of emergency incidents requiring public safety or medical attention and likely would increase the frequency of responses to the Project site. The number of workers commuting to the Project site may also increase the risk of traffic accidents and other travel and transportation issues on the rural roads of western Freson County. Emergency response to the Project site—located in a relatively remote part of western Fresno County—would increase demand on County Sheriff resources, which are already operating at or beyond full capacity. The Project site is also located in one of the lowest-coverage zones for fire protection in the county: both Battalions 14 and 15 are centered away from the Project area, with no fire station near Cantua Creek. This means calls to the site would draw resources away from other emergencies for longer periods because travel times to the site and transport to medical facilities if needed would be greater.

Operation

Operation of the Solar Facility, Step-Up Substation, and Gen-Tie under Option 1, Option 2, and the Alternate Hydrogen Option could result in increased demand on law enforcement, fire protection, and EMS services. It would not result in any adverse impacts on schools or other public facilities. Once constructed, the facility could potentially increase demand for law enforcement, fire protection, and EMS services through increased risk of trespass, vandalism, and theft compared to current land uses. Similar facilities in Fresno County attract people looking for metal and other valuable materials to sell. Sometimes trespass and theft can lead to accidents, injuries, and fire. Though infrequent, these incidents could require both law enforcement and medical response. The impact to public services could be mitigated somewhat by implementing a private security system with active surveillance (either on-site or by video) with which local law enforcement can integrate and coordinate response and deterrent measures. Implementing and maintaining site design, vegetation management practices and security best practices can reduce the risk of fire and trespass and increase the ability of first responders to respond to incidences. This would minimize demand for local Sheriff, fire, and EMS providers and preserve their capacity to respond to other emergencies.

BESS

Construction

Construction of the BESS under Option 1, Option 2, and the Alternate Hydrogen Option could result in increased demand on law enforcement, fire protection, and EMS services. It would not result in any adverse impacts on schools or other public facilities. The increased concentration of workers in western Fresno County required to construct the BESS under Option 1, Option 2, and the Alternate Hydrogen Option would increase the risk of emergency incidents requiring public safety or medical attention and likely would increase the frequency of responses to the Project site, as described above.

Operation

Operation of the BESS under Option 1, Option 2, and the Alternate Hydrogen Option could result in increased demand on law enforcement, fire protection, and EMS services. It would not result in any adverse impacts on schools or other public facilities. Once constructed, the BESS would increase the risk of fire compared to existing land use conditions. Similar facilities elsewhere in the county have experienced fires, which may require multiple fire resources and personnel. Fire response is already limited with longer response times than other locations in the county, which could reduce the effectiveness of response to a fire at the Project site and increase response times for other emergencies.

Green Hydrogen

Construction

Construction of the Green Hydrogen component under Option 1, Option 2, and the Alternate Hydrogen Option could result in increased demand on law enforcement, fire protection, and EMS services. It would not result in any adverse impacts on schools or other public facilities. The increased concentration of workers in western Fresno County required to construct the Green Hydrogen component under Option 1, Option 2, and the Alternate Hydrogen Option would increase

the risk of emergency incidents requiring public safety or medical attention and likely would increase the frequency of responses to the Project site, as described above.

Operation

Operation of the Green Hydrogen component under Option 1, Option 2, and the Alternate Hydrogen Option could result in increased demand on law enforcement, fire protection, and EMS services. It would not result in any adverse impacts on schools or other public facilities. Once constructed, local fire and law enforcement responders would need to become familiar with the risks and procedures needed to respond to potential emergencies at the Green Hydrogen facility, which could require additional training. This would likely represent a small impact for departments already stretched thin from a resource perspective (particularly the County Sheriff). The actual risk of an emergency event—natural or human-caused (e.g., terrorism)—is likely very low, but still higher than the existing land use and should they occur could draw resources away from responding to other emergencies.

These risks would be mitigated somewhat as the Project owner would develop a fire protection policy for the Hydrogen Electrolyzer Facility, considering the initial and final design, layout, and equipment required for the construction and operation of the Project. The policy would include a Project-specific strategy for fire prevention and protection, fire and gas detection, and personal safety. A related fire response plan would document how fire protection systems outlined in the strategy would be implemented with the support of the local fire department.

Utility Switchyard

Construction

Construction of the Utility Switchyard component under Option 1, Option 2, and the Alternate Hydrogen Option could result in increased demand on law enforcement, fire protection, and EMS services. It would not result in any adverse impacts on schools or other public facilities. The increased concentration of workers in western Fresno County required to construct the Green Hydrogen component under Option 1, Option 2, and the Alternate Hydrogen Option would increase the risk of emergency incidents requiring public safety or medical attention and likely would increase the frequency of responses to the project site, as described above.

Operation

Operation of the Green Hydrogen component under Option 1, Option 2, and the Alternate Hydrogen Option could result in increased demand on law enforcement, fire protection, and EMS services. It would not result in any adverse impacts on schools or other public facilities. Once constructed, the facility could potentially increase demand for law enforcement, fire protection, and EMS services through increased risk of trespass, vandalism, and theft compared to current land uses. This would have a similar effect on response times and incident management at the project site, as described for the other components described above.

Overall Project

Construction

Construction of the Project under Option 1, Option 2, and the Alternate Hydrogen Option could result in increased demand on law enforcement, fire protection, and EMS services. It would not

result in any adverse impacts on schools or other public facilities. The increased concentration of workers in western Fresno County required to construct the Project would increase the risk of emergency incidents requiring public safety or medical attention and likely would increase the frequency of responses to the Project site. The number of workers commuting to the Project site may also increase the risk of traffic accidents and other travel and transportation issues on the rural roads of western Freson County. Emergency response to the Project site—located in a relatively remote part of western Fresno County—would increase demand on County Sheriff resources, which are already operating at or beyond full capacity. Traffic issues are particularly pronounced during the winter months when the likelihood of road washout from storms and other natural hazards increases. The Sheriff's Office does not currently have the capacity to respond to increased traffic-related incidents in the region, which may require increased response from Highway Patrol or other law enforcement and emergency management agencies.

The Project site is also located in one of the lowest-coverage zones for fire protection in the county: both Battalions 14 and 15 are centered away from the Project area, with no fire station near Cantua Creek. This means calls to the site would draw resources away from other emergencies for longer periods because travel times to the site and transport to medical facilities if needed would be greater.

Impacts could be mitigated somewhat through pre-construction coordination with emergency responders and detailed transportation planning to minimize traffic concerns arising from workers commuting to the Project site and develop emergency plans during storm or flood conditions that could occur during the construction period.

Operation

Operation of the Project under Option 1, Option 2, and the Alternate Hydrogen Option could result in increased demand on law enforcement, fire protection, and EMS services. It would not result in any adverse impacts on schools or other public facilities. Once constructed, the Project could potentially increase demand for law enforcement, fire protection, and EMS services through increased risk of trespass, vandalism, and theft compared to current land uses. Similar facilities in Fresno County attract people looking for metal and other valuable materials to sell. Sometimes trespass and theft can lead to accidents, injuries, and fire that require both law enforcement and medical response. Additional demands on first responders may come from an increased need for specialized training to understand risks and protocols to respond to risks posed by new technologies.

The impact to public services could be mitigated somewhat by implementing a private security system with active surveillance (either on-site or by video) with which local law enforcement can integrate and coordinate response and deterrent measures. Implementing and maintaining site design, vegetation management practices and security best practices can reduce the risk of fire and trespass and increase the ability of first responders to respond to incidences. This minimizes demand on local Sheriff, fire, and EMS providers and maintains their ability to respond to other emergencies.

L. Utilities

Impact SOC-9 UTILITIES

Criteria:	Would the project impose additional costs on utilities or change capacity or service levels for existing or future customers of gas, water, wastewater, or solid waste?

Solar Facility, Step-Up Substation, and Gen-Tie

Construction

Construction of the Solar Facility, Step-Up Substation, and Gen-Tie under Option 1, Option 2, and the Alternate Hydrogen Option would not result in adverse impacts to utilities. The Solar Facility, Step-Up Substation, and Gen-Tie would not require or rely on gas, municipal water, or wastewater services. Construction waste would be adequately handled at appropriate local facilities.

Operation

Operation of the Solar Facility, Step-Up Substation, and Gen-Tie under Option 1, Option 2, and the Alternate Hydrogen Option would not result in adverse impacts to utilities. Once constructed, the facility would not be connected to gas service. Domestic water and wastewater would be provided to the operations building and any on-site employees through on-site resources.

BESS

Construction

Construction of the BESS under Option 1, Option 2, and the Alternate Hydrogen Option would not result in adverse impacts to utilities. The BESS would not require or rely on gas, municipal water, or wastewater services. Construction waste would be adequately handled at appropriate local facilities.

Operation

Operation of the BESS under Option 1, Option 2, and the Alternate Hydrogen Option would not result in adverse impacts to utilities. The BESS would not require or rely on gas, municipal water, or wastewater services.

Green Hydrogen

Construction

Construction of the Green Hydrogen component under Option 1, Option 2, and the Alternate Hydrogen Option would not result in adverse impacts to utilities. The Green Hydrogen component would not require or rely on gas, municipal water, or wastewater services. Construction waste would be adequately handled at appropriate local facilities.

Operation

Operation of the Green Hydrogen component under Option 1, Option 2, and the Alternate Hydrogen Option would not result in adverse impacts to utilities. The Green Hydrogen component would not be connected to gas service. Water and wastewater processing would be required for

operation. A water sources has yet to be identified, so a full evaluation of potential impacts of water use and disposal is not possible, although the source and disposal mechanism will not be a municipal water or wastewater system.

Utility Switchyard

Construction

Construction of the Utility Switchyard under Option 1, Option 2, and the Alternate Hydrogen Option would not result in adverse impacts to utilities. The Utility Switchyard would not require or rely on gas, municipal water, or wastewater services. Construction waste would be adequately handled at appropriate local facilities.

Operation

Operation of the Utility Switchyard under Option 1, Option 2, and the Alternate Hydrogen Option would not result in adverse impacts to utilities. The Utility Switchyard would not require or rely on gas, municipal water, or wastewater services.

Overall Project

Construction

Construction of the Project under Option 1, Option 2, and the Alternate Hydrogen Option would not result in adverse impacts to utilities. The Project would not be connected to natural gas, municipal water, or wastewater services during construction. All domestic wastewater would be processed onsite through septic or transported from the site in porta-potties. Construction waste would be adequately handled at appropriate local facilities. Thus, it is unlikely the Project would have any effect—positive or negative—on utility services providers.

Operation

Operation of the Project under Option 1, Option 2, and the Alternate Hydrogen Option would not result in adverse impacts to utilities. The Project would not require or rely on gas, municipal water, or wastewater services. Water and wastewater processing would be required for the Green Hydrogen component operation. A water sources has yet to be identified, so a full evaluation of potential impacts of water use and disposal is not possible, although the source and disposal mechanism will not be a municipal water or wastewater system.

M. Community Character

Impact SOC-10 COMMUNITY CHARACTER

Criteria:	**Would the project change the character of nearby local communities or affect the ability of the local population to address its needs?** **Would the project create a substantial change in community interaction patterns, social organization, social structures, or social institutions; substantial conflict with community attitudes, values, or perceptions; or substantial inequities in the distribution of the costs and benefits?** ***Note: These broad impacts are discussed for the Project as a whole only rather than by component because they are unlikely to vary by component*.**

Overall Project

Construction

Construction of the Project under Option 1, Option 2, and the Alternate Hydrogen Option could result in temporary changes—both beneficial and adverse—to community character. The peak workforce present on site would represent a substantial proportion of the resident population surrounding the Project site (see population discussion above). This population could result in increased disruption and traffic, which could adversely affect nearby residents. However, the region is already accustomed to significant population fluctuations from migratory agricultural workers, so the effect of the influx of workers may not be as dramatic as it could be in other places with a more consistent population. Project workers may also purchase goods and services in the local communities, resulting in beneficial impacts for nearby residents and businesses.

The CEC application requires the Project developer to develop a Community Benefits Agreement, which would outline a plan to invest financial resources in the region for the benefit of the local population. The scope and scale of this agreement is still under development and potential beneficiaries have not yet been identified. However, leading up to and during construction the Project would invest in resources that community leaders, in collaboration with the Project developer, identify as priority needs that could contribute to enhanced community character and quality of life for residents.

Operation

Operation of the Project under Option 1, Option 2, and the Alternate Hydrogen Option could result in changes—both beneficial and adverse—to community character. The Solar PV components would represent a change to the landscape which some people may perceive as positive while others see it as a cost arising from loss of rural and undeveloped character.

The CEC application requires the Project developer to develop a Community Benefits Agreement, which would outline a plan to invest financial resources in the region for the benefit of the local population. The scope and scale of this agreement is still under development and potential beneficiaries have not yet been identified. However, leading up to and during construction the Project would invest in resources that community leaders, in collaboration with the Project

developer, identify as priority needs that could contribute to enhanced community character and quality of life for residents.

4. Cumulative Impacts

The impact analysis highlights that most of the Project's impacts would be beneficial to the local economy, or neutral to very small as a share of total economic activity in the case of economic changes related to lost agricultural production. Population and housing effects, while insignificant at the scale of the study area and 60-mile commute area, could put extra pressure on already scarce housing resources in the communities closest to the Project site. **Other construction projects that require non-local labor and occur at the same time as the project are likely to produce adverse cumulative effects on temporary housing resources in western Fresno County.** This includes several energy production projects within 15 miles of the Project in western Fresno County. As with demands on housing, construction projects in western Fresno County that occur at the same time as this Project are **likely to produce adverse cumulative impacts on response times for emergency responders.** Projects not under construction at the same time are unlikely to produce cumulative impacts related to the construction labor force. These potential cumulative impacts should be assessed as more information about project timing (for this and other projects) becomes available and potential impacts discussed with public safety providers in the region.

The energy projects also in development in western Fresno County are likely to attract vandalism, trespass, and other issues that law enforcement and emergency responders must attend to; these incidences have increased in recent years at already-existing solar projects in the County. **Coordination and ongoing monitoring and security response for each of these facilities is likely to contribute to cumulative adverse impacts on the Fresno County Sheriff's office**, which is already operating at or over capacity (requiring mandatory overtime of existing staff). Without additional fiscal resources to hire new officers to patrol and coordinate security surveillance of these facilities, these demands may result in increased response times for other types of emergencies in the County. These potential cumulative impacts should be discussed with public safety providers in the region to identify potential opportunities to reduce demands on law enforcement. This may include additional investments in private security and ongoing coordination with local law enforcement officers.

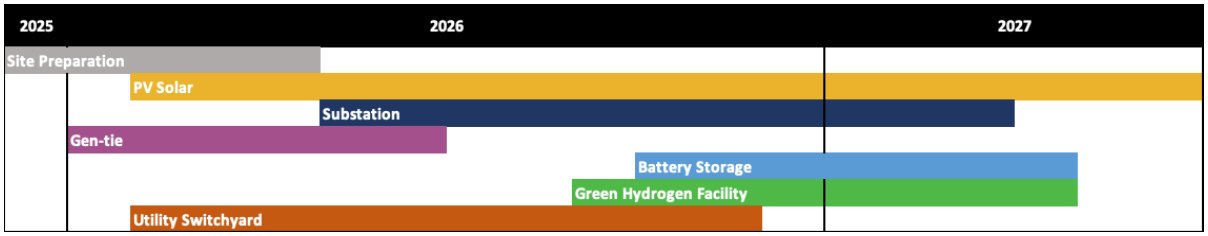
5. Appendix A Local Worker Availability Analysis

Project Labor Demand

ECONorthwest staff worked with IP Darden to translate preliminary Project development plans into categories of required labor by occupation and quantities of labor by occupation over the Project timeline. The labor estimates and potential construction timelines were based on experience from previous Intersect Power projects. The construction schedule and labor workforce will be refined by IP Darden and the selected Engineering, Procurement and Construction (EPC) firm for the Project. As noted in the Project description, IP Darden anticipates constructing the Project over an 18-month period or a 36-month period. Each Project component can be conceptualized as a single project requiring a similar labor arrangement. Figure 6 and Figure 7 show the distribution of total workers across construction years by component for 18-month and 36-month construction periods, respectively. For this analysis, labor demand estimates are developed separately for the PV solar energy generation facility; step-up substation; gen-tie; battery energy storage system (BESS); green

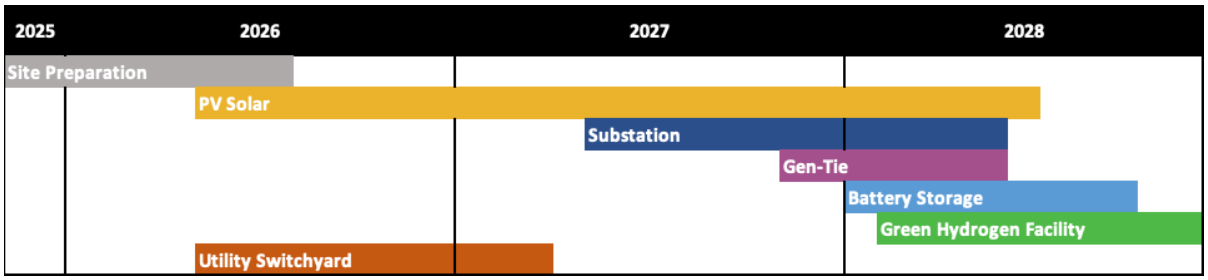
hydrogen facility; and utility switchyard, with combined totals provided to illustrate peak workforce if all components of the Project are developed.

