

# **Economic Impact to San Luis Obispo County of the California Valley Solar Ranch**



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# Executive Summary

Below is the summary of this response, whereas:

*Direct Impacts* are attributable to the activity on the site,  
*Indirect Impacts* are the inputs than support the direct activity,  
*Induced Impacts* result from the spending of the direct and indirect employees.

## Total Economic and Tax Impacts in SLO County

<b>Impact</b>	<b>Economic Activity</b>	<b>Job-Years<sup>1</sup></b>	<b>Employee Compensation<sup>2</sup></b>	<b>Economic Output<sup>3</sup></b>
Direct	Project Development	980	\$103,000,000	\$170,000,000
Indirect	Local Supply Chain	360	\$15,000,000	\$67,000,000
Induced	Employee Spending	640	\$18,000,000	\$78,000,000
<b>Total Economic Impacts</b>		<b>1,980</b>	<b>\$136,000,000</b>	<b>\$315,000,000</b>
<b>Tax Impacts<sup>4</sup></b>				<b>\$11,000,000+</b>

[1] Job estimates for indirect and induced employment include part-time and full-time employment.

[2] Employee compensation includes wages as well as fringe benefits paid for by employers.

[3] Economic output includes all local spending on labor, materials, and services, not the value of the energy being created, and thus is a gross underestimation of the traditional "economic output."

[4] Does not include property tax that would be levied on the Visitor Center and O&M building.

# Part I

Prologue memo titled,  
"Economic Benefits of the  
California Valley Solar Ranch"  
Prepared by Cal Poly Economics  
Professor Stephen Hamilton

# **Economic Benefits of the California Valley Solar Ranch**

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On November 29, 2010, U.S. Energy Secretary Steven Wu described the recent success of the People's Republic of China in developing clean energy technologies as a "sputnik moment" for the U.S. In his speech, Dr. Chu urged U.S. political and business leaders to facilitate research and development in clean-energy technologies to capitalize on emerging economic opportunities in the rapidly-growing global clean energy market. The proposed California Valley Solar Ranch, (CVSR) which builds on strengths already identified as high-priority opportunities for economic growth in the county (EVC, 2010), helps San Luis Obispo County develop a position at the nexus of innovation in green technology.

The CVSR provides several broad types of economic benefits that range from local to global in scale. Globally, the power generated by the proposed 250 megawatt facility provides an economic benefit by displacing energy units that would otherwise be produced largely through the combustion of fossil fuel, thereby reducing future economic costs associated with global warming. In and of itself, the global benefit of displacing conventional power production with solar power production is diffuse in the sense that a 250 megawatt facility contributes a small share of power production relative global energy use, but the scale of operation at the local level is nevertheless considerable, equivalent to 39 percent of total electricity consumption and 99 percent of residential electricity consumption in the County (CEC, 2010).<sup>1</sup> The CVSR Project represents an important local action towards a cooperative global solution to the problem of clean energy creation.

## ***1. State and National Benefits***

At the national level, investments in solar power represents a rise to the call for business leaders to seize emerging economic opportunities in the nascent clean energy sector of the U.S. economy. Clean energy investments in San Luis Obispo County represent a strategic opportunity for research and development in green technology given the high rate of growth of the County's green economy over the period 1995-2010 and the close affinity between the green products and services sector and the key industries recognized by the county as encompassing positions of competitive advantage contributing to economic growth (EVC, 2010). Successful research and development programs place eggs in many baskets, and San Luis Obispo County, with its proximity to world-class engineering and architecture resources at Cal Poly and its prevailing concentration of industrial activity in key support areas for clean technology

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<sup>1</sup> Details on these calculations are provided in Section 2B.

development, has the potential to become a market leader in the next generation of clean energy technology.

At the state level, the CVSR contributes to job creation in the State of California. Much of the job creation on the manufacturing side is likely to be concentrated at SunPower's Milpitas facility, providing employment benefits with favorable timing for a workforce in the State of California that is currently suffering through a period of 12 percent unemployment (CAEDD, 2010).

The CVSR also responds to the ambitious commitment of the State of California to meet its renewable portfolio standard (RPS). California has provided an array of state manufacturing incentives, tax credits and other public aid to facilitate private investment in solar energy projects. These programs create targeted profit opportunities that are designed to steer business activity in the direction of meeting important social goals, for instance job creation and the displacement of fossil fuel inputs with non-polluting wind and solar inputs in energy production, and the role of financial incentives for clean energy development is to ensure that the overriding social objective does not otherwise go unmet. Programs tailored towards attaining social goals are only effective to the extent to which they are manifested in opportunities that market participants can exploit.

## ***2. San Luis Obispo County Benefits***

At the county level, the California Valley Solar Ranch provides a range of benefits resulting from the actual construction and operation of the facility in San Luis Obispo County. The regional economic impacts that stem from the construction and operation of the plant on local labor market conditions, which are the subject of the detailed economic impact analysis, can be classified into *direct effects* (business revenue and the wages and benefits accruing to those employed by the business), *indirect effects* (the economic gain to individuals involved in business-to-business transactions that support the project, for instance local businesses supplying building materials and engineering services), and *induced effects* (increased consumer spending on goods and services that can be attributed to increased economic activity through the direct and indirect effects). The input-output methodology that underlies the calculation of each type of effect provides an important characterization of the economic value created by a business development project, with the important limitation that the future economic value of a project is based on a snapshot of the local economic structure at a particular point in time (usually the latest period in which data is available). That is, the input-output method does not accommodate structural changes that can potentially occur in the economy in the future. Some projects have greater synergy with the regional economy than others in the sense of facilitating structural changes in the core set of industries that underpin economic growth in the region. The agglomeration of particular industries in a region, for instance the concentration of hi-tech electronics industries in Silicone Valley, contributes to competitive advantage in ways that can enhance regional economic growth.

San Luis Obispo County, like many other regions in the state and nation, is in the midst of an economic recession. Business opportunities that are capable of contributing to economic growth in the current economic environment are extremely valuable to regional economic activity, as are

projects that contribute to economic growth in industries that support and/or contribute to competitive advantage in the region.

### ***2.A. Construction Jobs***

The current economic climate in the County mirrors general conditions in the U.S. economy, with a current unemployment rate of 9.4 percent in October, 2010 (CAEDD, 2010) relative to 9.6 percent nationally, and proportionally larger levels of unemployment in construction trades. The U.S. unemployment rate in the construction industry, largely a symptom of the housing-driven economic downturn, increased to a peak of 27.1 percent in February, 2010, and currently stands at 17.3 percent, nearly double the national unemployment rate across all industries (BLS, 2010). A similar trend emerged in San Luis Obispo County, where total employment decreased 5.0 percent (from 105,030 to 99,740) over the period May 2008 - May 2009, while employment in construction and extraction occupations decreased 23.7 percent (from 5,700 to 4,350) over the same period (BLS, 2010). Indeed, despite its relatively small share in the overall employment of workers in San Luis Obispo County (5.4 percent in 2008), job losses in the construction and extraction industry accounted for over one-quarter of all job losses in the County over the period May 2008 - May 2009. As the current housing market continues to struggle, employment conditions in the construction industry continues to be anemic, and the current dearth of new construction projects in the County suggests a full job market recovery in the construction trades remains, at best, a few years away.

The CVSR Project provides jobs for electricians, carpenters, engineers, iron workers and other skilled labors in the construction industry. Most of the jobs created by the solar ranch are concentrated in the initial 3-year construction phase of the project, which provides a stabilizing effect on employment in the construction industry. In short, the timing of the project appears to be serendipitous.