Figure 6 Construction Timeline, 18-month



Source: IP Darden, 2023

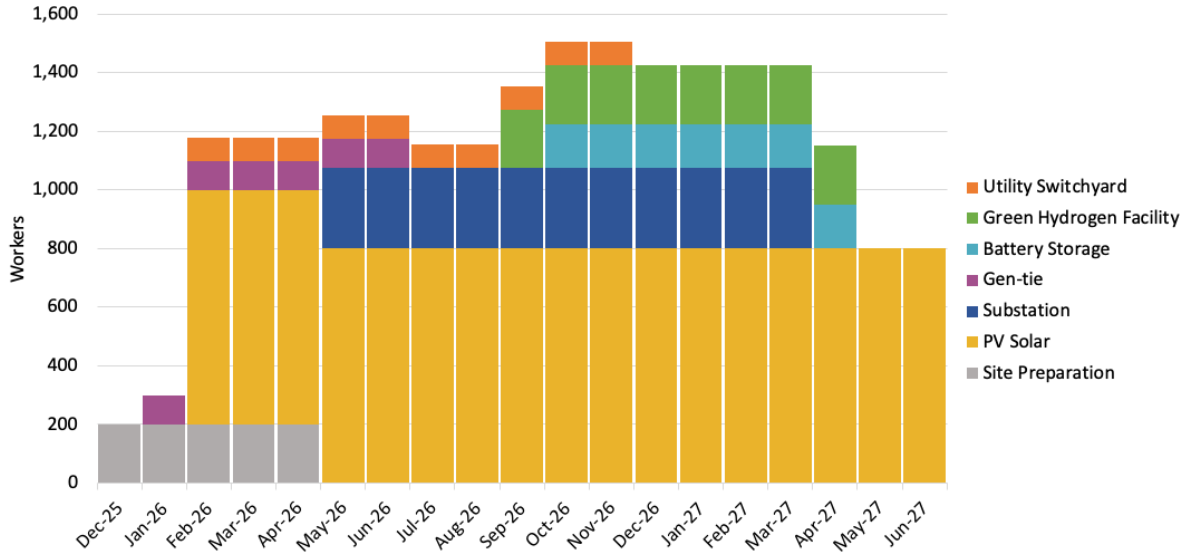
Figure 7 Construction Timeline, 36-month



Source: IP Darden, 2023

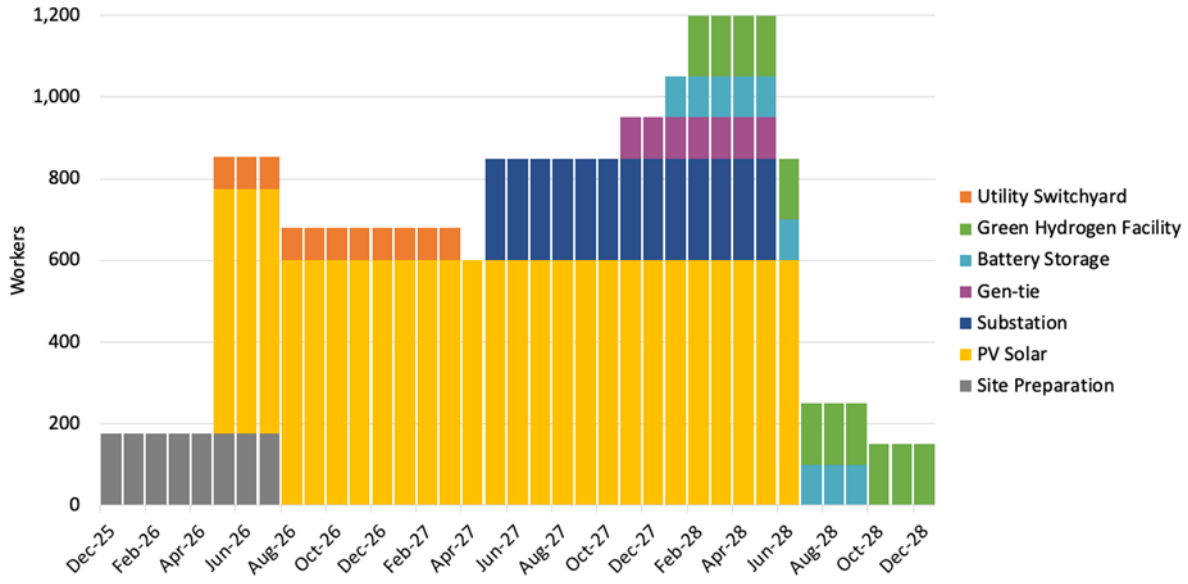
The construction of a PV solar energy generation and support facilities relies on a mix of skilled and unskilled labor (US Bureau of Labor Statistics, N.D.). Much of the construction and installation of PV solar, green hydrogen, and support facilities are completed by general construction workers. However, civil engineers, electricians, and specialty construction equipment operators must be employed to handle the more complex and specialized tasks in the construction process. Additionally, surveyors, health and safety specialists, and construction managers are employed to ensure the quality of construction and installation. Each of these occupations are required in certain quantities at certain times during the construction timeline. The construction-worker curve for the 18-month period exhibits a bell-shaped distribution, with labor peaking near the middle of the construction timeline. The 18-month construction scenario employs a higher number of workers than the 36-month scenario in almost every month, thus creating a more leveled curve. In the 36-month scenario, the construction worker curve is skewed towards later stages of the timeline, with construction peaking between late 2027 and mid-2028. As specific tasks of a phase are completed, the same workers may shift to the next phase of the Project. The same workers may also shift across Project tasks within a phase; for instance, construction laborers may move from excavation to pile driving to concrete pouring as Project development moves through each task. Figure 8 shows the 18-month construction timeline scenario and Figure 9 shows the 36-month construction timeline scenario.

Figure 8 Construction Workers by Component, 18-Month Timeline



Source: IP Darden , 2023

Figure 9 Construction Workers by Component, 36-Month Timeline



Source: IP Darden, 2023

Table 27 and Table 28 show Project labor demand across the 18-month and 36-month construction periods, respectively, focusing on estimated workforce demand by occupation. Project Total (FTE[10]) represents the total worker-years of employment the Project would generate. Some workers would be the same from year to year, others may be present for only part of a year, so this number does not represent total employees. Project Average represents the average number of workers needed across the two-year construction period. The peak workers in an occupation represent the largest number of total workers needed at the same time across Project phases. Comparing average to

[10] Each FTE job equates to one full-time job for one year or 2,080-hour units of labor. Part-time or temporary jobs constitute a fraction of a job. For example, if an engineer works just 3 months on a solar project, that would be considered one-quarter of an FTE job.

peak labor demand shows that some labor categories are required in greater amounts for a short period of time while some labor categories provide sustained employment at more consistent levels throughout the Project construction period.

In both scenarios, electricians comprise nearly a third of the Project workforce, representing more workers than any other listed occupation. Construction laborers and iron workers make up other large labor categories. Construction laborers represent approximately 17 percent of the Project workforce in the 18-month scenario and 16 percent in the 36-month scenario. Iron Workers represent about 17 percent of the Project workforce in both the 18-month scenario and the 36-month scenario. Across the 18-month construction period, the Project would require 1,805 FTEs, with most workers needed between October and November 2026. Across the 36-month construction period, the Project would require 2,032 FTEs, with most workers needed between February and June of 2028. Although the 36-month construction period scenario would require more total FTEs, Project peak FTEs would be lower than in the 18-month scenario because workers would be employed over a longer period. In both scenarios, the distribution of workers by occupation would be roughly the same.

Table 27 Project Labor Demand, 18-Month Construction Timeline

Occupation	Project Total (FTE)	Project Annual Average	Project Peak
Electricians	572	361	484
Construction Equipment Operators	236	149	192
Paving Operators	17	11	26
Iron Workers	305	192	256
Construction Laborers	311	196	257
Surveyors	37	23	36
Craft Supervision	69	44	59
Construction Management	60	38	49
Administrative Assistant	8	5	8
Power Line Installers	50	32	65
Civil Engineers	6	4	6
Concrete Finishers	58	37	53
Construction Inspector/Engineers	39	25	38
Health and Safety Specialists	39	25	39
Total Project Workers	**1,805**	**1,141**	**1,566**

Source: IP Darden. ECONorthwest Analysis, 2023

Table 28 Project Labor Demand, 36-Month Construction Timeline

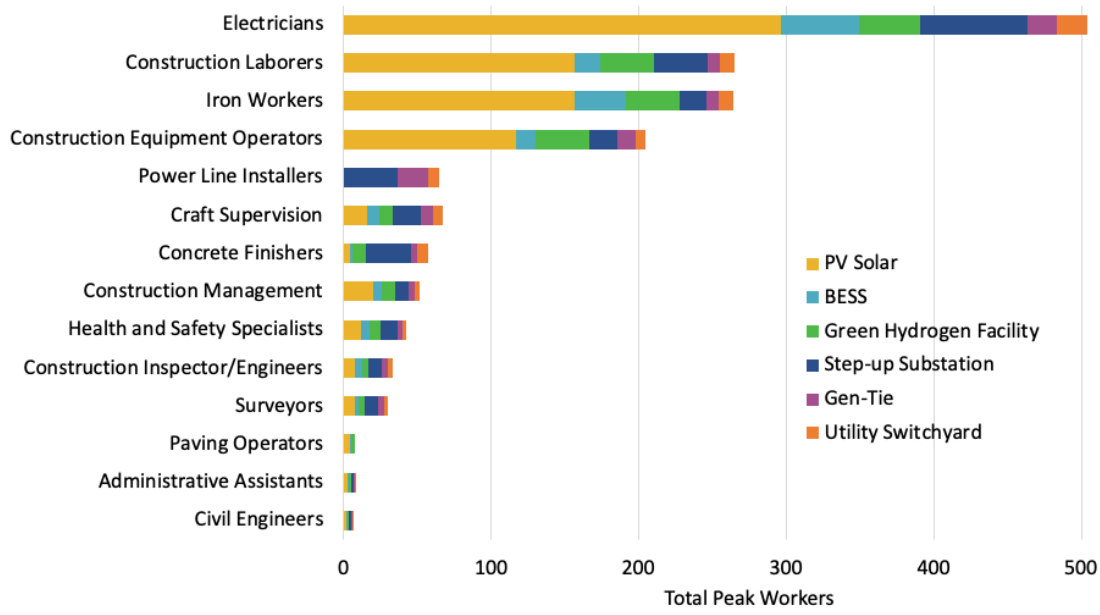
Occupation	Project Total (FTE)	Project Annual Average	Project Peak
Electricians	617	200	373
Construction Equipment Operators	240	78	129
Paving Operators	20	6	22
Iron Workers	347	112	177
Construction Laborers	324	105	183
Surveyors	49	16	30

Occupation	Project Total (FTE)	Project Annual Average	Project Peak
Craft Supervision	92	30	59
Construction Management	78	25	51
Administrative Assistant	10	3	8
Power Line Installers	61	20	59
Civil Engineers	8	3	7
Concrete Finishers	80	26	53
Construction Inspector/Engineers	55	18	34
Health and Safety Specialists	51	16	37
Total Project Workers	**2,032**	**659**	**1,221**

Source: IP Darden. ECONorthwest Analysis, 2023

In Figure 10, the peak number of workers by component represents the distribution of labor demanded in each occupation. Peak demand for electricians is mostly driven by PV solar and BESS components, while the demand for power-line installers is driven by the step-up substation and gen-tie components. The labor demanded in each occupation over the construction period peaks in a different month for each component. Due to the condensed timeline of the 18-month construction period, the peak number of workers in nearly every occupation is greater than in the 36-month construction period. However, distribution of peak labor demand by component and occupation is roughly the same across both timelines.

Figure 10 Peak Labor Demand by Component and Occupation, 18-Month Construction



Local Labor Supply

Commuting patterns of the type of workers needed for the Project help to reveal the regional labor market from which workers would be supplied. To estimate willingness to travel for workers who live in the surrounding region, we computed the average drive time to work for the types of workers

the Project would demand the most: construction laborers, electricians, and construction equipment operators. Table 29 presents commuting times to work for the selected occupations across Fresno, Madera, and Kings counties. About 46 percent of workers in these occupations commute 30 minutes or longer, with construction laborers and equipment operators generally commuting longer times than electricians. Approximately 50 percent of workers commute 30 minutes or shorter to their job site, another 40 percent commute between 30 and 60 minutes, and 10 percent commute over an hour. (US Census Bureau, 2021c).

Table 29 Commuting Time to Work for Selected Professions

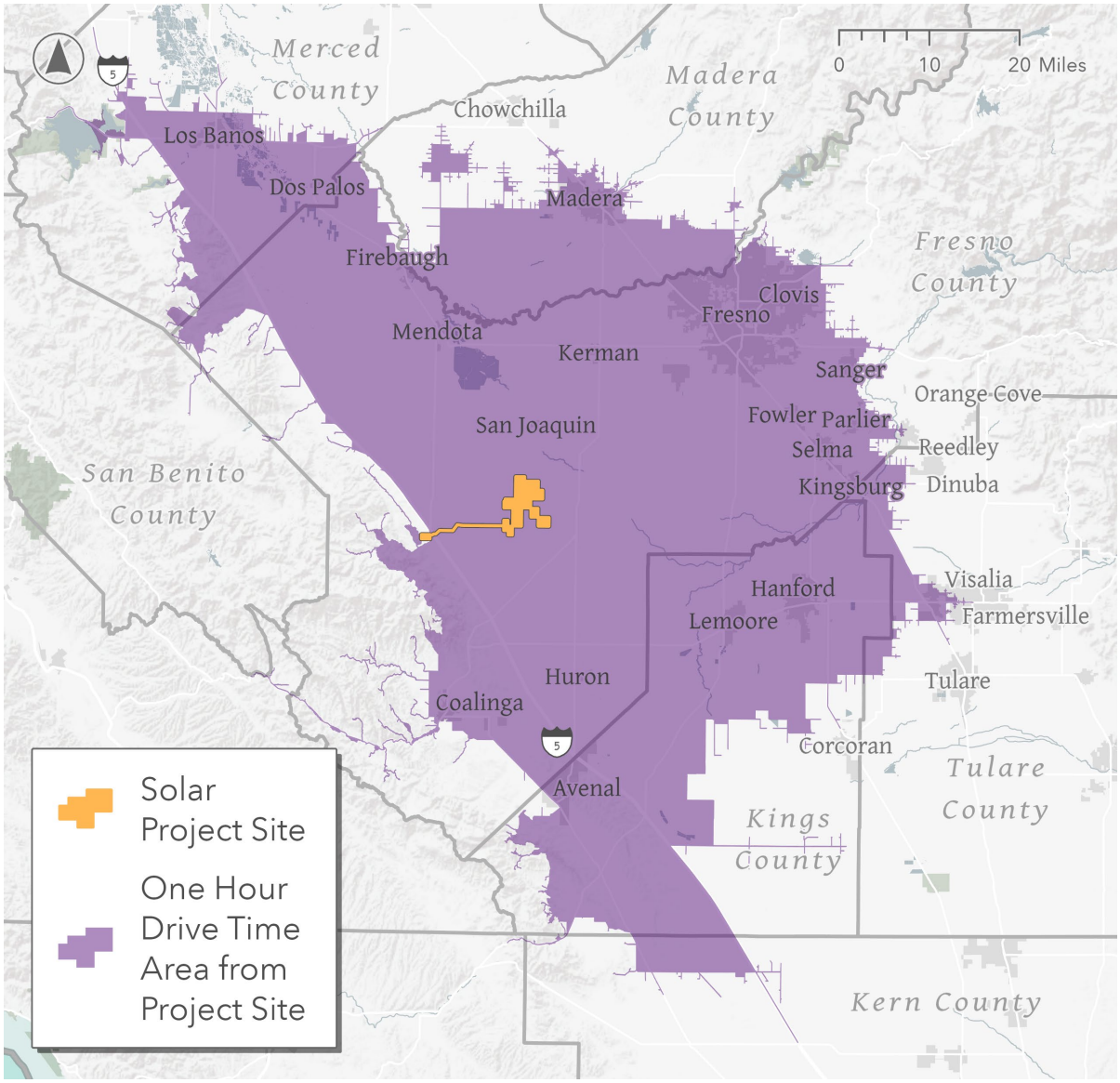
	Construction Workers	Electricians	Equipment Operators	Average
0 to 29 minutes	56%	49%	46%	50%
30 to 60 minutes	33%	46%	40%	40%
Over 60 minutes	11%	6%	14%	10%
30 minute +	44%	51%	54%	50%

Source: (US Census Bureau, 2021c)

The one-hour commuting perimeter around the Project site (i.e., the Project area) is depicted in Figure 11. The study area includes portions of Fresno, Madera, and Kings counties as well as Kern, Tulare, and Merced counties. Within these counties, much of the population is concentrated in the cities of Fresno, Madera, Clovis, and Hanford. These data suggest that defining a labor-market geography with a drive time of 60 minutes to the Project site is reasonable in this region for the types of workers that the Project would employ. This distance encompasses Fresno, Kings, and Madera counties, as shown in Figure 11.[11]

[11] The 60-minute drive time shown in Figure 11 also includes small portions of Merced, Tulare, and Kern counties. We have excluded these counties from the analysis because they have much smaller populations of workers.

Figure 11 One-Hour Drive Time from Project Site



Source: ESRI, 2023

Within the labor market geography defined in Figure 11, the Bureau of Labor Statistics (BLS) Occupational, Employment, and Wage Statistics (OEWS) Survey collects employment data for the Fresno, Hanford-Corcoran, and Madera MSAs. The regional employment across occupations needed for the Project totaled 15,730 in 2022. Administrative Assistants comprise the highest share of employment in the region, but a low share of the labor needed for the Project. The regional supply of construction laborers, electricians, and construction equipment operators, some of the most demanded occupations for the Project, comprise a relatively high share of the employment. The Fresno, MSA contributes the highest number of workers to each occupation and represents 87 percent of the total (Table 30).

Table 30 Regional Employment by Occupation

Occupation	Fresno, MSA	Hanford-Corcoran, MSA	Madera, MSA	Region Total
Administrative Assistants	3,620	340	410	4,370
Construction Laborers	2,270	130	240	2,640
Electricians	1,690	100	130	1,920
Craft Supervision	1,570	90	140	1,800
Construction Equipment Operators	900	60	130	1,090
Construction Management	930	40	80	1,050
Civil Engineers	1,000	ND	50	1,050
Concrete Finishers	700	40	50	790
Construction Inspector/Engineers	280	ND	50	330
Health and Safety Specialists	230	ND	30	260
Power Line Installers	160	ND	ND	160
Surveyors	120	ND	ND	120
Iron Workers	110	ND	ND	110
Paving Operators	40	ND	ND	40
Total Labor Supply	**13,620**	**800**	**1,310**	**15,730**

Note: ND: Not disclosed due to confidentiality of data.

Source: (US Bureau of Labor Statistics, 2022)

Workforce Availability

The previous sections provide information about how much labor the Project would require, and how much labor is available within a reasonable commuting time to the Project site. A simple comparison of the data for the 18-month construction scenario (Table 31) indicates that workers in some occupations (e.g., civil engineers and administrative assistants) could be readily hired locally because the Project only requires a few and the labor pool is comparatively large. For other occupations, particularly electricians, iron workers, construction equipment operators, and construction laborers, it is likely that a portion of these workers would come from outside the local area. Although there are more workers available in every occupation in the region than the Project would employ (i.e., no occupation exceeds 100 percent of the region's employment), it is unlikely this Project would draw as many as are required away from other job opportunities. The occupations that are sourced non-locally are the same in both the 18-month and 36-month construction periods. However, peak labor demand in the extended timeline is lower than in the condensed timeline. Thus, the peak workers in the 36-month scenario comprise a smaller share of total regional employment for each occupation.

Specifically, Table 31 is divided into the components and shows a combined total assuming they happen simultaneously within each phase. In each of these categories it shows the estimated number of workers construction activities would employ at the "peak demand" as a share of the regional employment for each occupation when the most workers would be needed simultaneously as multiple phases overlap (based on planning-level information available in August 2023, subject to change). The shading in the table highlights where the percent of Project labor demand exceeds certain thresholds. The dark orange shows Project demand exceeding 10 percent of available labor. Light orange shows demand between 6.4 percent—the current unemployment rate for Fresno

County where more than half of the regional workforce (87 percent, as shown in Table 31) is centered—and 10 percent. Green indicates less than the unemployment rate of 6.4 percent.

Table 31 Peak Labor Demand as Share of Regional Employment, 18-month Period

Occupation Title	Solar PV	BESS	Hydrogen generator	Substation	Gen-tie easement	Switching station	Total
Electricians	15.4%	2.8%	2.1%	3.8%	1.0%	1.0%	25.2%
Construction Equipment Operators	10.7%	1.2%	3.3%	1.7%	1.1%	0.6%	17.6%
Paving Operators	9.8%	2.2%	6.8%	0.0%	0.0%	0.0%	65.3%
Iron Workers	141.9%	32.1%	33.1%	16.7%	7.6%	9.1%	232.8%
Construction Laborers	5.9%	0.7%	1.4%	1.4%	0.3%	0.4%	9.7%
Surveyors	6.5%	1.5%	3.8%	7.6%	3.5%	1.7%	30.2%
Craft Supervision	0.9%	0.5%	0.5%	1.0%	0.5%	0.4%	3.3%
Construction Management	1.9%	0.6%	0.9%	0.9%	0.4%	0.3%	4.7%
Administrative Assistants	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%
Power Line Installers	0.0%	0.0%	0.0%	22.9%	13.0%	4.6%	40.5%
Civil Engineers	0.1%	0.1%	0.1%	0.2%	0.1%	0.1%	0.6%
Concrete Finishers	0.5%	0.2%	1.2%	3.9%	0.5%	0.8%	6.7%
Construction Inspector/Engineers	2.4%	1.3%	1.4%	2.8%	1.3%	1.0%	11.4%
Health and Safety Specialists	4.5%	2.0%	3.1%	4.2%	1.3%	1.0%	14.9%

Source: IP Darden, 2023; BLS, OEWS, 2022.

Renewable projects have often been criticized for promising local employment but recruiting most workers from out of state. Limited research is available documenting these hiring patterns, but anecdotally, solar projects tend to hire greater percentages of local workers compared to wind projects because wind projects tend to require workers with more specialized skills than solar projects (Fabra, Lacuesta, Gutierrez, & Ramos, 2023). Because we can't characterize most of the factors discussed above, we must make some assumptions to estimate the likely share of local workforce availability.

- For all occupations with average shares below the unemployment rate (cells in green Table 31) we assume the Project would be able to hire sufficient workers locally **to fill all (100 percent of) positions** throughout the construction period.
- For occupations above the unemployment rate (6.4 percent) but below 10 percent of the average regional total, we assume the Project could have sufficient influence to hire upwards of 100 percent if managers provide sufficient incentives, given the lower numbers needed in these occupation categories, but assume **75 percent would be hired locally** to provide a conservative estimate.
- For occupations above 10 percent of the average regional total, we assume the Project could hire a substantial number from the local region with sufficient incentives, but not 100 percent given the high numbers of workers needed and the tight labor market in construction in this region. In this case, we assume **50 percent would come from the local area**.

Table 32 shows the result of applying these assumptions to the Project workforce. The share of local versus non-local may shift toward local as the total workers needed fluctuates below this peak. With this methodology, the local share of the total workforce is 50 percent for the highest demanded occupations for the Project, such as electricians, specialized construction occupations, and power-line installers.

Table 32 High Estimate of Non-Local Workforce by Occupation, 18-Month Period

Occupation Title	Share Local	Peak Local Workforce	Peak Non-Local Workforce
Electricians	50%	242	242
Construction Equipment Operators	50%	96	96
Paving Operators	50%	13	13
Iron Workers	50%	128	128
Construction Laborers	75%	193	64
Surveyors	50%	18	18
Craft Supervision	100%	59	-
Construction Management	100%	49	-
Administrative Assistants	100%	8	-
Power Line Installers	50%	32	32
Civil Engineers	100%	6	-
Concrete Finishers	75%	39	13
Construction Inspector/Engineers	50%	19	19
Health and Safety Specialists	50%	19	19
Total by Occupation		**921**	**645**

Source: ECONorthwest analysis, 2023

We do not include equivalent data tables for the 36-month timeline as the influx of Project workers anticipated for this scenario would be spread out over a longer timeframe. The extended timeline would therefore put less pressure on the region's workforce as compared with the concentrated pressure anticipated over a shorter construction period.

Multiple factors influence local worker availability beyond the number of workers in an occupation within a certain geography—though this element is an appropriate starting point. Factors including compensation, benefits and perks, licensing requirements, working conditions, competing opportunities, and overall economic conditions all influence workers' decisions to take one job over another (or do something else entirely). A potential employer has influence over some of these factors (e.g., compensation), while others it has limited to no influence over (e.g., competing opportunities, general economic conditions).

Given the uncertainty of the estimates above and additional information drawn from IP Darden's experience on previous projects and current project planning efforts that include preliminary labor negotiations, ECONorthwest determined it would be appropriate to provide a lower-bound estimate for non-local workers. This lower bound assumes a much higher share of local workers would be attracted to the project. Only construction management, administrative assistants, civil engineers, and health and safety specialists would be employed almost entirely from outside of the region.

Table 33 Low Estimate of Non-Local Workers by Occupation, 18-Month Period

Occupation Title	Share Local	Peak Local Workforce	Peak Non-Local Workforce
Electricians	100%	484	-
Construction Equipment Operators	100%	192	-
Paving Operators	100%	27	-
Iron Workers	100%	256	-
Construction Laborers	100%	257	-
Surveyors	100%	37	-
Craft Supervision	100%	59	-
Construction Management	0%	-	47
Administrative Assistants	0%	-	8
Power Line Installers	100%	65	-
Civil Engineers	0%	-	6
Concrete Finishers	100%	53	-
Construction Inspector/Engineers	100%	39	-
Health and Safety Specialists	70%	28	11
Total by Occupation		**1,496**	**72**

Source: IP Darden, 2023

Table 32 and Table 33 and include low and high estimates of peak local versus non-local workers across the 18-month construction period. The low estimate of peak non-local workers across all occupations is 72 and the high estimate is 645. For the low estimate, peak non-local workforce comprises 5 percent of the total peak workforce. For the high estimate, peak non-local workforce comprises 41 percent of the total peak workforce. The non-local share of the peak workforce varies by component. For the low estimate of the peak non-local workforce, the Green Hydrogen Facility would require the highest non-local share of the peak workforce (8 percent) while PV Solar would require the lowest (3 percent). For the high estimate of the peak non-local workforce, the PV Solar would require the highest non-local share of the peak workforce (36 percent) due to the peak number of electricians needed for PV Solar. In comparison, the utility switchyard would require the lowest non-local share of the peak workforce (3 percent) due to a more evenly distributed utilization of workers across occupations.

For the 36-month scenario, the low estimate of peak non-local workers is similar at the low end—76 and somewhat lower at the high end—489. For the low estimate, peak non-local workforce comprises 6 percent of the total peak workforce, while the high estimate demands peak non-local workforce that comprise 40 percent of the total peak workforce. The share of local workers across occupations remains the same across the 18-month and 36-month construction timelines.

With the low and high estimate of the peak non-local workers, peak ***local*** workers total 1,146 for the low estimate and 731 for the high estimate.

For consistency throughout the document and to simplify the discussion, the low estimate of peak non-local workforce is used in the impact analysis. This estimate is used to evaluate impacts to population, housing, and economic and employment. Both analyses were run in case IP Darden's lower estimate of non-local employment is too optimistic and a higher share of non-local workers

would need to relocate to the area. ***The analysis indicates that impact conclusions would not change if the high estimate of non-local employment were used instead.***

6. Appendix B Project Economic and Employment Assumptions

Construction

Local and Non-Local Workforce

For the purposes of this analysis, IP Darden assumes that the Project would be constructed over an 18-month to 36-month period. The construction of a component can overlap the construction of another component. The analysis evaluates the estimated economic impacts of constructing each component. Capital costs and workforce employed for each component are aggregated and then modeled on an annual basis due to the modeling structure within IMPLAN. For the 18-month construction scenario, construction of all components is expected to occur January of 2026 through June 2027, with site prep beginning one month prior to the start of the PV Solar component. The 36-month construction scenario begins at the same time, but construction takes place through December 2028.

IP Darden estimates that the 18-month construction scenario would directly support approximately 1,806 full-time equivalent (FTE) employment.[12] The Project would require an estimated 1,726 local FTE and 80 FTE from outside of the study area (Fresno, Madera, and Kings Counties, see Appendix A for rationale of this study area), using IP Darden's assumptions about local worker availability and labor categories. If the labor market remains tight, more workers may need to come from outside the area. The construction workforce distribution would follow a bell-shaped curve, peaking near the middle of the construction period. Most of the workforce (68 percent) would be employed during 2026.

Table 34 Annual Construction Workforce, 18-Month Period

	2026		2027	
Component	Local Workers (FTEs)	Non-local Workers (FTEs)	Local Workers (FTEs)	Non-local Workers (FTEs)
PV Solar	721	26	386	14
BESS	48	3	47	3
Green Hydrogen Facility	75	6	62	5
Step-up Substation	187	11	65	4
Gen-Tie	60	4	0	0
Utility Switchyard	75	5	0	0
Total Workers (FTEs)	**1,166**	**55**	**560**	**25**

Source: IP Darden, 2023

Table shows on-site construction employment for the 36-month scenario would total 2,032 FTE, with an estimated 1,925 local FTE and 107 non-local FTE. [13] The construction workforce distribution

[12] FTE basis. Each FTE job equates to one full-time job for one year or 2,080-hour units of labor. Part-time or temporary jobs constitute a fraction of a job. For example, if an engineer works just 3 months on a solar project, that would be considered one-quarter of an FTE job. FTE in this section is higher than the number of individual *workers* reported in Appendix A (which is used primarily for the purpose of identifying impacts to population and housing). FTE is required for the analysis of economic and employment impacts using IMPLAN.

[13] FTE basis. Each FTE job equates to one full-time job for one year or 2,080-hour units of labor. Part-time or temporary jobs constitute a fraction of a job. For example, if an engineer works just 3 months on a solar project, that would be considered one-quarter of an FTE job.

is skewed toward the end of the construction period when the PV solar, step-up substation, gen-tie, BESS, and hydrogen facility construction overlap, peaking in the beginning of 2028. Most of the construction activity would take place in 2027, utilizing 44 percent of the total Project workforce.

Table 35 Annual Construction Workforce, 36-Month Period

	2026		2027		2028	
Component	Local Workers (FTEs)	Non-local Workers (FTEs)	Local Workers (FTEs)	Non-local Workers (FTEs)	Local Workers (FTEs)	Non-local Workers (FTEs)
PV Solar	438	25	575	25	288	12
BESS	0	0	0	0	66	9
Green Hydrogen Facility	0	0	0	0	119	18
Step-up Substation	0	0	158	8	99	5
Gen-Tie	0	0	158	1	39	3
Utility Switchyard	107	0	20	0	0	0
Total Workers (FTEs)	**545**	**25**	**912**	**34**	**611**	**48**

Source: IP Darden, 2023

The Worker Availability Analysis (see Appendix A) estimated labor demand by occupation and reviewed the corresponding supply in the study area, in conjunction with IP Darden's knowledge of current labor contracts in the area. The analysis found that a **high estimate** of peak non-local workers would total 645 for the 18-month construction scenario or 489 for the 36-month construction scenario. However, based on input from IP Darden, a **low estimate** of the peak non-local workers would be 72 for the 18-month construction scenario or 76 for the 36-month construction scenario. The low estimate of non-local workers was chosen for modeling economic impacts related to construction.