### ***2.B. Tax Revenue for Local Governments***

The CVSR Project benefits individual cities in the County of San Luis Obispo through several channels of tax collection. Many of the indirect economic benefits resulting from increased consumer spending occur through expenditures at retail establishments, representing taxable transactions that contribute to the general funds of local governments.

Energy produced at the CVSR facility and sold to residences and industrial users in the County is also subject to a utility user's tax (UTT) and/or franchise fee at the retail level that directly contributes to general fund revenue for local government. As of 2008, utility user's taxes cover 45 percent of the population in the State of California and range from 1-11 percent (League of California Cities, 2008). Currently in San Luis Obispo County, the City of San Luis Obispo levies a 5 percent UTT and the City of Grover Beach levies a 1 percent UTT, the City of Paso Robles assesses a 3 percent franchise fee on electric service, while electricity service remains untaxed in all other incorporated areas. Based on current data from the U.S. Census Bureau (2010), a 19.7 percent share of the County's population resides in San Luis Obispo, an 18.4 percent share resides in Paso Robles, and a 5.9 percent share resides in Grover Beach, which amounts to local utility taxes being paid by 44 percent of the population in the County, a rate

comparable to the Statewide average. Based on a representative usage level of 6,333 KWh per capita among residents in the County (CEC, 2010), the population-weighted average electricity tax rate in the County is 1.6 percent ( $=0.05*0.197 + 0.01*0.059 + 0.03*0.184$ ).

At the proposed 250 megawatt capacity of the CVSR Project, the project is anticipated to supply 663,000 megawatt-hours of clean energy per year (SunPower), enough to meet 99.0 percent of the County's annual residential electricity use of 669,587 megawatt-hours and 39.2 percent of the County's total electricity use of 1,690,684 megawatt-hours (CEC, 2010). The average retail price of electricity forecast in 2010 for San Luis Obispo County by the California Energy Commission, which represents a quantity-weighted average rate across the various tiers in the inclining rate structure employed by PG&E, is \$0.156/KWh, suggesting an annual retail value of electricity of \$103.4 million ( $=0.156*663,000$ ) in the downstream consumer market served by PG&E. At prevailing utility tax rates in the County, the retail sale of clean energy generated at the solar ranch provides a potential source of \$1.65 million ( $=0.016*103.4$ ) in tax revenue for local governments. While it is possible that other local governments in the County levy utility taxes on retail electricity sales in the future, such proposals would require voter approval by a 2/3 majority.

### ***2.C. Clusters of Opportunity***

In 2009, the County Board of Supervisors appointed the Economic Vitality Corporation of San Luis Obispo County to develop a strategy to increase economic growth in the County. The Economic Strategy Project that derived from this partnership produced a report that identified six "clusters of opportunity" that are the drivers of economic growth in the County economy (EVC, 2010). Together, the six clusters, which are identified as industries that have more highly concentrated business activity in the County relative to the rest of California, were responsible for 89% of job growth in San Luis Obispo County over the period 1995-2008, as employment in the cluster industries expanded by 59% over the period while the number of jobs in all other industries combined increased by less than 1%. The agglomeration of business activity in the six clusters was particularly notable in the Specialized Manufacturing industries, which more than doubled in size over the period, resulting in 2,116 new jobs, and Building Design and Construction industries, which grew at the fastest rate (22%) over the period 2003-2008 through the addition of 1,791 new jobs. In terms of industry concentration relative to the rest of California, which is an important metric for measuring competitive advantage, the most concentrated industry cluster in the County is Specialized Manufacturing, followed by Wine and Agriculture, and Building Design and Construction.

The Economic Strategy Project identified important linkages between the six clusters of opportunity and the core green economy comprised of industries that provide environmentally-friendly products and services in San Luis Obispo County. The core green economy in San Luis Obispo is characterized by robust employment growth in relation to the rest of the economy, with businesses that provide products and services that reduce environmental impacts and improve resource efficiency enjoying an increase in employment of 89 percent over the period 1995-2008 in relation to an overall increase in employment of 18 percent over the same period across all industries in the County (EVC, 2010). The core green economy is an essential nexus for shaping the competitive advantage that drives economic growth in the County. In 2008, two thirds of

employment in the core green economy was derived from job creation in industries represented by San Luis Obispo County's clusters of opportunity, with the largest areas of green job growth occurring in Building Design and Construction (259 jobs), Knowledge & Innovation Services (294 jobs), and Specialized Manufacturing (101 jobs). In terms of annual average earnings, County employment in the industries encompassed by Building Design and Construction (\$50,000), Specialized Manufacturing (\$49,000), and Knowledge & Innovation Services (\$42,000) represented the highest-paying jobs among the six clusters, an important consideration given the high cost of living in San Luis Obispo County.

The competitive advantage offered by the six clusters of opportunity identified by the County has the potential to leverage Cal Poly expertise in the areas of engineering and architecture. The viability of industrial activity in the Specialized Manufacturing and Building Design and Construction clusters is supported by engineering and architectural strengths at Cal Poly that produce a highly skilled workforce in these areas. The CVSR Project dovetails synergies with the engineering and architectural strengths at Cal Poly that stimulate business activity in the Specialized Manufacturing and Building Design and Construction clusters with the favorable climatic conditions that contribute to regional competitive advantage in the Wine and Agriculture cluster. The employment of construction workers during the initial 3-year phase of project construction arrives at a time of unusually high unemployment in the construction industry, which helps to retain a skilled labor force in clean energy that is essential for job growth in rapidly expanding green economy of San Luis Obispo County.

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# **Part II**

California Valley Solar Ranch  
Economic Impact Analysis

Prepared by

Economics and Planning Systems, Inc (EPS)

Darin Smith and Tepa Banda

## **TECHNICAL MEMORANDUM**

To: Greg Blue, SunPower Corporation  
From: Darin Smith and Tapa Banda  
Subject: California Valley Solar Ranch Economic Impact Analysis;  
EPS #20133  
Date: December 8, 2010

*The Economics of Land Use*



### **Introduction**

The California Valley Solar Ranch project ("CVSR Project") proposes to construct and operate a 250 megawatt solar photovoltaic (PV) power plant in California Valley, an unincorporated area in eastern San Luis Obispo County ("County"). SunPower Corporation, the developers for the CVSR Project, has retained Economic & Planning Systems, Inc. (EPS) to estimate the potential economic impacts of the CVSR Project in the County.

### **Summary of Findings**

EPS's research and analysis has led to the following conclusions:

1. During the nearly 3-year construction period, SunPower will spend approximately \$115 million on Project construction labor, materials and related services in the County and support 680 full-time equivalent (FTE) job-years on site or an average of 227 FTEs per calendar year.
2. These 680 FTEs will include electricians, carpenters, engineers, iron workers, and other skilled labor in addition to general laborers. SunPower expects to pay these workers a total of nearly \$72 million in wages and benefits, with an average salary (excluding benefits) of roughly \$68,000 per year per FTE (in Year 2010 dollars). The wage rates are established in local contractual labor agreements.
3. At full operational capacity, the ongoing operation of the CVSR Project will require 12 FTE on-site employees being paid a total of roughly \$31 million over 25 years (including benefits), with an average salary of approximately \$67,000 per FTE (in 2010 dollars).