This workforce would likely include workers who normally reside within daily commuting distance of the Project site and would commute to and from their homes each day, as well as workers who would temporarily relocate to the Project vicinity for the duration of their employment. Based on the existing supply of temporary housing resources in the study area, for the purposes of this analysis we assume that a maximum of 72 workers during the 18-month construction scenario or 76 workers for the 36-month scenario during Project construction would find temporary accommodation (rental housing and apartments, hotel/motel rooms, RV hookups) in the study area for the duration of construction.[14]

Worker Compensation

The annual wage estimates for the construction workforce are derived from the Bureau of Labor Statistics Occupational Employment and Wage Statistics (OES) for the main population centers in Fresno, Madera, and Kings counties.[15]The OES does not include employee benefits in the wage and salary estimates. To estimate total compensation (wage and benefits), the unionized benefits share of wages for the construction industry was chosen from the U.S. Bureau of Labor Statistics Employer Costs of Employee Compensation (US Bureau of Labor Statistics, 2023). Total compensation for local

[14] This assumption uses IP Darden's estimate of non-local workers. If local labor force availability constraints are considered, the number of non-local workers could be as high as almost 650 under the 18-month construction timeline.

[15] The Metropolitan Statistical Areas within these counties are Fresno MSA, Handford-Corcoran MSA, and Madera MSA.

construction employment would have an economic impact on the study area, while only the per-diem expenditures from the non-local construction employment would have an impact on the study area. Table presents wage and total compensation assumptions by occupation.

Table 36 Construction Employment Compensation by Occupation

Occupation Title	Wage & Salary Estimate	Total Compensation
Electricians	$66,857	$94,669
Construction Equipment Operators	$79,571	$112,672
Paving Operators	$69,090	$97,831
Iron Workers	$55,110	$78,036
Construction Laborers	$52,231	$73,959
Surveyors	$107,310	$151,951
Craft Supervision	$85,022	$120,392
Construction Management	$111,465	$157,835
Secretaries and Administrative Assistants	$45,988	$65,120
Power Line Installers	$105,450	$149,317
Civil Engineers	$111,586	$158,005
Concrete Finishers	$59,837	$84,729
Construction Inspector/Engineers	$82,895	$117,379
Health and Safety Specialists	$79,576	$112,680

Source: Bureau of Labor Statistics, Occupational Employment and Wage Statistics, 2022; Bureau of Labor Statistics, Employer Costs of Employee Compensation, 2023

For the 18-month construction scenario, employee compensation (wages and benefits) for local and non-local workers would total $175.3 million across the entire period. The annual estimates of total employee compensation for the construction workers are presented in Table .

Table 37 Total Employee Compensation, 18-Month Construction Period

Component	2026	2027	Total
PV Solar	$69,783,159	$37,226,268	$107,009,427
BESS	$5,136,146	$4,801,526	$9,937,672
Green Hydrogen Facility	$8,019,992	$6,484,990	$14,504,982
Step-up Substation	$20,883,115	$7,255,542	$28,138,657
Gen-Tie	$7,219,922	$0	$7,219,922
Utility Switchyard	$8,444,858	$0	$8,444,858
Total Employee Compensation	**$119,487,193**	**$55,768,325**	**$175,255,518**

Source: (US Bureau of Labor Statistics, 2022); IP Darden, 2023

For the 36-month construction scenario, employee compensation (wages and benefits) for local and non-local workers would total $198.9 million across the entire period. The annual estimates of total employee compensation for the construction workers are presented in Table.

Table 38 Total Employee Compensation, 36-Month Construction Period

Component	2026	2027	2028	Total
PV Solar	$44,440,873	$56,191,072	$28,095,536	$128,727,482
BESS	$0	$0	$7,627,296	$7,627,296
Green Hydrogen Facility	$0	$0	$14,370,894	$14,370,894
Step-up Substation	$0	$17,466,044	$10,916,278	$28,382,322
Gen-Tie	$0	$1,916,321	$4,790,802	$6,707,123
Utility Switchyard	$11,088,670	$2,035,387	$0	$13,124,057
Total Employee Compensation	**$55,529,544**	**$77,608,824**	**$65,800,807**	**$198,939,174**

Source: (US Bureau of Labor Statistics, 2022); IP Darden, 2023

Construction labor-related expenditures that occur in the study area as detailed in the tables above would result in secondary economic impacts elsewhere in the local economy (detailed in Appendix C). Construction labor expenditures in this context refer to wage and salary payments to construction workers employed directly on-site. Payments to construction workers who normally reside in Fresno, Kings, or Madera counties would support local businesses as workers and their families purchase goods and services locally. Workers temporarily relocating to the county for the duration of their on-site employment would also spend money locally. Local expenditures by these non-local workers were estimated using per-diem payment information and assigned to the appropriate economic sectors in IMPLAN, primarily those related to lodging/housing, food, transportation, and incidentals. Per-diem rates were estimated based on 2023 per-diem rates established by the General Services Administration for Fresno, California (U.S. General Services Administration, 2023).

Construction Costs

Construction costs for this analysis were provided by IP Darden. Specialized materials and equipment (e.g., solar panels, inverters, electrical components, mounting, and electrolyzer equipment) account for the largest share of the overall construction cost for all components, with these categories together typically accounting for more than half of the total installed cost. None of these specialized materials and equipment are expected to be produced in the study area. Decisions regarding hiring and local purchasing would be made in conjunction with the Engineering, Procurement, and Construction (EPC) contractor or contractors that IP Darden hires to build the Project. However, based on past project experience, purchases that could likely occur in the study area include construction-related expenditures on concrete, gravel, water, fencing, fuel, and light equipment rentals, resulting in secondary impacts elsewhere in the local economy. Estimates of potential local spending were developed for this analysis based on inputs provided by IP Darden. IP Darden estimates the same capital costs regardless of construction timeline scenario; however, this analysis harmonizes the workforce and construction costs estimates to an annual basis. The construction costs differ slightly between Option 1 and 2. For Option 1, in which the step-up substation is centralized with the other components and an extended gen-tie line is added, the total construction cost is higher, and for Option 2, in which the substation is in the south-western corner of the PV solar facility with a shorter gen-tie line, the total construction cost is lower. Table presents the total and local share of expenditures by component and Option.

Table 39 Total Construction Costs by Component and Option

Component	Option 1 Total Cost	Option 1 Share Purchased Locally	Option 2 Total Cost	Option 2 Share Purchased Locally	Option 2 with Alternate Hydrogen Total Cost	Option 2 with Alternate Hydrogen Share Purchased Locally
PV Solar	[redacted]	34%	[redacted]	34%	[redacted]	34%
BESS	[redacted]	13%	[redacted]	13%	[redacted]	13%
Green Hydrogen Facility	[redacted]	35%	[redacted]	35%	[redacted]	35%
Step-up Substation	[redacted]	39%	[redacted]	39%	[redacted]	47%
Gen-tie	[redacted]	100%	[redacted]	100%	[redacted]	100%
Utility Switchyard	[redacted]	50%	[redacted]	50%	[redacted]	50%
Other Related Costs	[redacted]	0%	[redacted]	0%	[redacted]	0%
Total Project Cost	[redacted]		[redacted]		[redacted]	

Source: IP Darden, 2023

Operations and Maintenance

Once construction is complete, operation and maintenance of the Project would continue to contribute to the local economy. The Project would provide direct operation-related employment and Project-related operation expenditures would generate secondary (indirect and induced) economic benefits. IP Darden anticipates that 12 permanent full-time employees would maintain the solar facility, 4 permanent full-time employees would maintain the BESS facility, and 24 permanent full-time employees would operate and maintain the green hydrogen facility. In addition, some personnel would be employed on an intermittent basis for solar washing and ongoing facility maintenance. Solar washing occurs quarterly, at maximum, and weed control and landscaping management would occur in accordance with the Project's Vegetation Management Plan. IP Darden anticipates hiring all operations and maintenance staff locally. Typical local operation-related expenditures include vehicle-related expenditures, such as fuel costs, replacement parts and equipment, and miscellaneous supplies.

The hydrogen facility would require substantial amounts of water supplied locally. The operations and maintenance of solar and BESS facilities can be modeled in IMPLAN. However, there is not currently enough commercial activity in the hydrogen industry for IMPLAN to have a designated industry. To address this need, we created a custom industry for a hydrogen electrolyzer facility based on current supply-chain information.

7. Appendix C Economy and Employment Impact Analysis

Option 1 Project Layout

Construction

The estimated impacts of per diem and local construction-related expenditures are summarized for the study area in Table for the 18-month construction period and Table 42 for the 36-month construction period. These estimates are one-time impacts that would occur over the anticipated construction period. Estimates are presented for each year. Job estimates are presented in FTEs or job-years, with each identified job representing 12 months (2,080 hours) of employment. Per diem-spending related impacts are assumed to vary across construction years based on the workforce required for each component. For the 18-month construction scenario, 55 non-local workers (FTEs) are estimated to work in 2026 and 25 workers in 2027. For the 36-month construction scenario, 25 non-local workers are estimated to work in 2026, 34 non-local workers in 2027, and 48 non-local workers in 2028. Local construction-related expenditures are estimated by component and distributed across the construction scenarios.

The 18-month construction period would directly employ an estimated 1,806 FTEs on-site and the 36-month construction scenario would directly employ an estimate 2,032 FTEs. Most of the construction workforce would be from within the study area. However, some workers would come from outside of the region. Therefore, it is important to note that the estimates shown in Table and include the impacts from local construction employment, associated employee compensation, and construction expenditures as well as impacts from the employment in those sectors where per diem expenditures would occur. After the economic impacts associated with the local construction workforce wages and the non-local workforce per diem expenditures are computed, the non-local direct construction jobs are added back into the direct employment estimates. We assume that these jobs do not create an economic effect in the local economy in the same way as the local construction workforce and the jobs supported by per diem expenditures because those workers do not live within the study area. The jobs associated with per diem expenditures are primarily in the accommodation, food and drink, and retail sectors, reflecting the estimated distribution of worker spending.

Viewed over the assumed 18-month construction period, expenditures would support an estimated 2,420 FTE direct jobs in the study area (see Table). These direct jobs would be associated with construction of the project, including local and non-local jobs, as well as accommodation, food and drink, and retail sectors supported by per diem spending. Per diem and local construction-related expenditures would also support employment, labor income, and economic output in other sectors of the local economy, with indirect impacts estimated to support approximately 1,680 FTE jobs and induced impacts estimated to support a further 1,150 FTE jobs over the construction period. Construction is estimated to support a total of approximately 5,250 FTE jobs in the study area and approximately $402 million in labor income, with total economic output of approximately $1.88 billion.

Table 40 Option 1: Estimated Construction Impacts, 18-Month Construction Period

Impact Measure	Impact Type	2026	2027	Total[3/]
Employment[1/]	Direct	1,261	604	2,420
	Indirect	913	595	1,680

Impact Measure	Impact Type	2026	2027	Total[3/]
	Induced	622	332	1,150
	Total	**2,796**	**1,530**	**5,250**
Labor Income[2/]	Direct	$121,164,164	$56,544,588	$220,950,000
	Indirect	$63,325,712	$41,258,411	$115,884,000
	Induced	$35,337,002	$18,845,895	$65,236,000
	Total	**$219,826,877**	**$116,648,894**	**$402,070,000**
Output[2/]	Direct	$715,951,178	$444,235,806	$1,263,601,000
	Indirect	$239,709,024	$156,225,459	$422,163,000
	Induced	$107,215,309	$57,182,620	$197,955,000
	Total	**$1,062,875,511**	**$657,643,885**	**$1,883,719,000**

Notes:

1/ Jobs are FTE for a period of one year (1 FTE = 2,080 hours).

2/ Labor income and economic output are expressed in Year 2022 dollars.

3/ Total impacts include impacts of local expenditures of soft costs, such as legal, financial, and non-EPC engineering services.

Source: IMPLAN, 2021, ECONorthwest Analysis, 2023

The 36-month construction period (see Table 41) requires fewer FTEs due to the extended construction timeline, therefore resulting indirect and induced impacts are reduced compared with the 18-month construction period. Construction over a 36-month period is estimated to support a total of approximately 5,520 FTE jobs in the study area and approximately $428 million in labor income, with total economic output of approximately $1.89 billion.

Table 41 Option 1: Estimated Construction Impacts, 36-Month Construction Period

Impact Measure	Impact Type	2026	2027	2028	Total[3/]
Employment[1/]	Direct	589	829	694	2,660
	Indirect	226	334	913	1,650
	Induced	240	340	436	1,210
	Total	**1,055**	**1,503**	**2,043**	**5,520**
Labor Income[2/]	Direct	$56,289,498	$102,988,281	$203,531,720	$245,442,000
	Indirect	$15,696,431	$30,191,795	$59,363,397	$113,506,000
	Induced	$13,626,710	$24,141,567	$41,341,438	$68,826,000
	Total	**$85,612,639**	**$157,321,643**	**$304,236,555**	**$427,774,000**
Output[2/]	Direct	$203,531,720	$296,035,900	$662,306,196	$1,265,287,000
	Indirect	$59,363,397	$87,635,404	$239,801,197	$413,028,000
	Induced	$41,341,438	$58,680,905	$75,263,756	$208,843,000
	Total	**$304,236,555**	**$442,352,210**	**$977,371,148**	**$1,887,158,000**

Notes:

1/ Jobs are FTE for a period of one year (1 FTE = 2,080 hours).

2/ Labor income and economic output are expressed in Year 2022 dollars.

3/ Total impacts include impacts of local expenditures of soft costs, such as legal, financial, and non-EPC engineering services

Source: IMPLAN, 2021, ECONorthwest Analysis, 2023

Operation

Estimated operation impacts for the solar facility are summarized for the study area in Table . These estimates are for annual operations. An estimated 12 full-time employees would be employed on-site to operate and maintain these components, including site management, and operating technicians. Operation and maintenance of these components would also support employment, labor income, and economic output in other sectors of the local economy. Indirect and induced impacts are estimated to support approximately 21 jobs. Overall, operation of the solar facility is estimated to support approximately 33 total (direct, indirect, and induced) jobs in Fresno, Madera, and Kings counties and approximately $3.7 million in labor income, with total economic output of approximately $16.9 million.

Table 42 Option 1: Estimated Annual Operations Impacts of Solar Facility

Impact	Employment/1	Labor Income/2	Output/2
Direct	12	$2,305,000	$12,114,000
Indirect	10	$758,000	$2,902,000
Induced	11	$610,000	$1,852,000
Total	**33**	**$3,673,000**	**$16,869,000**

Notes:

1/ Jobs are FTE for a period of one year (1 FTE = 2,080 hours).

2/ Labor income and economic output are expressed in Year 2022 dollars.

Source: IMPLAN, 2021; ECONorthwest Analysis, 2023

Operation and maintenance for the green hydrogen facility would employ 24 full-time direct jobs, $1.7 million in employee compensation, and would purchase water, the main input to the production of green hydrogen, in the study area. Indirect and induced impacts from the operations employment and expenditures could support approximately 54 jobs. Operations could support, in total, approximately $4 million in labor income and $19.4 million in economic output. Table summarizes the impact results.

Table 43 Option 1: Estimated Annual Operations Impacts (Green Hydrogen Only)

Impact	Employment/1	Labor Income/2	Output/2
Direct	24	$1,700,989	$5,799,325
Indirect	18	$1,671,615	$5,659,833
Induced	12	$671,978	$2,038,604
Total	**54**	**$4,044,582**	**$19,357,739**

Notes:

1/ Jobs are FTE for a period of one year (1 FTE = 2,080 hours).

2/ Labor income and economic output are expressed in Year 2022 dollars.

Source: IMPLAN, 2021; ECONorthwest Analysis, 2023

Operations and maintenance of the Project could support a total of 98 jobs, approximately $9 million in labor income, and $41.9 million in economic output, annually.

Option 2 Project Layout

Construction

Option 2 requires less costly substation and gen-tie line than Option 1, decreasing total construction expenditures by $13.65 million. Aside from the difference in construction spending, the proposed construction timelines and workforce required remain the same as Option 1.

The 18-month construction period would support a total of 5,220 FTEs across the construction period, including per diem supported employment (see Table). Construction over the 18-month period is estimated to support a total of approximately $400 million in labor income, with total economic output of approximately $1.86 million.

Table 44 Option 2: Estimated Construction Impacts, 18-Month Construction Period

Impact Measure	Impact Type	2026	2027	Total[3/]
Employment[1/]	Direct	1,261	604	2,420
	Indirect	892	595	1,660
	Induced	616	332	1,140
	Total	**2,770**	**1,530**	**5,220**
Labor Income[2/]	Direct	$121,164,164	$56,544,588	$220,950,000
	Indirect	$61,874,642	$41,258,411	$114,433,000
	Induced	$35,044,138	$18,845,895	$64,944,000
	Total	**$218,082,944**	**$116,648,894**	**$400,327,000**
Output[2/]	Direct	$702,301,178	$444,235,806	$1,249,951,000
	Indirect	$234,210,341	$156,225,459	$416,664,000
	Induced	$106,326,408	$57,182,620	$197,066,000
	Total	**$1,042,837,927**	**$657,643,885**	**$1,863,681,000**

Notes:

1/ Jobs are FTE for a period of one year (1 FTE = 2,080 hours).

2/ Labor income and economic output are expressed in Year 2022 dollars.

3/ Total impacts include impacts of local expenditures of soft costs, such as legal, financial, and non-EPC engineering services

Source: IMPLAN, 2021, ECONorthwest Analysis, 2023

As with Option 1, the 36-month construction period requires fewer FTEs due to the extended construction timeline. Resulting indirect and induced impacts are therefore reduced compared with the 18-month construction scenario. The 36-month construction scenario (see Table 45) is estimated to support a total of approximately 5,500 jobs in the study area and approximately $426 million in labor income, with total economic output of approximately $1.87 million.

Table 45 Option 2: Estimated Construction Impacts, 36-Month Construction Period

Impact Measure	Impact Type	2026	2027	2028	Total[3/]
Employment[1/]	Direct	589	829	694	2,660
	Indirect	226	328	898	1,630
	Induced	240	339	433	1,210
	Total	**1,025**	**1,453**	**1,967**	**5,500**
Labor Income[2/]	Direct	$56,289,500	$78,657,300	$67,254,500	$245,442,000

	Indirect	$15,696,400	$22,754,300	$62,304,500	$112,055,000
	Induced	$13,626,700	$19,258,300	$24,594,700	$68,533,000
	Total	**$85,612,600**	**$120,669,900**	**$154,153,700**	**$426,030,000**
Output[2/]	Direct	$203,531,700	$292,135,900	$652,556,200	$1,251,637,000
	Indirect	$59,363,400	$86,064,400	$235,873,600	$407,530,000
	Induced	$41,341,400	$58,426,900	$74,628,800	$207,954,000
	Total	**$304,236,600**	**$436,627,200**	**$963,058,600**	**$1,867,121,000**

Notes:

1/ Jobs are FTE for a period of one year (1 FTE = 2,080 hours).

2/ Labor income and economic output are expressed in Year 2022 dollars.

3/ Total impacts include impacts of local expenditures of soft costs, such as legal, financial, and non-EPC engineering services

Source: IMPLAN, 2021, ECONorthwest Analysis 2023

Operation

The operations and maintenance of the PV solar, BESS, and green hydrogen components would remain the same with Option 2.

Alternate Hydrogen Layout

The alternate hydrogen location would include the green hydrogen facility, substation, and switchyard. These components would be in addition to Option 2, requiring increased expenditures for the additional step-up substation of $11 million.[16] The 18-month construction scenario would support a total of 5,250 FTEs across the construction period, including per diem supported employment. Construction over the 18-month period is estimated to support a total of approximately $398 million in labor income, with total economic output of approximately $1.86 million.

[16] The Alternative Green Hydrogen facility could occur with either the Option 1 or Option 2 configuration. The Alternative Green Hydrogen facility is modeled with Option 2 in this analysis since there is no effect to the underlying conclusion.

Table 46 Alternate Hydrogen: Estimated Construction Impacts, 18-Month Construction Period

Impact Measure	Impact Type	2026	2027	Total[3/]
Employment[/1]	Direct	1,261	604	2,420
	Indirect	904	599	1,680
	Induced	619	333	1,150
	Total	**2,785**	**1,536**	**5,250**
Labor Income[2/]	Direct	$121,164,164	$56,544,588	$220,950,000
	Indirect	$62,725,086	$41,577,327	$115,602,000
	Induced	$35,215,780	$18,910,261	$65,180,000
	Total	**$219,105,029**	**$117,032,176**	**$401,732,000**
Output[2/]	Direct	$710,301,178	$447,235,806	$1,260,951,000
	Indirect	$237,433,012	$157,433,961	$421,095,000
	Induced	$106,847,376	$57,377,983	$197,782,000
	Total	**$1,054,581,566**	**$662,047,750**	**$1,879,828,000**

Notes:

1/ Jobs are FTE for a period of one year (1 FTE = 2,080 hours).

2/ Labor income and economic output are expressed in Year 2022 dollars.

3/ Total impacts include impacts of local expenditures of soft costs, such as legal, financial, and non-EPC engineering services

Source: IMPLAN, 2021, ECONorthwest Analysis, 2023

The 36-month construction period would support a total of 5,520 FTEs across the construction period, including per diem supported employment. Construction over the 36-month period is estimated to support a total of approximately $427 million in labor income, with total economic output of approximately $1.88 million.

Table 47 Alternate Hydrogen: Estimated Construction Impacts, 36-Month Construction Period

Impact Measure	Impact Type	2026	2027	2028	Total[3/]
Employment[1/]	Direct	589	829	694	2,660
	Indirect	226	339	905	1,650
	Induced	240	341	434	1,210
	Total	**1,055**	**1,509**	**2,033**	**5,520**
Labor Income[2/]	Direct	$56,289,498	$78,657,290	$67,254,451	$245,442,000
	Indirect	$15,696,431	$23,473,947	$62,754,264	$113,225,000
	Induced	$13,626,710	$19,403,495	$24,685,471	$68,769,000
	Total	**$85,612,639**	**$121,534,732**	**$154,694,186**	**$427,436,000**
Output[2/]	Direct	$203,531,720	$298,905,130	$656,786,965	$1,262,637,000
	Indirect	$59,363,397	$88,791,227	$237,577,863	$411,961,000
	Induced	$41,341,438	$58,867,752	$74,904,338	$208,670,000
	Total	**$304,236,555**	**$446,564,110**	**$969,269,166**	**$1,883,268,000**

Notes:

[1] Jobs are FTE for a period of one year (1 FTE = 2,080 hours).

[2] Labor income and economic output are expressed in Year 2022 dollars.

[3] Total impacts include impacts of local expenditures of soft costs, such as legal, financial, and non-EPC engineering services

Source: IMPLAN, 2021, ECONorthwest Analysis, 2023

Operation

The operations and maintenance of the PV solar, BESS, and green hydrogen components would remain the same as Option 1 and Option 2.

Fiscal Impacts

Construction

Local expenditures on construction materials and equipment, as well as personal spending associated with the construction labor generate sales tax revenue. For the 18-month construction period, the total sales tax generated over the construction period ranges between $33.5 million and $33.9 million, depending on the Option. Table presents the state, county, and sub-county sales tax generation for each Option.

Table 48 Sales Tax Collections by Option, 18-Month Construction Period

Sales Tax Impact	Option 1	Option 2	Alternate Hydrogen
State	$26,609,000	$26,289,000	$26,547,000
County	$1,048,000	$1,035,000	$1,046,000
Sub-County	$6,221,000	$6,146,000	$6,206,000
Total	$33,878,000	$33,470,000	$33,799,000

Note: Dollar year 2022

Source: IMPLAN, 2021; ECONorthwest Analysis, 2023

For the 36-month construction schedule, the total sales tax generated over the construction period ranges between $33.2 and $33.6 million, depending on the Option. Table presents the state, county, and sub-county sales tax generation for each Option.

Table 49 Sales Tax Collections by Option, 36-Month Construction Period

Sales Tax Impact	Option 1	Option 2	Alternate Hydrogen
State	$26,364,000	$26,045,000	$26,302,000
County	$1,038,000	$1,026,000	$1,036,000
Sub-County	$6,164,000	$6,089,000	$6,149,000
Total	**$33,566,000**	**$33,160,000**	**$33,487,000**

Note: Dollar year 2022

Source: IMPLAN, 2021; ECONorthwest Analysis, 2023

Annual sales tax generation for the operations of this Project is estimated to total $1.8 million. This number includes sales tax generated from personal spending of employees of the Project as well as that generated from purchasing materials locally. Table shows the state, county, and sub-county sales tax collections for operations of the facility on an annual basis. Option 1, Option 2, and Alternate Hydrogen do not differ in operations and would have the same fiscal impact on the local economy.

Table 50 Sales Tax Collections from Operation of the Project

Sales Tax Impact	Annual Sales Taxes Generated
State	$1,410,000
County	$56,000
Sub-County	$330,000
Total	**$1,795,000**

Note: Dollar year 2022

Source: IMPLAN, 2021; ECONorthwest Analysis, 2023

Economy and Employment Impacts by Component

Construction

The construction of PV Solar, BESS, Hydrogen, and Utility Switchyard components remain the same across construction Options. The Gen-tie and Step-up Substation vary across Options. Option 1 contains a longer gen-tie line, and the Alternate Hydrogen location requires an additional switchyard and step-down substation, resulting in higher component costs. Although the Alternative Hydrogen scenario could be coupled with Option 1 or Option 2, the Alternative Hydrogen option was modeled utilizing the cost structure of Option 2. The Alternative Hydrogen option coupled with

Table51 Estimated Construction Impacts by Component and Option, 18-Month Construction Period

Impact	Direct	Indirect	Induced	Total
PV Solar, Step-Up Substation, Gen-tie				
Option 1				
Jobs	1,520	730	660	2,910
Income	$144,138,000	$50,731,000	$37,248,000	$232,117,000
Output	$620,396,000	$191,968,000	$113,007,000	$925,371,000
Option 2				
Jobs	1,520	710	650	2,880
Income	$144,138,000	$49,280,000	$36,955,000	$230,373,000
Output	$606,746,000	$186,469,000	$112,118,000	$905,333,000
Alternate Hydrogen				
Jobs	1,520	730	650	2,900
Income	$144,138,000	$50,449,000	$37,191,000	$231,778,000
Output	$617,746,000	$190,900,000	$112,834,000	$921,480,000
BESS				
Option 1, Option 2, and Alternate Hydrogen				
Jobs	110	160	70	340
Income	$10,120,000	$10,920,000	$4,049,000	$25,089,000
Output	$112,747,000	$41,353,000	$12,288,000	$166,388,000
Hydrogen				
Option 1, Option 2, and Alternate Hydrogen				
Jobs	160	550	180	890
Income	$14,845,000	$37,850,000	$10,292,000	$62,987,000
Output	$370,709,000	$143,376,000	$31,234,000	$545,319,000
Utility Switchyard				
Option 1, Option 2, and Alternate Hydrogen				
Jobs	80	70	50	200
Income	$8,606,000	$5,083,000	$2,594,000	$16,283,000
Output	$56,336,000	$19,238,000	$7,869,000	$83,443,000
Soft Costs				
Option 1, Option 2, and Alternate Hydrogen				
Jobs	570	180	200	950
Income	$43,241,000	$11,300,000	$11,054,000	$65,595,000
Output	$103,414,000	$26,228,000	$33,557,000	$163,199,000

Note: Dollar year 2022

Source: IMPLAN 2021; ECONorthwest Analysis, 2023

Table 52 Summary of Estimated Construction Impacts, 18-Month Construction Period

Impact	Direct	Indirect	Induced	Total
Total Option 1				
Jobs	2,420	1,680	1,150	5,250
Income	220,950,000	115,884,000	65,236,000	402,070,000
Output	1,263,601,000	422,163,000	197,955,000	1,883,719,000
Total Option 2				
Jobs	2,420	1,660	1,140	5,220
Income	220,950,000	114,433,000	64,944,000	$400,327,000
Output	1,249,951,000	416,664,000	197,066,000	$1,863,681,000
Total Alternate Hydrogen				
Jobs	2,420	1,680	1,150	5,250
Income	220,950,000	115,602,000	65,180,000	$401,732,000
Output	1,260,951,000	421,095,000	197,782,000	$1,879,828,000

Note: Dollar year 2022

Source: IMPLAN 2021, ECONorthwest Analysis, 2023

Table 53 Estimated Construction Impacts by Component and Option, 36-Month Construction Period

Impact	Direct	Indirect	Induced	TOTAL
PV Solar, Step-Up Substation, Gen-tie				
Option 1				
Jobs	1,750	700	710	3,160
Income	$166,257,000	$48,567,000	$40,570,000	$255,394,000
Output	$621,794,000	$183,664,000	$123,084,000	$928,542,000
Option 2				
Jobs	1,750	680	710	3,140
Income	$166,257,000	$47,116,000	$40,277,000	$253,650,000
Output	$608,144,000	$178,165,000	$122,195,000	$908,504,000
Alternate Hydrogen				
Jobs	1,750	700	710	3,160
Income	$166,257,000	$48,285,000	$40,513,000	$255,055,000
Output	$619,144,000	$182,596,000	$122,912,000	$924,652,000
BESS				
Option 1, Option 2, and Alternate Hydrogen				
Jobs	80	160	60	300
Income	$7,891,000	$11,180,000	$3,573,000	$22,644,000
Output	$112,916,000	$42,325,000	$10,844,000	$166,085,000
Hydrogen				
Option 1, Option 2, and Alternate Hydrogen				
Jobs	150	550	180	880

Impact	Direct	Indirect	Induced	TOTAL
Income	$14,929,000	$37,902,000	$10,103,000	$62,934,000
Output	$371,164,000	$143,540,000	$30,662,000	$545,366,000
Utility Switchyard				
Option 1, Option 2, and Alternate Hydrogen				
Jobs	130	70	60	260
Income	$13,124,000	$4,558,000	$3,526,000	$21,208,000
Output	$56,000,000	$17,272,000	$10,697,000	$83,969,000
Soft Costs				
Option 1, Option 2, and Alternate Hydrogen				
Jobs	570	180	200	950
Income	$43,241,000	$11,300,000	$11,054,000	$65,595,000
Output	$103,414,000	$26,228,000	$33,557,000	$163,199,000

Note: Dollar year 2023

Source: IMPLAN 2021; ECONorthwest Analysis, 2023

Table 54 Summary of Estimated Construction Impacts, 36-Month Construction Period

Impact	Direct	Indirect	Induced	Total
Total Option 1				
Jobs	2,660	1,650	1,210	5,520
Income	$245,442,000	$113,506,000	$68,826,000	$427,774,000
Output	$1,265,287,000	$413,028,000	$208,843,000	$1,887,158,000
Total Option 2				
Jobs	2,660	1,630	1,210	5,500
Income	$245,442,000	$112,055,000	$68,533,000	$426,030,000
Output	$1,251,637,000	$407,530,000	$207,954,000	$1,867,121,000
Total Alternate Hydrogen				
Jobs	2,660	1,650	1,210	5,520
Income	$245,442,000	$113,225,000	$68,769,000	$427,436,000
Output	$1,262,637,000	$411,961,000	$208,670,000	$1,883,268,000

Note: Dollar year 2022

Source: IMPLAN 2021; ECONorthwest Analysis, 2023

Fiscal Impacts by Component

Construction

Table 55 Estimated Sales Tax Collections, 18-Month Construction Scenario

Impact	State	County	Sub-County	Total
PV Solar, Step-Up Substation, Gen-tie				
Option 1	$13,147,000	$518,000	$3,074,000	$16,739,000
Option 2	$12,830,000	$505,000	$2,999,000	$16,334,000
Alternate Hydrogen	$13,086,000	$515,000	$3,059,000	$16,660,000
BESS				
Option 1, Option 2, and Alternate Hydrogen				
	$2,527,000	$100,000	$591,000	$3,218,000
Hydrogen				
Option 1, Option 2, and Alternate Hydrogen				
	$8,480,000	$334,000	$1,983,000	$10,797,000
Utility Switchyard				
Option 1, Option 2, and Alternate Hydrogen				
	$1,228,000	$48,000	$287,000	$1,564,000
Soft Costs				
Option 1, Option 2, and Alternate Hydrogen				
	$1,093,000	$43,000	$256,000	$1,392,000

Note: Dollar year 2022

Source: IMPLAN 2021, ECONorthwest Analysis 2023

Table 56 Estimated Sales Tax Collections, 36-Month Construction Scenario

Impact	State	County	Sub-County	Total
PV Solar, Step-Up Substation, Gen-tie				
Option 1	$12,934,000	$509,000	$3,024,000	$16,468,000
Option 2	$12,617,000	$497,000	$2,950,000	$16,063,000
Alternate Hydrogen	$12,873,000	$507,000	$3,009,000	$16,389,000
BESS				
Option 1, Option 2, and Alternate Hydrogen				
	$2,538,000	$100,000	$593,000	$3,232,000
Hydrogen				
Option 1, Option 2, and Alternate Hydrogen				
	$8,464,000	$333,000	$1,979,000	$10,776,000
Utility Switchyard				
Option 1, Option 2, and Alternate Hydrogen				
	$1,204,000	$47,000	$281,000	$1,533,000
Soft Costs				
Option 1, Option 2, and Alternate Hydrogen				
	$1,093,000	$43,000	$256,000	$1,392,000

Note: Dollar year 2022

Source: IMPLAN 2021, ECONorthwest Analysis, 2023

Operation

Table 57 Estimated Annual Sales Tax Collections from Operations

Component	State	County	Sub-County	Total
Solar	$1,055,079	$41,556	$246,658	$1,343,292
BESS	$354,576	$13,965	$82,893	$451,434
Hydrogen	N/A			
Total	**$1,409,654**	**$55,521**	**$329,551**	**$1,794,726**

Note: Dollar year 2022

Source: IMPLAN, 2021; ECONorthwest Analysis 2023

8. Appendix D Agricultural Production Effects

The Project area is predominantly retired agricultural lands that have been irregularly farmed over the last 10 years and are seasonally or annually disked when not growing crops. Some active farming occurred in limited areas of the Project site during 2023. A small portion of the Project area includes permanent crops and annual field and vegetable crops that could be impacted by construction and operation of the Project. The following assessment considers the conversion of the Project area from agricultural production/fallowed lands to solar development, estimating the direct impacts to the local economy in terms of harvested acres, agricultural value, and employment and estimates the secondary (indirect and induced) impacts that a corresponding reduction in farm spending would have on the local economy.