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4. Aside from those workers directly employed on the Project site, local construction and operating expenditures for the CSVR Project will indirectly stimulate a total of \$67 million of economic output in local supply businesses (in Year 2010 dollars) and support 360 job-years over the three-year construction period and 25-year operations period. Examples of these "indirect" impacts include payments to local providers of construction equipment, some construction materials, fuel, security, and other goods and services that support the CSVR construction and operations. These figures do not include the spending and jobs required for the PV equipment, the impacts of which are expected to accrue outside the County.
5. Employees at the CSVR Project and related businesses affected by the Project will spend their incomes on a variety of household goods and services such as food, clothing, housing, transportation, medical costs, etc. These employee expenditures are expected to induce additional economic activity which will support more jobs in retail, health care, etc., and those induced workers will also spend money in the economy, thereby creating "induced multiplier effects." In total, induced economic activity is expected to generate approximately \$78 million of economic output (in Year 2010 dollars) and support about 640 job-years in San Luis Obispo County during construction and operation of the CSVR Project.
6. In addition to the 640 "induced" job-years that will be created in San Luis Obispo County, others will occur outside the County. This dynamic occurs because the CSVR workers will spend some of their wages while traveling outside the County and will purchase goods grown or manufactured outside the County. Similar relationships are found in all economic impact modeling for comparably sized regions.
7. Because the majority of CSVR-related direct employment will occur during the construction phase, the indirect and induced jobs and expenditures are also greatest during that phase. With far fewer CSVR employees onsite during the operations phase, the annual indirect and induced effects during that phase are also much lower, although they accumulate significantly over the 25-year period.
8. The job and compensation estimates summarized above should be considered highly conservative projections, as they represent only the effects likely to accrue within San Luis Obispo County. The jobs and wages reported herein reflect only the effects associated with the installation of the CSVR Project, not the costs of acquiring the equipment to be installed. EPS does not have adequate information to estimate the impacts associated with the manufacturing or transportation of the construction materials, including the PV panels and other equipment that are expected to comprise the vast majority (80 percent or more) of the overall costs of the CSVR Project.
9. In addition to the jobs created and related payroll expenditures, the CSVR Project is expected to generate significant tax revenues. According to an analysis produced by another consultant hired by the County to prepare the Project's Environmental Impact Report, the CSVR Project is expected to generate approximately \$7.8 million in one-time sales and use tax revenues for the County during the construction phase, and annual tax revenues of about \$412,000 to \$500,000 during operations from increased property tax receipts.
10. The impacts estimated in this report do not include ancillary projects that may accompany the CSVR Project, including a new aggregate mine, a \$20 million switchyard, and a \$34 million Morro-Midway reconductoring project. These additional projects, if implemented, would add construction jobs and associated spending to the impacts estimated herein.

## Impact Analysis Methodology

This economic impact analysis relies on IMPLAN (Impact Analysis for Planning), an Input-Output (I/O) modeling system developed by the Minnesota IMPLAN Group, and draws upon data collected from numerous state and federal sources, including the Bureau of Economic Analysis, Bureau of Labor Statistics (BLS), and the Census Bureau. The IMPLAN model is widely used for estimating economic impacts across a wide array of industries and economic settings.

Regional economic impact analysis and I/O models in particular provide a means to estimate total effects stemming from a particular industry or activity, and yield estimates of the number and types of jobs created, the amount of wages associated with those jobs, and the total economic output or "final sales" generated within various industries. I/O models rely on economic "multipliers" that mathematically represent the relationship between the initial change in one sector of the economy and the effect of that change on other interdependent industry sectors, corresponding changes in demand for inputs to *those* sectors, and so on. These effects are commonly described as "direct," "indirect" or "induced" and are generally defined as follows:

- The "direct" effect is the initial change in economic activity in a specific industry or sector. For example, economic activities (business revenues, jobs, employee earnings) at the new solar power plant would represent the direct impact on the San Luis Obispo County economy.
- The "indirect" effect results from industry-to-industry transactions required to support the direct activity. This effect is a measure of the change in the output of suppliers linked to the industry that is being evaluated. For example, construction of the new solar power plant will cause an increase in purchases of building materials, engineering services, and other goods from "business-to-business" suppliers in San Luis Obispo County and elsewhere.
- The "induced" effect consists of impacts from employee spending in the regional economy. Specifically, the employees of directly and indirectly affected businesses generate this effect by purchasing goods and services in the regional economy (e.g., food, clothing, automobiles, health care, etc.).

The total economic impact is the sum of the direct, indirect, and induced effects, and measures the impact of an activity as it "ripples" through the economy. The IMPLAN model is calibrated to identify the types and magnitudes of economic effects expected within a specific geographic area, as well as in the broader economy. For this CVSR Project analysis, the model has produced quantitative estimates of the magnitude of regional economic activity resulting from the development and operation of a solar power plant in San Luis Obispo County, and has estimated those impacts within the County as well as in the economy overall.

### Caveats to Input/Output Modeling

Several important caveats are relevant to the interpretation of IMPLAN model estimates. First, IMPLAN relies upon I/O relationships derived from 2008 data (the latest available from IMPLAN). Thus, our analysis assumes that this characterization of the economy is a reasonable approximation of current and future conditions. To the extent that significant structural changes have occurred within the regional economy since 2008 (e.g., additions or subtractions of major employers), our results may not account for such changes. However, EPS is not aware of any such structural changes in the County since 2008, at which point the County, State, and nation were already in the midst of the current economic recession.

Second, the I/O methodology assumes that demand for goods and services by industries or households increases in relation to the increase in income; and that an increase in demand results in a proportional increase in *local* supply and employment. This implies that local suppliers satisfy this initial demand by increasing their output and hiring additional workers rather than shifting their goods or services from one set of consumers to another. This assumption may not hold in areas with tight labor or capital markets since suppliers may find it difficult to obtain these labor or material inputs or other resources necessary to expand production.

## Impact Analysis Results

EPS has projected the economic impacts for the construction phase (expected to be three years) and the operations phase (25 years) of the power plant as summarized in **Table 1** below. Explanations of these summary figures are provided in the pages that follow. All monetary estimates are in constant 2010 dollars.

**Table 1**  
**Summary of CVSR Economic Impacts in the County**  
**California Valley Solar Ranch Economic Impact Analysis; EPS #20133**

Project Phase	Economic Activity	Type of Impact	Economic Impacts in the County (Rounded)		
			Job-Years <sup>1</sup>	Employee Earnings <sup>2</sup>	Output <sup>3</sup>
<b>Construction (3 years)</b>					
	Project Development	Direct Impacts	680	\$72,000,000	\$115,000,000
	Local Supply Chain Business Activity	Indirect Impacts	230	\$10,000,000	\$43,000,000
	Employee Spending	Induced Impacts <sup>4</sup>	480	\$14,000,000	\$59,000,000
		<b>Total Impacts</b>	<b>1,390</b>	<b>\$96,000,000</b>	<b>\$217,000,000</b>
<b>Operations (25 years)</b>					
	Project Operations	Direct Impacts	300	\$31,000,000	\$55,000,000
	Local Supply Chain Business Activity	Indirect Impacts	130	\$5,000,000	\$24,000,000
	Employee Spending	Induced Impacts <sup>4</sup>	160	\$4,000,000	\$19,000,000
		<b>Total Impacts</b>	<b>590</b>	<b>\$40,000,000</b>	<b>\$98,000,000</b>
<b>Total Project Impacts</b>			<b>1,980</b>	<b>\$136,000,000</b>	<b>\$315,000,000</b>

[1] Indirect and induced employment include both full-time and part-time jobs.

[2] Includes wages and benefits.

[3] Based on the portion of project construction-related expenditures within SLO County.

[4] Impacts generated by personal consumption spending of both direct and indirect employees.

Source: IMPLAN 2008; SunPower; and Economic & Planning Systems.