Project Area and Fresno County Crop Production Overview

Fresno County and the San Joaquin Valley is one of the most productive agricultural areas in the world. The County consistently has the greatest value of agricultural production of any county in California, which is the largest producing State in the Nation by value (CDFA, 2020). But agricultural production in the County is often only a fraction of potential production due to the curtailment of CVP water deliveries through the Westlands Irrigation District (Shires, 2022). Alternative sources of water available to farmers, such as groundwater, are typically more expensive than contracted surface water due to the electrical costs of pumping and delivering groundwater as well as the infrastructure investment. Groundwater usage can also create salinity issues for crops resulting in reduced crop yields and potential for long-term damage to permanent crops. When groundwater is over pumped, the region has a history of land subsidence, generating a host of long-term impacts to the land as well as private and public infrastructure in the region (Shires, 2022). The San Joaquin Valley, where Fresno County is located, continues to see losses of farmland to traditional development in areas with soil with excess salinity left to idle (County of Fresno 2023a). The California Department of Conservation (DOC) reported Fresno County as the largest example of an area where previously identified high-quality agricultural lands are being reclassified to grazing lands or lesser-quality agricultural lands (Fresno County, 2023a).

The District has only received its full allocation of water from the CVP three times since 1998, in 2017, 2006 and 1998. On average, the district has only received 31 percent of its contracted surface water allocations from the CVP over the past decade, receiving little to no water from annual CVP contracts during a period of drought that lasted from 2012 through 2016. Recent drought has forced farmers to fallow hundreds of thousands of acres in Fresno County (UC Berkeley, 2016) . Westlands Water District is actively pursuing long-term opportunities to repurpose agricultural lands to reduce

subsidence, cut groundwater use, improve groundwater supply, and avoid undesirable results, while providing benefits to disadvantaged communities (Westlands Water District, 2023). Westlands Water District, which currently owns a majority of lands within the Project site, is actively pursuing retirement of 100,000 acres of agricultural land in order to reallocate water to agricultural lands which are not impaired (Westlands Water District GSA and County of Fresno GSA-Westside, 2022), including 9,100 acres on which the Project is located. This retirement of agricultural land will occur with or without the Darden Clean Energy Project. Another 500,000 acres of agricultural land in the San Joaquin Valley is expected to be retired in compliance with the Sustainable Groundwater Management Act (PPIC, Accessed 2023). **Thus, in the absence of the Project, agricultural production on the 9,100 acres is expected to be zero, and no agricultural production impacts are estimated on the 9,100 acres due to the Darden Clean Energy Project.**

Agricultural lands within the Project site that are not pursuant to retirement by Westlands Water District, include land under active agricultural production and fallow/idle cropland. Cropland acres, expected yield, and total value of this cropland are presented by Project component in Table . Crop acreage was derived from the Cropland Data Layer (USDA CroplandCROS). Crop raster files were spatially joined to parcels and manually divided sub-parcels on the basis of majority crop coverage. These parcels were then intersected by Project component resulting in the yearly crop acreage. As noted previously in this report, productive crop acreage and crop mix vary significantly by year due to frequent water shortages in the region. The analysis relies on a three-year average of crop production data. Crop yields by crop type are based on published yield values as presented in Fresno County agricultural crop reports. Total value of crop production relies on published agrictutural values for Fresno County averaged over 2019-2021((Fresno County, Department of Agriculture and Weights and Measures, 2019) (Fresno County, Department of Agriculture and Weights and Measures, 2020) (Fresno County, Department of Agriculture and Weights and Measures, 2021), and inflated into 2022 dollars using the PPI.

Table 58 Agricultural Crop Production in the Project Area

Component	Acres	Yield	Total Value
Gen-Tie			
Almonds	0.87	1.23	$4,185
Cotton	0.037	1,578	$117
Fallow/Idle Cropland	0.52	-	$0
Garlic	0.107	7.45	$2,271
Lettuce	0.038	13.18	$1,323
Onions	0.066	17.91	$899
Pistachios	0.039	1.42	$212
Tomatoes	0.34	50.17	$1,362
Winter Wheat	0.035	2.90	$34
Alternate Hydrogen			
Almonds	119	1.23	$577,284
Fallow/Idle Cropland	46	-	$0
Winter Wheat	4	2.90	$5,989
Utility Switchyard			
Almonds	132.0	1.23	$644,752

Component	Acres	Yield	Total Value
Fallow/Idle Cropland	0.1	-	$0
Winter Wheat	0.1	2.90	$212
Total Option 1			
Almonds	138.2	1.23	$671,935
Cotton	0.037	1,578	$117
Fallow/Idle Cropland	8.5	-	$0
Garlic	0.107	7.45	$0
Lettuce	0.038	13.18	$1,323
Onions	0.066	17.91	$899
Pistachios	0.039	1.42	$212
Tomatoes	0.34	50.17	$1,362
Winter Wheat	0.2	2.90	$247
TOTAL	**147.5**		
Total Option 2			
Almonds	138.2	1.23	$671,935
Cotton	0.037	1,578	$117
Fallow/Idle Cropland	8.5	-	$0
Garlic	0.107	7.45	$0
Lettuce	0.038	13.18	$1,323
Onions	0.066	17.91	$899
Pistachios	0.039	1.42	$212
Tomatoes	0.34	50.17	$1,362
Winter Wheat	0.2	2.90	$247
TOTAL	**147.5**		
Total Alternate Hydrogen			
Almonds	251.5	1.23	$1,212,958
Cotton	0.037	1,578	$117
Fallow/Idle Cropland	47.0	-	$0
Garlic	0.107	7.45	$2,271
Lettuce	0.038	13.18	$1,323
Onions	0.066	17.91	$899
Pistachios	0.039	1.42	$212
Tomatoes	0.34	50.17	$1,362
Winter Wheat	4.3	2.90	$6,236
TOTAL	**303.4**		

Note:

1/ All values are 3-year averages (2019-2021) inflated into 2022 dollars using the PPI.

2/ Figures represent the value crops produced on land in agricultural production within the Project site that would remain in production but for the Project only.

Source: IMPLAN 2021, ECONorthwest, (Fresno County, Department of Agriculture and Weights and Measures, 2019) (Fresno County, Department of Agriculture and Weights and Measures, 2020) (Fresno County, Department of Agriculture and Weights and Measures, 2021)

Employment requirements for agricultural production are presented in Table 60. Specific employment figures are not publicly available by crop type, so these figures are generated from published crop enterprise budgets for the crops historically grown on the Project site. Specific crop enterprise budgets were selected based on crop relevance, geographic relevance, and finally, the most recent timeframe. Utilizing published crop enterprise budgets for employment estimates generates reliable employment assumptions when primary data is not available from Project site landowners detailing actual employment numbers. As displayed in the table, employment for crop production varies drastically by crop type. For example, garlic requires 190 hours per acre to produce, while wheat requires only 4 hours per acre. These hourly estimates were transformed into FTE estimates assuming FTE employees work an average of 2,080 hours per year. Table 60 presents the FTEs required per 100 acres of production by crop type as well as the source of each employment assumption.

Table 59 Agricultural Employment per 100 Acres by Crop Type

Crop	Employment Hours Per Acre	FTEs per 100 Acres	Source
Almonds	28	1.33	(UC Davis, 2019)
Cotton	9	0.45	(UC Davis, 2012)
Garlic	190	9.13	(Missouri, 2020)
Lettuce	36	1.73	(UC Davis, 2023)
Onions	44	2.11	(UC Davis, 2016)
Pistachios	15	0.71	(UC Davis, 2020)
Tomatoes	23	1.09	(UC Davis, 2018)
Winter Wheat	4	0.19	(UC Davis, 2016 (2))

Sources: crop budget sources presented above

Agriculture Economic Output and Employment

Agricultural production employment on the Project site is estimated utilizing crop enterprise budgets presented in the Environmental Setting. Crop value (output) is derived from Fresno County agricultural crop reports as summarized in Table above. Labor income is estimated using data from the IMPLAN model for Fresno County below. Together these data provide a comprehensive picture of agricultural production and value on the Project site and are used as a baseline for the following assessment.

Removing land from agricultural production within the Project area would have impacts to the local agricultural economy due to the associated reduction in local spending. Due to the Project area's location within the Central Valley agricultural production region, area farmers are assumed to purchase farming inputs such as fuel, seed, fertilizer and chemicals almost exclusively from local suppliers. Using IMPLAN, we modeled the economic impacts for Fresno County based on an estimated reduction in annual output for the Project Option 1, Option 2 and the Alternate Hydrogen location. Estimated impacts of removing land from agricultural production are estimated as follows:

- The direct impact represents the gross value of production that the farmers would no longer receive from producing crops,[17] and the associated employment and labor income of farmers

[17] Note that farmers would receive lease payments for land dedicated to the project. This private transaction would, in theory, be equivalent to or greater than the value farmers receive from producing crops. These payments and their contribution to the regional economy are modeled as part of the project costs described in Appendices B and C. Although the farmer is compensated financially, any employment associated with crop production would still be impacted.

and their employees. The direct employment numbers are based on employment estimates extrapolated from published crop enterprise budgets. These estimates approximate the loss of full time equivalent (FTE) jobs if the Project were to go forward.

- The indirect impact represents economic activity supported by the agricultural production on the Project site. This includes spending on inputs like seeds, fertilizer, and fuel and contract services, which could include harvesting or spraying. This spending supports indirect jobs associated with labor income. When agricultural production on the site ceases, the presumption is that this spending no longer occurs and this amount of FTE, labor income, and output would be lost. This impact may or may not translate into reductions in individual employment positions (jobs).
- Induced impacts are generated by the spending of households associated either directly or indirectly with ongoing agricultural operations within the Project area boundary. Assuming this income is no longer earned, it is not available to spend and would also represent lost economic activity when agricultural production on-site stops.

Table presents these impacts by component as well as Project option/alternative, which are discussed in detail below. Note, these figures include impacts of removing land from agricultural production on agricultural land within the Project site that would remain in production but for the Project, but these figures do not include impacts of removing land from agricultural production on agricultural land within the Project site that would be retired regardless of if the Project is developed or not.

Table 60 Agricultural Production Impacts

Impact	Direct	Indirect	Induced	TOTAL
Gen-Tie				
Jobs	0	0	0	0
Income	$3,562	$1,454	$1,031	$6,047
Output	$10,404	$3,036	$3,131	$16,571
Alternate Hydrogen				
Jobs	2	1	1	5
Income	$229,284	$83,468	$64,404	$377,156
Output	$583,273	$148,033	$195,638	$926,945
Utility Switchyard				
Jobs	3	1	1	5
Income	$253,029	$91,992	$71,053	$416,074
Output	$644,964	$162,243	$215,838	$1,023,046
Total Option 1				
Jobs	2	2	1	5
Income	$100,420	$135,021	$47,004	$282,444
Output	$676,095	$238,466	$142,608	$1,057,169
Total Option 2				
Jobs	2	2	1	5
Income	$100,420	$135,021	$47,004	$282,444
Output	$676,095	$238,466	$142,608	$1,057,169

Impact	Direct	Indirect	Induced	TOTAL
Total Alternate Hydrogen				
Jobs	3	4	1	8
Income	$182,410	$245,235	$85,377	$513,022
Output	$1,225,378	$434,447	$259,034	$1,918,858

Note: Dollar year 2022

Note: Figures represent impacts of removing land from agricultural production on agricultural land within the Project site that would remain in production but for the Project

Note: Project components overlap geographically, so project component values cannot be aggregated in their entirety to estimate total values for each option/alternative.

Source: IMPLAN 2021, ECONorthwest Analysis

Gen-Tie

Agricultural production on the Project site along the Gen-Tie easement generates jobs, income and output impacts in the local economy. Crop production is expected to continue underneath the Gen-Tie line per agreements with growers if the Project were built. Thus, the only land removed for production related to construction and operation of the gen-tie line would be the area underneath the gen-tie support poles, which is assumed to be roughly 2 acres.[18]

- The direct impact represents the gross value of production that the farmers would no longer receive from producing crops under the Gen-Tie, and the associated employment and labor income of farmers and their employees. The direct output of agricultural production lost if the Project gen-tie were built represent $10,404 under all options/alternative. The direct employment number is estimated based on published crop enterprise budgets and is estimated at 0 employees but $3,562 in labor income.
- The indirect impact represents economic activity supported by the agricultural production on the Project site. This includes spending on inputs like seeds, fertilizer, and fuel and contract services, which could include harvesting or spraying. Total indirect output is estimated at $3,036. This economic activity supports no indirect jobs but is associated with $1,454 in labor income.
- Induced impacts are generated by the spending of households associated either directly or indirectly with ongoing agricultural operations within the Project site boundary. Induced output from agricultural production in the Project area is estimated at $3,131 supporting 0 induced jobs but roughly $1,031 in labor income.

Alternate Hydrogen

Agricultural production currently occurring on the Alternate Hydrogen site generates jobs, income and output impacts in the local economy. This analysis assumes the complete removal of agricultural production on the alternative hydrogen site if the Project were built as is consistent with a conservative estimation approach.

[18] Each support pole along the gen-tie line is estimated to effect roughly 0.05 acres, aggregating to a total of 2.1 acres across the entire gen-tie right-of-way overlaying non-retired lands. Based on the placement of gen-tie support poles, specific crops will be impacted. Since gen-tie pole placement is preliminary, the removal of agricultural land from production is estimated proportionally along the length of the gen-tie line overlaying non-retired land. Note that since this portion of the gen-tie right-of-way overlays streets and non-agricultural lands, the total agricultural land removed from production is estimated to sum to slightly less, or 2.05 acres across the gen-tie right-of-way overlaying non-retired lands.

The direct impact represents the gross value of production that the farmers would no longer receive from producing crops on the alternative hydrogen site, and the associated employment and labor income of farmers and their employees. The direct output of agricultural production lost if the alternative hydrogen facility were built represent $583,273 under the alternative hydrogen project alternative. The direct employment number is estimated based on published crop enterprise budgets and is estimated at 2 employees with $229,284 in labor income.