## Direct Impacts

The CVSR Project's estimated direct impacts in the County stem from SunPower's construction-related and operating expenditures at the solar power plant that are expected to be captured within the County, as well as the workers directly employed to construct and operate the solar power plant. Most data for these inputs were provided by SunPower, based on the company's current business planning effort. Employment data provided by SunPower included a range of job types, expected wages and total payroll costs (including fringe benefits) for each job type, and a projected schedule of the number of employees in each category required at various points in the construction and operations timetable.

### **Construction Period**

In addition to the solar array installations that will cover approximately 1,500 acres (M3 alternative), project construction will include construction of main access and fire access roads, an operations and maintenance building, a Visitor Center, public viewing areas, onsite water supply facilities and septic system, an electric substation, an overhead medium voltage collection system, and a 2.8-mile 230 kV generation tie-line to the PG&E switching station.<sup>1</sup>

As shown in **Table 2**, the CVSR Project will directly generate about \$115 million in local economic output and support employment for 680 job-years over the 3-year construction period. These 680 jobs will include electricians, carpenters, engineers, iron workers, and other skilled labor in addition to general laborers. **Table 3** shows the number of employees in various categories expected in each year of construction, and the compensation costs associated with those workers. That table is derived from data in **Appendix Tables A-1 through A-3**. **Table A-1** illustrates SunPower's expected monthly labor force and suggests that at its peak, the CVSR project will have roughly 350 workers on-site constructing the power plant. That table also converts monthly employment to full-time equivalent (FTE) annual average employment representing the annual equivalents of the monthly employment and sums up the job-years over the 3-year period. For instance, a "job-year" means that 12 carpenters employed in one month is equal to one carpenter being employed for a full year. As shown, over the course of the construction period, the CVSR Project is expected to produce 680 job-years of employment, with the highest need for electricians, followed by general laborers and then iron workers.

**Tables A-2 and A-3** respectively apply total payroll costs (including fringe benefits) and wage costs (excluding fringe benefits) to the number of employees by category by month to estimate the total costs of the CVSR Project labor force during the construction period. These tables indicate that the construction-period workforce expenses are expected to be roughly \$72 million, with roughly \$46 million of that being paid to workers as direct wages.

### **Operations Period**

Once full operational capacity is reached in 2013, the CVSR Project is expected to employ 12 employees (FTEs) on site. These will include plant management, operations & maintenance, regional support, security, and cleaning staff. In addition to the Project's main operations of

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<sup>1</sup> Source: California Valley Solar Ranch Draft Environmental Impact Report, August 2010. The 1,500-acre size refers to an alternative (reduced footprint) configuration that is now the primary project plan, according to SunPower.

monitoring system status, performance, diagnostics, and planning, ongoing operations will include daily preventive maintenance activities, periodic corrective maintenance activities, panel washing, and 24-hour security services and standby maintenance personnel.

As shown in **Table 2**, the CVSR Project will directly generate about \$55 million in local economic output and support employment for 300 job-years over the 25-year period.<sup>2</sup> **Table 4** shows the number and compensation for the employees that SunPower expects will operate the CVSR power plant once it is fully operational. Total payroll expenditures are projected to be roughly \$30.9 million, with \$20 million of that being paid as direct wages to the employees.

### Indirect Impacts

The “Jobs and Economic Development Impact” (JEDI) model developed by the National Renewable Energy Laboratory for the United States Department of Energy estimates that the construction of a 250 megawatt PV solar power plant would cost roughly \$1.7 billion, but SunPower has indicated that some of their cost components are now less expensive than the JEDI model assumes, due to improved efficiencies in PV manufacturing in the last few years. Consistent with the assumptions included in the Draft Environmental Impact Report, EPS has estimated that the total cost of development for the CVSR Project will be roughly \$1.4 billion.

While the bulk of the Project’s estimated \$1.4 billion total cost of construction is expected to consist of materials and equipment sourced outside the County, this analysis estimates that about \$43 million would be spent on materials and services within San Luis Obispo County, including engineering, surveying, consulting, and local contractor expenditures beyond the costs of laborers employed on the CVSR Project site.<sup>3</sup> This \$43 million in local construction-phase expenditures is counted as output for local businesses in San Luis Obispo County, as shown in **Table 1**. Based on this activity, the IMPLAN model indicates that about 230 job-years would be supported locally with employee earnings of about \$10 million total wages and benefits.

During operations, SunPower expects to spend approximately \$5 million annually on average for operations and maintenance of the solar plant, for a total of \$125 million over 25 years. Of this, SunPower has estimated that \$31 million would be spent on wages and benefits for Project employees. According to the JEDI model, another \$70 million (5 percent of total Project construction costs) is initially spent on inverters which may need to be replaced as the Project ages, and those equipment costs would accrue outside the County where the equipment is manufactured. The remaining \$24 million is expected to be spent on goods and services sourced within the region, such as office and industrial supplies, business and professional services, labor costs for the replacement of certain solar power equipment (especially inverters), construction labor and materials for non-recurring improvements (e.g., repairs to buildings or roads), and similar costs of doing business. This \$24 million estimate of local operations expenditures is

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<sup>2</sup> While the photovoltaic (PV) panels at the CVSR solar power plant are warranted for 25 years, SunPower indicated that it expects the system to remain productive for up to 35 years or more. Therefore, the total impacts generated during the entire operational period of the Project may be larger than estimated here.

<sup>3</sup> The on-site construction employees are expected to be employed by contractors, rather than directly by SunPower, but the construction workers’ wages are counted as “direct expenditures” to the project.

counted as output for local businesses in the County, as shown in **Table 1**. Based on this activity, about 130 job-years would be supported locally with employee earnings of about \$5 million total wages and benefits.

### **Induced Impacts**

Employees of the CVSR Project and employees at local businesses indirectly affected by the CVSR Project will spend their wages on a variety of goods and services. Those expenditures are projected to result in additional jobs and economic impacts. For example, if a CVSR Project employee spends her wages on food for her family, part of that spending goes to the retail worker who sells the food, part goes to the trucker who delivers the food, part goes to the farmer who grows the food, and part goes to various intermediaries (processors, wholesalers, transportation companies, etc.). Thus, in aggregate, the spending associated with direct employees' purchases helps to support other jobs in the regional and greater economy. As shown in **Table 1**, total employee spending would induce approximately \$59 million of economic output during construction and another \$19 million during the operations phase. This induced output would support about 480 and 160 job-years during construction and operations, respectively.

**Table 5** summarizes the results of the input-output modeling of the induced jobs created in San Luis Obispo County by the spending of the direct CVSR Project employees and the indirect employees. As shown, the high direct and indirect employment during the construction phase yields a high number of induced jobs (480) during that same period, and the lower direct employment of the operations phase yields fewer induced jobs (157). The largest induced impacts are projected to occur in the retail trade and health care services sectors, although some job creation is expected in virtually all industry sectors. Rather than being a generic model not tied to the specific economic geography of San Luis Obispo County, these local induced impacts reflect the extent to which the San Luis Obispo County economy has a pre-existing industry that can respond to the business opportunities associated with the direct and indirect employees' spending.

As shown in **Table 6**, CVSR's direct construction employees will spend approximately \$39 million of their \$46 million in total wages (or 83 percent) during the construction period, while employees in the operations phase will spend a total of about \$16.6 million or \$664,000 annually through the 25-year life of the Project. The 83-percent of total wages assumed to be disposable (available for personal consumption spending) is based on the Bureau of Labor Statistics' 2009 consumer expenditure data for households with an average income similar to the average annual wages to be paid to CVSR employees (\$50,000 to \$75,000).

To illustrate the induced spending impacts on various industry sectors, **Table 7** shows a detailed breakdown of CVSR employee spending by retail category and other categories. The analysis also shows the percent of total spending that is captured within the County. The IMPLAN model estimates that 74 percent of employees' household expenditures on all categories are expected to be made within the County. The largest proportion, 37 percent of total employee spending, will be captured within the County's retail establishments, while the real estate and health care sectors will also benefit substantially. Please note that **Table 7** reflects only the spending of the direct CVSR employees. Expenditures by indirect employees are expected to be distributed similarly.

## **Local Government Revenue Impacts**

In addition to the broader economic impacts described in the preceding sections, the CVSR Project will also benefit the County through increased local government revenues. The main types of local government revenues that would accrue to the County include property tax and property-related taxes and fees, and sales and use taxes. To estimate these impacts, EPS has relied on a recent economic impact study prepared for the Project's Draft Environmental Impact Report (DEIR), by Aspen Environmental Group. That document provides estimates for local government revenues that the Project is anticipated to generate for the County during the construction and operational phases of the CVSR Project. The report in the DEIR analyzed the CVSR project along with another solar project the Topaz Solar Farm Project and presented combined results for the two projects. Using parameters provided for the two projects in the DEIR study, EPS attempted to isolate the revenue impacts associated with the CVSR project from the combined results presented in the DEIR study.

### ***Property Tax Revenue***

The DEIR study estimated increased property tax revenue based on a revaluation of the Project's site after sale to SunPower and the value of non-generating electricity facilities. Other on site supporting facilities such as the Visitor Center and the Operations and Maintenance building were not included, and such property tax revenues may be greater than estimated in the DEIR study.

EPS expects that of the total estimated property tax increase of between \$806,000 and \$941,000 for the two projects (CVSR and Topaz), the CVSR Project will account for an increase of approximately \$412,000 to \$499,000 in annual property taxes, based on land purchase costs assumptions shown in the DEIR study. The County would receive about 28.2% allocated to a number of agencies for services in the County.

### ***Sales and Use Taxes***

During the 3-year construction period, the DEIR study reports that the County will receive about \$7.5 million from the CVSR Project in sales and use tax revenues. The study also estimates that the two projects would stimulate an additional \$600,000 of sales and use tax revenue through supply chain purchases (indirect effects) during construction and \$8,000 annually during the operational period. Of this, EPS estimates that the CVSR Project would account for \$275,000 and \$1,700, respectively, based on supplies and material costs estimates provided in the DEIR study.

**Table 2**  
**CVSR Direct Impacts in San Luis Obispo County**  
**California Valley Solar Ranch Economic Impact Analysis; EPS #20133**

<b>Direct Impacts</b>	<b>Local Spending</b>	<b>Employment</b>
<b>Construction (3-year duration)</b>		
Pre-Construction Development Costs <sup>1</sup>	\$25,000,000	
Payroll Expenditures	\$72,000,000	
Local Materials and Supplies	\$18,000,000	
<b>Local Construction Economic Output</b>	<b>\$115,000,000</b>	
Project Construction Employment		680
<b>Operations (25-year duration)</b>		
Local Spending on Goods & Services <sup>2</sup>	\$24,000,000	
Onsite Payroll Expenditures	\$31,000,000	
<b>Local Operations Economic Output</b>	<b>\$55,000,000</b>	
Project Ongoing Employment (Job-years)		300
<b>Total Direct Local Impacts</b>	<b>\$170,000,000</b>	<b>980</b>

[1] Includes expenditures on professional and business services in San Luis Obispo County.

[2] SunPower estimates total annual operational expenditures will equal \$5 million, or \$125 million over 25 years. Estimate shown here is derived by subtracting payroll and approx. \$70 million for replacement of inverters as they age. The result is just under \$1.0 million annually in local spending on maintenance, utilities, security, etc.

Source: SunPower; and Economic & Planning Systems.

**Table 3**  
**Direct Construction Employment and Compensation**  
**California Valley Solar Ranch Economic Impact Analysis; EPS #20133**

Position	Average Annual Employment <sup>1</sup>			Total Job-Years Years 1-3	Annual Wage Rate <sup>2</sup>	Total Wages	Total Fringes <sup>2</sup>	Total Compensation
	Year 1	Year 2	Year 3					
Carpenter	2	0	0	2	\$77,688	\$123,006	\$37,544	\$160,550
Operating Engineer	4	7	3	14	\$79,414	\$1,085,330	\$495,761	\$1,581,091
Pile Driver	6	27	29	62	\$77,688	\$4,823,130	\$1,472,120	\$6,295,250
Iron Worker	9	41	46	96	\$68,640	\$6,560,840	\$4,833,152	\$11,393,992
Electrician	27	133	133	294	\$68,016	\$19,991,036	\$10,319,532	\$30,310,568
Laborer	33	50	50	133	\$54,766	\$7,302,187	\$4,534,400	\$11,836,587
Other Workers <sup>3</sup>	20	30	30	80	\$81,120	\$6,489,600	\$3,494,400	\$9,984,000
<b>Total</b>	<b>101</b>	<b>289</b>	<b>291</b>	<b>680</b>		<b>\$46,375,129</b>	<b>\$25,186,909</b>	<b>\$71,562,038</b>

[1] See Table A-1 for employment detail by month and calculation of annual average employment.

[2] See Table A-3 for hourly wage assumptions based on local union labor agreements.

[3] Other workers include: on-site administration, security, engineering, and other occupations.

Source: SunPower; and Economic & Planning Systems.

**Table 4**  
**Permanent Employment and Compensation**  
**California Valley Solar Ranch Economic Impact Analysis; EPS #20133**

<b>Position</b>	<b>Number of Employees</b>	<b>Annual Salary</b>	<b>Total Annual Income</b>	<b>Total Annual Benefits<sup>1</sup></b>	<b>Total Annual Compensation</b>
Plant Manager	1	\$100,000	\$100,000	\$54,311	\$154,311
Plant Staff	3	\$80,000	\$240,000	\$130,347	\$370,347
Regional Support	2	\$70,000	\$140,000	\$76,036	\$216,036
Security Staff	2	\$60,000	\$120,000	\$65,173	\$185,173
Cleaning Staff	4	\$50,000	\$200,000	\$108,622	\$308,622
<b>Annual Total/Average</b>	<b>12</b>	<b>\$66,667</b>	<b>\$800,000</b>	<b>\$434,490</b>	<b>\$1,234,490</b>
<b>Total (25 Years)</b>	<b>300</b>		<b>\$20,000,000</b>	<b>\$10,862,249</b>	<b>\$30,862,249</b>

[1] Assumed to equal 35% of total compensation based on data averages for construction workers.

Source: SunPower; and Economic & Planning Systems.

**Table 5**  
**Induced Employment Generated by Employee Spending in the County**  
**California Valley Solar Ranch Economic Impact Analysis; EPS #20133**

Industry/Sector	Construction Phase		Operations Phase	
	Jobs	% of Total	Jobs	% of Total
Agriculture & Mining	2	0%	0	0%
Utilities	3	1%	1	1%
Construction (Maintenance & Repair)	4	1%	0	0%
Manufacturing	1	0%	1	0%
Wholesale Trade	13	3%	5	3%
Food Services and Drinking Places	52	11%	18	12%
Retail Trade	112	23%	35	22%
Transportation and Warehousing	5	1%	1	1%
Information Services	6	1%	1	1%
Finance and Insurance	16	3%	4	3%
Real Estate and Rental and Leasing	38	8%	10	7%
Professional and Business Services	37	8%	5	3%
Educational Services	19	4%	11	7%
Health Care Services	78	16%	33	21%
Social Assistance	22	5%	8	5%
Leisure and Hospitality	19	4%	7	4%
Other Services (except Public Administration)	51	11%	15	10%
Government	4	1%	1	0%
<b>Total Induced Employment</b>	<b>480</b>	<b>100%</b>	<b>157</b>	<b>100%</b>

Source: IMPLAN 2008; and Economic & Planning Systems.