The indirect impact represents economic activity supported by the agricultural production on the Project site. This includes spending on inputs like seeds, fertilizer, and fuel and contract services, which could include harvesting or spraying. Total indirect output is estimated at $148,033. This economic activity supports 1 indirect job associated with $83,468 in labor income.

Induced impacts are generated by the spending of households associated either directly or indirectly with ongoing agricultural operations within the Project site boundary. Induced output from agricultural production in the Project area is estimated at $195,638 supporting 1 induced job and roughly $64,404 in labor income.

Utility Switchyard

Agricultural production currently occurring on the utility switchyard site generates jobs, income and output impacts in the local economy. This analysis assumes the complete removal of agricultural production on the utility switchyard site if the Project were built as is consistent with a conservative estimation approach.

- The direct impact represents the gross value of production that the farmers would no longer receive from producing crops on the utility switchyard site, and the associated employment and labor income of farmers and their employees. The direct output of agricultural production lost if the utility switchyard were built represents $644,964 in output under all options/alternatives. The direct employment number is estimated based on published crop enterprise budgets and is estimated at 3 employees with $253,029 in labor income.
- The indirect impact represents economic activity supported by the agricultural production on the Project site. This includes spending on inputs like seeds, fertilizer, and fuel and contract services, which could include harvesting or spraying. Total indirect output is estimated at $162,243. This economic activity supports 1 indirect job associated with $91,992 in labor income.
- Induced impacts are generated by the spending of households associated either directly or indirectly with ongoing agricultural operations within the Project site boundary. Induced output from agricultural production in the Project area is estimated at $215,838 supporting 1 induced job and roughly $71,053 in labor income.

Project Total Impacts

Total impacts of agricultural production on the Project site are presented in Table 61. In total, the Project would remove 5 agricultural jobs under Option 1 and Option 2 and 8 jobs under the alternative hydrogen alternative. The Project would reduce agricultural related output by $1.06 million in Option 1 and Option 2, and $1.92 million under the alternative hydrogen alternative. The Project would also reduce agriculturally based income by $282,444 under Option 1 and Option 2 and $513,022 under the alternative hydrogen alternative.

9. Appendix E List of Preparers

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10. Appendix F References

(n.d.). Retrieved from https://theriverbendpark.com/

Adventist Health Selma. (2023). *Adventist Health Selma*. Retrieved from California Department of Health Care and Information Access: https://hcai.ca.gov/facility/adventist-health-selma/

Almond Tree Oasis RV Park. (2023). Retrieved from https://almondtreeoasispark.com/

Arena RV Park. (2023). *Arena RV Park*. Retrieved from http://www.arenarvpark.net/

Association of Environmental Professionals. (2019). *2019 CEQA Statute and Guidelines.*

Blackstone North RV Park. (2023). *Blackstone North RV Park*. Retrieved from https://www.blackstonervpark.com/

Bureau of Economic Analysis. (2021). *Employment and GDP.* Retrieved from Bureau of Economic Analysis: https://www.bea.gov/data/by-place-county-metro-local

CA Employment Development Department. (2023). *Fresno County Profile*. Retrieved from California Employment Development Department: https://labormarketinfo.edd.ca.gov/cgi/databrowsing/localAreaProfileQSResults.asp?selectedarea=Fresno+County&selectedindex=10&state=true&geogArea=0604000019&countyName=#:~:text=Located%20in%20the%20fertile%20Central,state%2C%20encompassing%206%2C000%20squ

California Code of Regulations. (Accessed 2023). *California Code Regulations Title 14 Section 15131.* Retrieved from Case Text: https://casetext.com/regulation/california-code-of-regulations/title-14-natural-resources/division-6-resources-agency/chapter-3-guidelines-for-implementation-of-the-california-environmental-quality-act/article-9-contents-of-environmental-impact-reports/se

California Department of Health Care Access and Information. (2023a). *Coalinga Regional Medical Center*. Retrieved from California Department of Health Care Access and Information: https://hcai.ca.gov/facility/coalinga-regional-medical-center/

California Department of Health Care Access and Information. (2023b). *Clovis Community Medical Center*. Retrieved from California Department of Health Care Access and Information: https://hcai.ca.gov/facility/clovis-community-medical-center/

California Department of Health Care Access and Information. (2023c). *Community Regional Medical Center - Fresno*. Retrieved from California Department of Health Care Access and Information: https://hcai.ca.gov/facility/community-regional-medical-center-fresno/

California Department of Health Care Access and Information. (2023d). *Kaiser Foundation Hospotal Fresno*. Retrieved from California Department of Health Care Access and Information: https://hcai.ca.gov/facility/kaiser-foundation-hospital-fresno/

California Department of Health Care Access and Information. (2023e). *St Agnes Medical Center*. Retrieved from California Department of Health Care Access and Information: https://hcai.ca.gov/facility/st-agnes-medical-center/

California Department of Health Care Access and Information. (2023g). *Adventist Health Reedley*. Retrieved from California Department of Health Care Access and Information: https://hcai.ca.gov/facility/adventist-health-reedley/

California Department of Health Care Access and Information. (2023h). *Adventist Health Hanford*. Retrieved from California Department of Health Care Access and Information: https://hcai.ca.gov/facility/adventist-health-hanford/

California Department of Health Care Access and Information. (2023i). *Kaweah Delta Medical Center*. Retrieved from California Department of Health Care Access and Information: https://hcai.ca.gov/facility/kaweah-delta-medical-center/

California Department of Health Care Access and Information. (2023j). *Tulare Regional Medical Center*. Retrieved from California Department of Health Care Access and Information: https://hcai.ca.gov/facility/tulare-regional-medical-center/

California Department of Housing and Community Development. (2021). *Fresno Council of Governments Regional Housing Needs Assessment.* Retrieved from Department of Housing and Community Development: https://fresnocog.wpenginepowered.com/wp-content/uploads/2022/01/Fresno-COG-RHNA-Determination-Final.pdf

California Dept of Finance. (2023). *Projections.* Retrieved from California Dept of Finance: https://dof.ca.gov/forecasting/demographics/projections/

California Housing Parthership. (2019). *FRESNO COUNTY'S HOUSING EMERGENCY UPDATE.* Retrieved from California Housing Partnership: http://chpc.net/wp-content/uploads/2019/05/Fresno-HNR-2019.pdf

California Housing Partnership. (2023). *324,000 Naturally-Occurring Affordable Homes at Risk.* Retrieved from California Housing Partnership: https://chpc.wpenginepowered.com/wp-content/uploads/2023/03/NOAH-2023_final-3.23.pdf

California Legislative Information. (2015). *CHAPTER 4.9. Payment of Fees, Charges, Dedications, or Other Requirements Against a Development Project [65995 - 65998]*. Retrieved from https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=GOV&sectionNum=65995

California Legislative Information. (Accessed 2023). *Education Code Section 17620.* Retrieved from California Legislative Information: https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=EDC&sectionNum=17620

California State Board of Equalization. (2012). *Guidelines for Active Solar Energy Systems New Construction Exclusion.*

Campendium. (2023a). *Campendium*. Retrieved from Sunset West Mobile Home Park: https://www.campendium.com/sunset-west-mobile-home-park

Campendium. (2023b). *Visalia-Sequoia National Park KOA*. Retrieved from https://www.campendium.com/visalia-sequoia-national-park-koa

CDFA. (2020). *California Agricultural Statistics Review 2019-2020.* Retrieved from CDFA: https://www.cdfa.ca.gov/Statistics/PDFs/2020_Ag_Stats_Review.pdf

CDFA. (2022). *California Agricultural Statistics Review 2021-2022.* Retrieved from California Dept of Food and Agriculture: https://www.cdfa.ca.gov/Statistics/PDFs/2022_Ag_Stats_Review.pdf

CDTFA. (2023a). *Sales and Use Tax in California*. Retrieved from California Department of Tax and Fee Administration: https://www.cdtfa.ca.gov/taxes-and-fees/sutprograms.htm

CDTFA. (2023b). *California Sales and Use Tax Rates by County and City.* Retrieved from California Department of Tax and Fee Administration: https://www.cdtfa.ca.gov/formspubs/cdtfa95.pdf

CDTFA. (2023c). *District Taxes, Rates, and Effective Dates.* Retrieved from California Department of Tax and Fee Administration: https://www.cdtfa.ca.gov/formspubs/cdtfa105.pdf

CEC. (2021). *California Code of Regulations, Title 20. Public Utilities and Energy. Division 2. State Energy Resources Conservation and Development Commission. Chapter 5. Power Plant Site Certification, Appendix B. Information Requirements for an Application. (g)(7).*

City of Fresno. (2023). *City of Fresno Adopted FY 2023 Budget.* City of Fresno. Retrieved from https://www.fresno.gov/wp-content/uploads/2023/04/upload_tempFY-2023-Adopted-Budget-1.pdf

Community Regional Medical Center. (2023). *About Community Regional Medical Center*. Retrieved from Community Regional Medical Center: https://www.communitymedical.org/locations/community-regional-medical-center

Country Manor Mobile Home Community. (2023). Retrieved from https://www.inspirecommunities.com/communities/country-manor/

County of Fresno. (2023a). *County of Fresno 2022-2023 Recommended Budget.* County of Fresno. Retrieved from https://www.fresnocountyca.gov/files/sharedassets/county/v/1/county-administrative-office/cao-budget/fy-2022-23-budget/fy-2022-23-recommended-budget.pdf

County of Fresno. (2023b). *Property Tax Information - Frequently Asked Questions*. Retrieved from Fresno County: https://www.fresnocountyca.gov/Departments/Auditor-Controller-Treasurer-Tax-Collector/Property-Tax-Information/Frequently-Asked-Questions

County of Fresno. (2023c). *County of Fresno FY 2023-24 Recommended Budget Line Item Detail.* County of Fresno. Retrieved from https://www.fresnocountyca.gov/files/sharedassets/county/v/2/county-administrative-office/cao-budget/fy-2023-24-budget/fy-2023-24-recommended-budget-line-item-detail.pdf

DeRoos, J. A. (1999, April). Natural Occupancy Rates and Development Gaps - a Look at the U.S. Lodging Industry. *Cornell Hotel and Restaurant Asministration Quarterly, Volumne 40, No.2*, pp. 14-22.

DiGangi, D. (2023, August 17). *As demand for solar labor surges, training standards are a key focus: Fluke specialist*. Retrieved from Utility Dive: https://www.utilitydive.com/news/solar-labor-demand-training-workforce-seia-energy/691188/#:~:text=Worker%20demand%20is%20high%20across,expand%20their%20labor%20force%20accordingly.

District, R. J. (2023, September 8). School Development Fee Inquiry. (R. Chen, Interviewer)

Education Data Partnership. (2023). *Fresno County*. Retrieved from Education Data Partnership: https://www.ed-data.org/county/Fresno

Environmental Systems Research Institute. (Accessed, 2023). Drive Time Analysis. Retrieved 8 25, 2023

EPA. (Accessed 2023). *Executive Order 12898.* Retrieved from United States Environmental Protection Agency: https://www.epa.gov/laws-regulations/summary-executive-order-12898-federal-actions-address-environmental-justice

ESRI. (2023). *ESRI Demographic and Income Profile.* Retrieved from ARCGis Business Analyst: https://ago-item-storage.s3.amazonaws.com/c2b137cbb5074263b8fa2673475e7d71/Demographic_and_Income_Profile_5df0796b-ddc4-40c1-ae60-75fe6c5510ed.pdf?X-Amz-Security-Token=IQoJb3JpZ2luX2VjEB4aCXVzLWVhc3QtMSJHMEUCIGq88VaWFOcyeapdnBoWBLbIIoUNUtJH250KgzeXCsrWAiE

Fabra, N., Lacuesta, A., Gutierrez, E., & Ramos, R. (2023). Some (but not all) investments in renewable energy generate local jobs. *Centre for Economic Policy and Research*. Retrieved from Centre for Economic Policy and Research: https://cepr.org/voxeu/columns/some-not-all-investments-renewable-energy-generate-local-jobs

Feldman, D., Dummit, K., Zuboy, J., & Margolis, R. (2023). *Spring 2023 Solar Industry Update.* National Renewable Energy Laboratory (NREL).

Firebaugh Hacienda & Mobile Home Park. (2023). Retrieved from http://www.firebaughhacienda.com/

Fischer, A. (2023, July 19). *Solar jobs grow 3.5% in 2022, workforce challenges remain*. Retrieved from pv magazine: https://pv-magazine-usa.com/2023/07/19/solar-jobs-grow-3-5-in-2022-workforce-challenges-remain/#:~:text=California%20leads%20the%20way%20with,with%20a%20total%20of%2017%2C580.

Franciscan Mobile Estates. (2023d). Retrieved from https://www.mhvillage.com/parks/3055

Fresno County. (2019). *2019 Ag Crop Report.* Retrieved from Fresno County Dept of Ag and Weights and Measures: https://www.fresnocountyca.gov/files/sharedassets/county/v/1/agricultural-commissioner/ag-crop-reports/2019-fresno-county-crop-report.pdf

Fresno County. (2023, April). *Fresno County Zoning Ordinance.* Retrieved from Fresno County: https://www.fresnocountyca.gov/files/sharedassets/county/v/1/public-works-and-planning/development-services/planning-and-land-use/general-plan/4_draft-zoning-ordinance-u.pdf

Fresno County. (2023a). *General Plan Background Report.* Retrieved from Fresno County California: https://www.fresnocountyca.gov/files/sharedassets/county/v/2/public-works-and-planning/development-services/planning-and-land-use/general-plan/fcgpr-background-report-2023-05-10.pdf

Fresno County Fire Protection District. (2023). *District Operations*. Retrieved from Fresno County Fire Protection District: https://www.fresnocountyfire.org/district-operations

Fresno County Office of Education. (2023). *Districts*. Retrieved from Fresno County Superintendent of Schools: https://www.fcoe.org/districts

Fresno County Public Health. (2023a). *EMS Overview*. Retrieved from Fresno County: https://www.fresnocountyca.gov/Departments/Public-Health/Emergency-Services/Administration-of-EMS/EMS-Overview

Fresno County Public Health. (2023b). *Fresno County Operations*. Retrieved from Fresno County Public Health: https://www.fresnocountyca.gov/Departments/Public-Health/Emergency-Services/Fresno-County-Operations

Fresno County Sheriff's Office. (2023a). *Patrol Areas*. Retrieved from Fresno County Sheriff's Office: https://www.fresnosheriff.org/units/enforcement/patrol-areas.html

Fresno County Sheriff's Office. (2023b). *Area 1*. Retrieved from Fresno County Sheriff's Office: https://www.fresnosheriff.org/area-1.html

Fresno County Sheriff's Office. (2023c). *Mutual Aid*. Retrieved from Fresno County Sheriff's Office: https://www.fresnosheriff.org/units/enforcement/mutual-aid.html

Fresno County, Department of Agriculture and Weights and Measures. (2019). *2019 Ag Crop Report.* Retrieved from Fresno County Deptartment of Agriculture and Weights and Measures: https://www.fresnocountyca.gov/files/sharedassets/county/v/1/agricultural-commissioner/ag-crop-reports/2019-fresno-county-crop-report.pdf

Fresno County, Department of Agriculture and Weights and Measures. (2020). *2020 Ag Crop Report.* Retrieved from Fresno County Dept of Ag and Weights and Measures: https://www.fresnocountyca.gov/files/sharedassets/county/v/1/agricultural-commissioner/ag-crop-reports/2020-fresno-county-crop-report.pdf

Fresno County, Department of Agriculture and Weights and Measures. (2021). *2021 Ag Crop Report.* Retrieved from Fresno County Dept of Ag and Weights and Measures: https://www.fresnocountyca.gov/files/sharedassets/county/v/1/agricultural-commissioner/ag-crop-reports/2021-fresno-county-crop-report.pdf

Fresno County, Resources and Parks Division. (2023). *Resource Guide for the Disposal of Construction and Demolition Debris.* Retrieved from Fresno County: https://www.fresnocountyca.gov/files/sharedassets/county/v/1/vision-files/files/20691-construction-demolition-guide.pdf

Fresno EDC. (2015). *COUNTY OF FRESNO COMPREHENSIVE ECONOMIC DEVELOPMENT STRATEGY.* Retrieved from Fresno County: https://www.fresnocountyca.gov/files/sharedassets/county/v/1/county-administrative-office/economic-development/ceds.pdf

Fresno Unified School District. (2022). *Resolution No. 21-45.* Retrieved from Fresno Unified School District: https://facilities.fresnounified.org/wp-content/uploads/Board-Approved-Resolution-Adopting-Level-1-Fee-Increases-6-15-2022.pdf

Future, R. f. (2021). *Carbon Pricing Bill Tracker*. Retrieved from https://www.rff.org/publications/data-tools/carbon-pricing-bill-tracker/

Gadzanku, S., Kramer, A., & Smith, B. (2023). *An Updated Review of the Solar PV Installation Workforce Literature.* NREL.