**Table 6**  
**Total Household Spending by CVSR Employees**  
**California Valley Solar Ranch Economic Impact Analysis; EPS #20133**

<b>Project Phase</b>	<b>Year</b>	<b>No. of Workers (Job-Years)</b>	<b>Avg. Income per Worker</b>	<b>Total Income</b>	<b>Percent Disposable</b>	<b>Total Employee Spending</b>
		(1)	(2)		(3)	
<b>Construction</b>						
Year 1	2011	101	\$67,500	\$6,817,500	83%	\$5,658,525
Year 2	2012	289	\$68,300	\$19,738,700	83%	\$16,383,121
Year 3	2013	291	\$68,300	\$19,875,300	83%	\$16,496,499
<b>Total Construction</b>		<b>681</b>		<b>\$46,431,500</b>		<b>\$38,538,145</b>
<b>Operations</b>						
On-going thru Project Life		300	\$66,700	\$20,010,000	83%	<b>\$16,608,300</b>

[1] See Table A-1 for details on average annual construction employment.

[2] See Table A-3 and Table 4 for detailed calculation of average wages.

[3] Percent of income after income tax (2009 Consumer Expenditure Survey, Bureau of Labor Statistics).

Source: SunPower; BLS; and Economic & Planning Systems.

**Table 7**  
**CVSR Employee Spending in Retail Stores and Other Expenditure Categories**  
**California Valley Solar Ranch Economic Impact Analysis; EPS #2013**

Expenditure Categories	Construction Phase			Operations Phase		
	Total Years 1-3	SLO County %	Amount	Annual Spending	SLO County %	Amount
Aggregate Worker Expenditures <sup>1</sup>	\$38,538,145			\$16,608,300		
Retail Establishments	\$12,598,552	84%	\$10,616,623	\$5,429,440	84%	\$4,575,313
Food Services and Drinking Places	\$1,787,553	76%	\$1,354,250	\$770,359	76%	\$583,624
Utilities	\$928,422	97%	\$899,457	\$400,111	97%	\$387,628
Wholesale Trade	\$501,912	51%	\$256,025	\$216,303	51%	\$110,336
Transportation and Warehousing	\$695,267	28%	\$195,652	\$299,630	28%	\$84,318
Information	\$1,179,075	38%	\$443,599	\$508,131	38%	\$191,172
Finance and Insurance	\$2,871,978	32%	\$927,964	\$1,237,700	32%	\$399,913
Real Estate and Rental and Leasing	\$6,287,152	93%	\$5,841,549	\$2,709,495	93%	\$2,517,459
Professional and Business Services	\$690,758	62%	\$427,686	\$297,687	62%	\$184,315
Educational Services	\$943,568	58%	\$551,481	\$406,638	58%	\$237,665
Health Care Services	\$6,215,432	74%	\$4,626,206	\$2,678,587	74%	\$1,993,698
Social Assistance	\$532,867	75%	\$397,372	\$229,643	75%	\$171,250
Leisure and Hospitality	\$1,138,764	59%	\$667,613	\$490,759	59%	\$287,713
Other Services (except Public Admin.)	\$2,003,328	60%	\$1,195,796	\$863,349	60%	\$515,337
Government Services	\$163,517	90%	\$146,675	\$70,469	90%	\$63,211
<b>Total Employee Expenditures</b>	<b>\$38,538,145</b>	<b>74%</b>	<b>\$28,547,950</b>	<b>\$16,608,300</b>	<b>74%</b>	<b>\$12,302,951</b>

[1] See Table 6 for calculation of total spending. Distribution of spending by category is based on spending patterns for households earning between \$50,000-\$75,000 annually in San Luis Obispo County according to 2008 IMPLAN data.

Source: IMPLAN 2008; and Economic & Planning Systems.



**APPENDIX A:**  
**Detailed Construction Employment  
and Payroll Expenditures**

**Table A-1**  
**Detailed Construction Employment by Type of Worker**  
**California Valley Solar Ranch Economic Impact Analysis; EPS #20133**

Month	Carpenter	Operating Engineer	Pile Driver	Iron Worker	Electrician	Laborers	Other Workers <sup>1</sup>	Total
January 2011	-	-	-	-	-	-	-	-
February 2011	-	-	-	-	-	-	-	-
March 2011	-	-	-	-	-	-	-	-
April 2011	-	-	-	-	-	-	-	-
May 2011	19	-	-	-	-	50	30	99
June 2011	-	12	15	-	-	50	30	107
July 2011	-	12	15	23	-	50	30	130
August 2011	-	-	15	12	12	50	30	119
September 2011	-	-	-	23	70	50	30	173
October 2011	-	-	-	23	70	50	30	173
November 2011	-	-	-	23	87	50	30	190
December 2011	-	23	32	-	88	50	30	223
<b>Annual Avg. 2011</b>	<b>1.6</b>	<b>3.9</b>	<b>6.4</b>	<b>8.7</b>	<b>27.3</b>	<b>33</b>	<b>20</b>	<b>101</b>
January 2012	-	23	32	46	100	50	30	281
February 2012	-	23	32	46	90	50	30	271
March 2012	-	23	32	46	136	50	30	317
April 2012	-	-	32	45	87	50	30	244
May 2012	-	-	32	45	135	50	30	292
June 2012	-	-	32	45	135	50	30	292
July 2012	-	-	32	45	135	50	30	292
August 2012	-	-	32	45	135	50	30	292
September 2012	-	-	32	45	167	50	30	324
October 2012	-	-	-	44	167	50	30	291
November 2012	-	-	-	44	167	50	30	291
December 2012	-	12	38	-	145	50	30	275
<b>Annual Avg. 2012</b>	<b>-</b>	<b>6.8</b>	<b>27.2</b>	<b>41.3</b>	<b>133.3</b>	<b>50.0</b>	<b>30.0</b>	<b>289</b>
January 2013	-	12	38	55	61	50	30	246
February 2013	-	12	38	55	162	50	30	347
March 2013	-	12	38	55	162	50	30	347
April 2013	-	-	38	55	162	50	30	335
May 2013	-	-	38	55	162	50	30	335
June 2013	-	-	38	55	162	50	30	335
July 2013	-	-	38	55	162	50	30	335
August 2013	-	-	38	55	162	50	30	335
September 2013	-	-	38	55	162	50	30	335
October 2013	-	-	-	52	200	50	30	332
November 2013	-	-	-	-	22	50	30	102
December 2013	-	-	-	-	22	50	30	102
<b>Annual Avg. 2013</b>	<b>-</b>	<b>3.0</b>	<b>28.5</b>	<b>45.6</b>	<b>133.4</b>	<b>50.0</b>	<b>30.0</b>	<b>291</b>
<b>Total Job-Years</b>	<b>1.6</b>	<b>13.7</b>	<b>62.1</b>	<b>95.6</b>	<b>293.9</b>	<b>133.3</b>	<b>80.0</b>	<b>680</b>

Note. Job estimates calculated by EPS from a bar chart (number of workers per month by occupation) provided by SunPower.

[1] Other workers include: on-site administration, security, engineering, and other occupations.

Source: SunPower; and Economic & Planning Systems.