Garcia, O. J. (2022). *County of Fresno Annual Comprehensive Financial Report for Fiscal Year Ended June 30, 2022.* County of Fresno.

Gilbert , J., Ricci-Jürgensen, M., & Ramola, A. (2020). *Quantifying the Benefits of Applying Quality Compost to Soil .* International Solid Waste Association .

Golden Plains Unified School District . (2020). Retrieved from School Facility Fee Justification Report for Residential, Commercial, & Industrial Development Projects:

https://resources.finalsite.net/images/v1655108043/gpusdorg/e3p3suhr4msmz2rcwbqo/Level-I-2020-Golden-Plains-FINAL-06-17-2020.pdf

GoodSam. (2023a). *Good Sam*. Retrieved from Fresno Mobile Home & RV Park: https://www.goodsam.com/campgrounds-rv-parks/california/fresno/fresno-mobile-home-rv-park-201201027/

GoodSam. (2023b). *Riverland RV Resort*. Retrieved from https://www.goodsam.com/campgrounds-rv-parks/california/kingsburg/riverland-rv-resort-200000728/

IMPLAN. (2021). *Industry Detail — Labor Income for Fresno, Kings, and Madera Counties.* Retrieved from https://implan.com/

In Response to the Increasing Threat of Climate Change, Most Americans Support Policies to Confront It. (2021). Retrieved from Energy Policy Institute at the University of Chicago (EPIC): https://epic.uchicago.edu/news/poll-in-response-to-the-increasing-threat-of-climate-change-most-americans-support-policies-to-confront-it/

Interstate Renewable Energy Council (IREC). (2023, July). *National Solar Jobs Census 2022: Executive Summary*. Retrieved from IRECUSA: https://irecusa.org/census-executive-summary/

Interstate Renewable Energy Council (IREC). (2023b). *California: Solar and Clean Energy Jobs*. Retrieved from https://irecusa.org/california-solar-and-clean-energy-jobs/

Interstate Renewable Energy Council (IREC). (2023c, July). *National Solar Jobs Census 2022: Long-Term Outlook for Solar Jobs*. Retrieved from IRECUSA: https://irecusa.org/census-long-term-outlook-for-solar-jobs/#:~:text=While%20much%20remains%20uncertain%2C%20the,over%20700%20GW%20in%202033.&text=The%20Solar%20Energy%20Industries%20Association,double%2C%20reaching%20538%2C000%20by%202032.

Kings Canyon Mobile Home Park . (2023). Retrieved from https://kingscanyonmobilehomepark.weeblysite.com/

Kings River RV Resort. (2023). Retrieved from https://kingsriverrvresort.com/

Madera RV Park. (2023). Retrieved from https://www.maderarvpark.com/rates-amenities/

McGoodwin, A. (2018). *Mitigating the Municipal Waste Management Crisis in Emerging Markets: A Cost-benefit Analysis of Enhancing Waste Management Interventions.* Mossavar-Rahmani Center for Business and Government and Lecturer in Public Policy, Harvard Kennedy School.

MH Village. (2023a). *Sunset Vista Estates*. Retrieved from https://www.mhvillage.com/parks/2934

MHBO. (2023). *The Willows of Santiago*. Retrieved from https://www.mhbo.com/mobile-home-park/39702-the-willows-of-santiago-2575-s-willow-ave-fresno-ca-93725

MHVillage. (2023b). *Kings Mobile Home Estates*. Retrieved from https://www.mhvillage.com/parks/3389

MHVillage. (2023c). *Four Seasons*. Retrieved from https://www.mhvillage.com/parks/3052

MHVillage. (2023e). *Town and Country Mobile Village*. Retrieved from https://www.mhvillage.com/parks/29615

MHVillage. (2023f). *Flamingo Mobile Home Lodge*. Retrieved from https://www.mhvillage.com/parks/3016

MHVillage. (2023g). *Sunnyside Mobile Estates*. Retrieved from https://www.mhvillage.com/parks/4579

MHVillage. (2023h). *Shady Acre Trailer Park*. Retrieved from https://www.mhvillage.com/parks/4391

MHVillage. (2023i). *Rancho Los Banos Mobile Park*. Retrieved from https://www.mhvillage.com/parks/4140

Mid-Valley Disposal. (2023). *Kerman.* Retrieved from Mid-Valley Disposal: https://www.midvalleydisposal.com/locations/kerman/

Missouri. (2020). *Sample Costs to Produce Garlic.* Retrieved from Missouri: https://fapri.missouri.edu › MO_Garlic_CoP

Modern Mobile Home Park. (2023). Retrieved from https://www.montechristocommunities.com/community/modern-mobile-home-park/

New Horizons Mobile RV Park. (2023). Retrieved from https://newhorizonsrvpark.com/

NRCS. (2014). *Guidelines for Economic Impact Analysis with IMPLAN.* Retrieved from USDA NRCS: https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=36604.wba

Office of Public School Construction. (2023). *Annual Adjustment to SFP Grants and Developer Fee History* . Retrieved from https://www.dgs.ca.gov/OPSC/Resources/Page-Content/Office-of-Public-School-Construction-Resources-List-Folder/Annual-Adjustment-to-SFP-Grants-and-Developer-Fee-History.

Parkview Mobilehome and RV Park. (2023). Retrieved from https://www.parkviewmobilehomepark.com/

Platt, B., Bell, B., & Harsh, C. (2013). *Composting in Maryland to Reduce Waste, Create Jobs, & Protect the Bay.* Institute for Local Self-Reliance.

PPIC. (Accessed 2023, October). *Managing Water and Farmland Transitions in the San Joaquin Valley.* Retrieved from Public Policy Institute of California: https://www.ppic.org/publication/managing-water-and-farmland-transitions-in-the-san-joaquin-valley/

Rosewood Glen. (2023). Retrieved from https://www.rosewoodglenrv.com/rent-amenities/

Shires, M. A. (2022, March 16). *The Economic Impact of the Westlands Water District on the Local and Regional Economy: 2022 Update.* Retrieved from Westlands Water District: https://wwd.ca.gov/wp-content/uploads/2022/03/economic-impact-report-2022-update.pdf

Solar Energy Industries Association (SEIA). (2023a). *Impact of the Inflation Reduction Act*. Retrieved from SEIA: https://www.seia.org/research-resources/impact-inflation-reduction-act

Solar Energy Industries Association. (2023b). *2022 DEIJ Certification Program Annual Report.* Solar Energy Industries Association.

STR. (2023). *Standard Trend Hotel Data within Fresno MSA.*

The County of Fresno Department of Agriculture and Weights and Measures. (2019). *2019 Ag Crop Report.* Retrieved from Fresno County:

https://www.fresnocountyca.gov/files/sharedassets/county/v/1/agricultural-commissioner/ag-crop-reports/2019-fresno-county-crop-report.pdf

The Riverbend Park. (2023). *Riverbend RV Park*. Retrieved from https://theriverbendpark.com/

Three Palms RV Park. (2023). Retrieved from https://www.threepalmsmobilehomepark.com/

U.S. Census Bureau. (2021). *American Community Survey, 5-year Estimates.* Retrieved from U.S. Census Bureau: https://www.census.gov/programs-surveys/acs

U.S. Department of Agriculture . (2017). *Census of Agriculture, Fresno County Profile.* Retrieved from U.S. Department of Agriculture: https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/County_Profiles/California/cp06019.pdf

U.S. General Services Administration. (2023). *Per Diem Rates.* Retrieved from General Services Administration: https://www.gsa.gov/travel/plan-book/per-diem-rates?gclid=CjwKCAjwgZCoBhBnEiwAz35RwoIsIwd7uBc48psfCH8Ji1VGEykzbonlu8hAIITjoTWiqc8ZMgigaxoCwF0QAvD_BwE

UC Berkeley. (2016, May). *Identifying Least-Conflict Solar PV Development in California's San Joaquin Valley.* Retrieved from University of California, Berkeley: https://www.law.berkeley.edu/wp-content/uploads/2016/05/A-PATH-FORWARD-May-2016.pdf

UC Davis. (1990). *Sample Cost to Produce Irrigated Barley.* Retrieved from UC Davis: https://coststudyfiles.ucdavis.edu/uploads/cs_public/6b/ca/6bca7efd-c89d-4974-b434-091c6a5f9d78/ba-vs-90-barley-1990-irrigatedsanjoaquinvalleysouthmaderacounty.pdf

UC Davis. (2012). *Sample Costs to Produce Cotton.* Retrieved from UC Davis: https://cottoninfo.ucdavis.edu/files/150403.pdf

UC Davis. (2016). Retrieved from Sample Costs to Produce Onions for Dehydrating: https://coststudyfiles.ucdavis.edu/uploads/cs_public/a7/1e/a71ed327-7d6c-4ae5-92a2-52854cb4195c/16_onionshydrostulelakefinaldraftmar22.pdf

UC Davis. (2016 (2)). *Sample Costs to Produce Wheat.* Retrieved from UC Davis: https://coststudyfiles.ucdavis.edu/uploads/cs_public/dc/15/dc158210-055c-494c-9c2f-54083fbf0323/2016wheatsacvalleyfinaldraft122116.pdf

UC Davis. (2018). *SAMPLE COSTS TO PRODUCE PROCESSING TOMATOES.* Retrieved from UC Davis: https://coststudyfiles.ucdavis.edu/uploads/cs_public/2e/7a/2e7a8cf0-b7fd-4207-b945-7b4b8a82625c/17processtomatofresnosdi-final_draft.pdf

UC Davis. (2019). *SAMPLE COSTS TO ESTABLISH AN ORCHARD AND PRODUCE almonds.* Retrieved from UC Davis: https://coststudyfiles.ucdavis.edu/uploads/cs_public/cb/07/cb078774-fd91-4418-906e-f94dfbd84506/2019almondssjvsouth.pdf

UC Davis. (2020). *Sample Costs to Establish and Produce Pistachios.* Retrieved from UC Davis: https://coststudyfiles.ucdavis.edu/uploads/cs_public/e4/bd/e4bd9353-25a1-4258-b5b1-42a203bc09ad/2020pistachiosjvsouth.pdf

UC Davis. (2023). *SAMPLE COSTS TO PRODUCE AND HARVEST ROMAINE HEARTS LETTUCE.* Retrieved from UC Davis: https://coststudyfiles.ucdavis.edu/uploads/pub/2023/08/04/2023-romheartslettuce-full-final.pdf

UCSF Department of Emergency Medicine. (2023). *UCSF Fresno*. Retrieved from UCSF Department of Emergency Medicine: https://emergency.ucsf.edu/ucsf-fresno

United States Department of Energy. (2023). *United States Energy and Employment Report 2023.* United States Department of Energy.

University of California, San Francisco. (2015). *UCSF and Community Medical Centers Sign Agreement To Expand Children's Services in Fresno.* Retrieved from UCSF: https://www.ucsf.edu/news/2015/09/131631/ucsf-and-community-medical-centers-sign-agreement-expand-childrens-services

US Bureau of Labor Statistics. (2022). Fresno County Occupational Employment and Wage Statistics. *Bureau of Labor Statistics Occupational Employment and Wage Statistics*. Retrieved from Bureau of Labor Statistics. (2022) .

US Bureau of Labor Statistics. (2022). *Occupational Employment and Wage Statistics*. Retrieved from US Bureau of Labor Statistics: https://www.bls.gov/oes/current/oessrcma.htm

US Bureau of Labor Statistics. (2022). *Occupational Employment and Wage Statistics*. Retrieved from US Bureau of Labor Statistics: https://www.bls.gov/oes/current/oessrcma.htm

US Bureau of Labor Statistics. (2023, June). *Employer Cost for Employee Compensation.* Retrieved from US Bureau of Labor Statistics, News Releases: https://www.bls.gov/news.release/pdf/ecec.pdf

US Bureau of Labor Statistics. (N.D.). *Careers in Solar Power.* Retrieved from US Bureau of Labor Statistics: https://www.bls.gov/green/solar_power/

US Census Bureau. (2020a). *Quick Facts*. Retrieved from US Census Bureau: https://www.census.gov/quickfacts/fact/table/fresnocountycalifornia,CA,US/POP060220

US Census Bureau. (2020b). *On The Map Area Profile, Fresno County*. Retrieved from US Census On The Map: https://onthemap.ces.census.gov/

US Census Bureau. (2021). *ACS 5-Year (2017-2021), Tables DP03: Selected Economic Characteristics.*

US Census Bureau. (2021a). *Table DP05 ACS Demographic and Housing Estimates*. Retrieved from US Census Bureau: https://data.census.gov/table?q=DP05:+ACS+Demographic+and+Housing+Estimates

US Census Bureau. (2021b). *DP04 Selected Housing Characteristics.* Retrieved from US Census Bureau: CA Housing Characteristics.xlsx

US Census Bureau. (2021c). *American Community Survey (ACS) One-Year Public Use Microdata Sample (PUMS.* Retrieved from US Census Bureau American Community Survey: data.census.gov

US Census Bureau. (2022). Annual Estimates of the Resident Population for Counties in California: April 1, 2020 to July 1, 2022. *American Community Survey*.

US Census Bureau. (Accessed 2023). *Quick Stats.* Retrieved from US Census Bureau Quick Stats: https://www.census.gov/quickfacts/fact/table/CA,kingscountycalifornia,maderacountycalifornia,fresnocountycalifornia,US/POP010210

US Department of Veteran's Affairs. (2023). *About Us*. Retrieved from US Department of Veteran's Affairs: https://www.va.gov/central-california-health-care/about-

us/#:~:text=Our%20medical%20center%20has%20114,was%20dedicated%20in%20March%201950.

US Energy Information Administration. (2023, June). *Use of Hydrogen.* Retrieved from US Energy Information Administration: https://www.eia.gov/energyexplained/hydrogen/use-of-hydrogen.php#:~:text=Hydrogen%20is%20used%20in%20industrial,the%20sulfur%20content%20of%20fuels.

USDA CroplandCROS. (n.d.). *Cropladn Data Layer 2019-2021.* Retrieved from CroplandCROS: https://croplandcros.scinet.usda.gov/

USDA National Agricultural Statistics Service. (2019). Cropland Data Layer. Retrieved 9 8, 2023, from https://nassgeodata.gmu.edu/CropScape/

USDA National Agricultural Statistics Service. (2020). Cropland Data Layer. Retrieved 9 8, 2023, from https://nassgeodata.gmu.edu/CropScape/

USDA National Agricultural Statistics Service. (2021). Cropland Data Layer. Retrieved 9 8, 2023, from https://nassgeodata.gmu.edu/CropScape/

USEPA. (2017). *The Social Cost of Carbon*. Retrieved from https://19january2017snapshot.epa.gov/climatechange/social-cost-carbon_.html

Westbrook Mobile Home RV Park. (2023). Retrieved from https://westbrookmhp.com/

Westlands Water District. (2023, 6 16). *Westlands Water District & Partners Awarded Grant from California Department of Conservation for Multibenefit Land Repurposing Program.* Retrieved from Westlands Water District: https://wwd.ca.gov/wwd-media/press-release-6-16-2023/

Westlands Water District. (Accessed 2023). *Westlands Water District*. Retrieved from Westlands Water District: https://wwd.ca.gov/

Westlands Water District GSA and County of Fresno GSA-Westside. (2022). *Groundwater Sustainability Plan.*

Woodward Bluffs. (2023). Retrieved from https://www.woodwardbluffsestates.com/

11. Agency Contacts and Personal Communications

Agency	Contact
Freson County Sheriff	Lt. Brandon Purcell
Fresno County Fire Protection District	Assistant Chief Ryan Michaels
Central California EMS Agency	Director Daniel J. Lynch Dale Dotson, Operations Coordinator
Fresno County Economic Development Corporation	Julian Ramos, Client Services Manager Spencer Bremer, Research Analyst

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