**Table A-2  
Detailed Construction Wages and Benefits - (Direct Employee Compensation)<sup>1</sup>  
California Valley Solar Ranch Economic Impact Analysis; EPS #20133**

Month	Carpenter	Operating Engineer	Pile Driver	Iron Worker	Electrician	Laborers	Other Workers <sup>2</sup>	Total Wages & Benefits	Avg. Annual Compensation per Worker
<i>Base wage<sup>3</sup></i>	\$37.35	\$38.18	\$37.35	\$33.00	\$32.70	\$26.33	\$39.00	<i>per hour</i>	
<i>Fringes<sup>3</sup></i>	\$11.40	\$17.44	\$11.40	\$24.31	\$16.88	\$16.35	\$21.00	<i>per hour</i>	
<i>Total Compensation</i>	\$48.75	\$55.62	\$48.75	\$57.31	\$49.58	\$42.68	\$60.00	<i>per hour</i>	
January 2011	-	-	-	-	-	-	-	-	-
February 2011	-	-	-	-	-	-	-	-	-
March 2011	-	-	-	-	-	-	-	-	-
April 2011	-	-	-	-	-	-	-	-	-
May 2011	\$160,550	\$0	\$0	\$0	\$0	\$369,893	\$312,000	\$842,443	
June 2011	\$0	\$115,690	\$126,750	\$0	\$0	\$369,893	\$312,000	\$924,333	
July 2011	\$0	\$115,690	\$126,750	\$228,476	\$0	\$369,893	\$312,000	\$1,152,809	
August 2011	\$0	\$0	\$126,750	\$119,205	\$103,126	\$369,893	\$312,000	\$1,030,975	
September 2011	\$0	\$0	\$0	\$228,476	\$601,571	\$369,893	\$312,000	\$1,511,940	
October 2011	\$0	\$0	\$0	\$228,476	\$601,571	\$369,893	\$312,000	\$1,511,940	
November 2011	\$0	\$0	\$0	\$228,476	\$747,666	\$369,893	\$312,000	\$1,658,036	
December 2011	\$0	\$221,738	\$270,400	\$0	\$756,260	\$369,893	\$312,000	\$1,930,292	
<b>Subtotal 2011</b>	<b>\$160,550</b>	<b>\$453,118</b>	<b>\$650,650</b>	<b>\$1,033,108</b>	<b>\$2,810,194</b>	<b>\$2,959,147</b>	<b>\$2,496,000</b>	<b>\$10,562,767</b>	<b>\$104,410</b>
January 2012	\$0	\$221,738	\$270,400	\$456,952	\$859,387	\$369,893	\$312,000	\$2,490,370	
February 2012	\$0	\$221,738	\$270,400	\$456,952	\$773,448	\$369,893	\$312,000	\$2,404,431	
March 2012	\$0	\$221,738	\$270,400	\$456,952	\$1,168,766	\$369,893	\$312,000	\$2,799,749	
April 2012	\$0	\$0	\$270,400	\$447,018	\$747,666	\$369,893	\$312,000	\$2,146,978	
May 2012	\$0	\$0	\$270,400	\$447,018	\$1,160,172	\$369,893	\$312,000	\$2,559,483	
June 2012	\$0	\$0	\$270,400	\$447,018	\$1,160,172	\$369,893	\$312,000	\$2,559,483	
July 2012	\$0	\$0	\$270,400	\$447,018	\$1,160,172	\$369,893	\$312,000	\$2,559,483	
August 2012	\$0	\$0	\$270,400	\$447,018	\$1,160,172	\$369,893	\$312,000	\$2,559,483	
September 2012	\$0	\$0	\$270,400	\$447,018	\$1,435,176	\$369,893	\$312,000	\$2,834,487	
October 2012	\$0	\$0	\$0	\$437,084	\$1,435,176	\$369,893	\$312,000	\$2,554,153	
November 2012	\$0	\$0	\$0	\$437,084	\$1,435,176	\$369,893	\$312,000	\$2,554,153	
December 2012	\$0	\$115,690	\$321,100	\$0	\$1,246,111	\$369,893	\$312,000	\$2,364,794	
<b>Subtotal 2012</b>	<b>\$0</b>	<b>\$780,905</b>	<b>\$2,754,700</b>	<b>\$4,927,132</b>	<b>\$13,741,593</b>	<b>\$4,438,720</b>	<b>\$3,744,000</b>	<b>\$30,387,049</b>	<b>\$105,328</b>
January 2013	\$0	\$115,690	\$321,100	\$546,355	\$524,226	\$369,893	\$312,000	\$2,189,264	
February 2013	\$0	\$115,690	\$321,100	\$546,355	\$1,392,206	\$369,893	\$312,000	\$3,057,245	
March 2013	\$0	\$115,690	\$321,100	\$546,355	\$1,392,206	\$369,893	\$312,000	\$3,057,245	
April 2013	\$0	\$0	\$321,100	\$546,355	\$1,392,206	\$369,893	\$312,000	\$2,941,555	
May 2013	\$0	\$0	\$321,100	\$546,355	\$1,392,206	\$369,893	\$312,000	\$2,941,555	
June 2013	\$0	\$0	\$321,100	\$546,355	\$1,392,206	\$369,893	\$312,000	\$2,941,555	
July 2013	\$0	\$0	\$321,100	\$546,355	\$1,392,206	\$369,893	\$312,000	\$2,941,555	
August 2013	\$0	\$0	\$321,100	\$546,355	\$1,392,206	\$369,893	\$312,000	\$2,941,555	
September 2013	\$0	\$0	\$321,100	\$546,355	\$1,392,206	\$369,893	\$312,000	\$2,941,555	
October 2013	\$0	\$0	\$0	\$516,554	\$1,718,773	\$369,893	\$312,000	\$2,917,221	
November 2013	\$0	\$0	\$0	\$0	\$189,065	\$369,893	\$312,000	\$870,958	
December 2013	\$0	\$0	\$0	\$0	\$189,065	\$369,893	\$312,000	\$870,958	
<b>Subtotal 2013</b>	<b>\$0</b>	<b>\$347,069</b>	<b>\$2,889,900</b>	<b>\$5,433,752</b>	<b>\$13,758,781</b>	<b>\$4,438,720</b>	<b>\$3,744,000</b>	<b>\$30,612,221</b>	<b>\$105,378</b>
<b>Total Project</b>	<b>\$160,550</b>	<b>\$1,581,091</b>	<b>\$6,295,250</b>	<b>\$11,393,992</b>	<b>\$30,310,568</b>	<b>\$11,836,587</b>	<b>\$9,984,000</b>	<b>\$71,562,038</b>	<b>\$104,869</b>

[1] Total monthly wage estimates assume 160-hours per month per employee (4x40 hours).

[2] EPS assumes base wage for "Other workers" averages 65% of total compensation (wage+fringes = \$60) provided by SunPower.

[3] Wage rates based on applicable rates and fringes within the local labor agreements for the occupations shown as provided by SunPower.

Source: SunPower; and Economic & Planning Systems.

**Table A-3  
Detailed Construction Wages<sup>1</sup>  
California Valley Solar Ranch Economic Impact Analysis; EPS #20133**

Month	Carpenter	Operating Engineer	Pile Driver	Iron Worker	Electrician	Laborers	Other Workers <sup>2</sup>	Total Wages	Avg. Annual Wage per Worker
<i>Base Hourly Wage<sup>3</sup></i>	\$37.35	\$38.18	\$37.35	\$33.00	\$32.70	\$26.33	\$39.00		
January 2011	-	-	-	-	-	-	-	-	-
February 2011	-	-	-	-	-	-	-	-	-
March 2011	-	-	-	-	-	-	-	-	-
April 2011	-	-	-	-	-	-	-	-	-
May 2011	\$123,006	\$0	\$0	\$0	\$0	\$228,193	\$202,800	\$553,999	
June 2011	\$0	\$79,414	\$97,110	\$0	\$0	\$228,193	\$202,800	\$607,518	
July 2011	\$0	\$79,414	\$97,110	\$131,560	\$0	\$228,193	\$202,800	\$739,078	
August 2011	\$0	\$0	\$97,110	\$68,640	\$68,016	\$228,193	\$202,800	\$664,759	
September 2011	\$0	\$0	\$0	\$131,560	\$396,760	\$228,193	\$202,800	\$959,313	
October 2011	\$0	\$0	\$0	\$131,560	\$396,760	\$228,193	\$202,800	\$959,313	
November 2011	\$0	\$0	\$0	\$131,560	\$493,116	\$228,193	\$202,800	\$1,055,669	
December 2011	\$0	\$152,211	\$207,168	\$0	\$498,784	\$228,193	\$202,800	\$1,289,156	
<b>Subtotal 2011</b>	<b>\$123,006</b>	<b>\$311,040</b>	<b>\$498,498</b>	<b>\$594,880</b>	<b>\$1,853,436</b>	<b>\$1,825,547</b>	<b>\$1,622,400</b>	<b>\$6,828,806</b>	<b>\$67,501</b>
January 2012	\$0	\$152,211	\$207,168	\$263,120	\$566,800	\$228,193	\$202,800	\$1,620,292	
February 2012	\$0	\$152,211	\$207,168	\$263,120	\$510,120	\$228,193	\$202,800	\$1,563,612	
March 2012	\$0	\$152,211	\$207,168	\$263,120	\$770,848	\$228,193	\$202,800	\$1,824,340	
April 2012	\$0	\$0	\$207,168	\$257,400	\$493,116	\$228,193	\$202,800	\$1,388,677	
May 2012	\$0	\$0	\$207,168	\$257,400	\$765,180	\$228,193	\$202,800	\$1,660,741	
June 2012	\$0	\$0	\$207,168	\$257,400	\$765,180	\$228,193	\$202,800	\$1,660,741	
July 2012	\$0	\$0	\$207,168	\$257,400	\$765,180	\$228,193	\$202,800	\$1,660,741	
August 2012	\$0	\$0	\$207,168	\$257,400	\$765,180	\$228,193	\$202,800	\$1,660,741	
September 2012	\$0	\$0	\$207,168	\$257,400	\$946,556	\$228,193	\$202,800	\$1,842,117	
October 2012	\$0	\$0	\$0	\$251,680	\$946,556	\$228,193	\$202,800	\$1,629,229	
November 2012	\$0	\$0	\$0	\$251,680	\$946,556	\$228,193	\$202,800	\$1,629,229	
December 2012	\$0	\$79,414	\$246,012	\$0	\$821,860	\$228,193	\$202,800	\$1,578,280	
<b>Subtotal 2012</b>	<b>\$0</b>	<b>\$536,047</b>	<b>\$2,110,524</b>	<b>\$2,837,120</b>	<b>\$9,063,132</b>	<b>\$2,738,320</b>	<b>\$2,433,600</b>	<b>\$19,718,743</b>	<b>\$68,349</b>
January 2013	\$0	\$79,414	\$246,012	\$314,600	\$345,748	\$228,193	\$202,800	\$1,416,768	
February 2013	\$0	\$79,414	\$246,012	\$314,600	\$918,216	\$228,193	\$202,800	\$1,989,236	
March 2013	\$0	\$79,414	\$246,012	\$314,600	\$918,216	\$228,193	\$202,800	\$1,989,236	
April 2013	\$0	\$0	\$246,012	\$314,600	\$918,216	\$228,193	\$202,800	\$1,909,821	
May 2013	\$0	\$0	\$246,012	\$314,600	\$918,216	\$228,193	\$202,800	\$1,909,821	
June 2013	\$0	\$0	\$246,012	\$314,600	\$918,216	\$228,193	\$202,800	\$1,909,821	
July 2013	\$0	\$0	\$246,012	\$314,600	\$918,216	\$228,193	\$202,800	\$1,909,821	
August 2013	\$0	\$0	\$246,012	\$314,600	\$918,216	\$228,193	\$202,800	\$1,909,821	
September 2013	\$0	\$0	\$246,012	\$314,600	\$918,216	\$228,193	\$202,800	\$1,909,821	
October 2013	\$0	\$0	\$0	\$297,440	\$1,133,600	\$228,193	\$202,800	\$1,862,033	
November 2013	\$0	\$0	\$0	\$0	\$124,696	\$228,193	\$202,800	\$555,689	
December 2013	\$0	\$0	\$0	\$0	\$124,696	\$228,193	\$202,800	\$555,689	
<b>Subtotal 2013</b>	<b>\$0</b>	<b>\$238,243</b>	<b>\$2,214,108</b>	<b>\$3,128,840</b>	<b>\$9,074,468</b>	<b>\$2,738,320</b>	<b>\$2,433,600</b>	<b>\$19,827,579</b>	<b>\$68,253</b>
<b>Total Project</b>	<b>\$123,006</b>	<b>\$1,085,330</b>	<b>\$4,823,130</b>	<b>\$6,560,840</b>	<b>\$19,991,036</b>	<b>\$7,302,187</b>	<b>\$6,489,600</b>	<b>\$46,375,129</b>	<b>\$68,182</b>

[1] Total monthly wage estimates assume 160-hours per month per employee (4x40 hours).

[2] EPS assumes base wage for "Other workers" averages 65% of total compensation (wage+fringes = \$60) provided by SunPower.

[3] Wage rates based on applicable rates and fringes within the local labor agreements for the occupations shown as provided by SunPower.

Source: SunPower; and Economic & Planning Systems.

# Appendix

EPS PowerPoint presentation titled,  
"Economic Impacts of the California Valley Solar Ranch  
in San Luis Obispo County"

*The Economics of Land Use*



# **Economic Impacts of the California Valley Solar Ranch In San Luis Obispo County**

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December 6, 2010

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# Economic Impact Modeling “101”

- Use IMPLAN “Input/Output” Model – Industry Standard
  - Impacts measured in jobs, wages, and “economic output”
- “Direct Impacts” are attributable to the activity on the site
  - In CVSR, workers employed to construct and operate plant
- “Indirect Impacts” are the inputs that support the direct activity
  - In CVSR, producers and transporters of solar equipment and other construction materials, lessors of construction equipment, etc.
- “Induced Impacts” result from the spending of the direct and indirect employees
  - Workers buy food, cars, homes, medical services, etc.

# Economic Impact Modeling "101": Examples on the CVSR Job Site

## 1. Direct



## 2. Indirect



## 3. Induced



# Direct Impacts – Total Local Spending

- EPS estimates for CVSR spending in SLO County:

\$72M for construction labor compensation (wages and benefits)

\$18M for contractor overhead and profit

\$25M for permitting, materials, outreach, etc.

**\$115M** total local spending in *predevelopment and construction*

\$31M for operations labor compensation

\$24M for operations supplies and services

**\$55M** total local spending in *operations* phase (25 years)

**\$170M** total direct spending in SLO County

# Direct Impacts – Jobs and Wages

- CVSR developers expect to have hundreds of construction workers on the job-site for 30 months
  - Peak of ~350 workers in certain months
- Will be good-paying jobs
  - Electricians, carpenters, engineers, laborers
  - Annual wages equivalent to \$50-75K salaries, plus benefits
  - Wages established through contractual labor agreements
  - Most workers expected to come from SLO County
- Total Local Jobs and Wages in SLO County:
  - 680 “job years” and \$46M wages over 3 construction years
  - 300 “job years” and \$20M wages over 25 operations years

# Indirect Impacts – Inputs to On-Site Activity

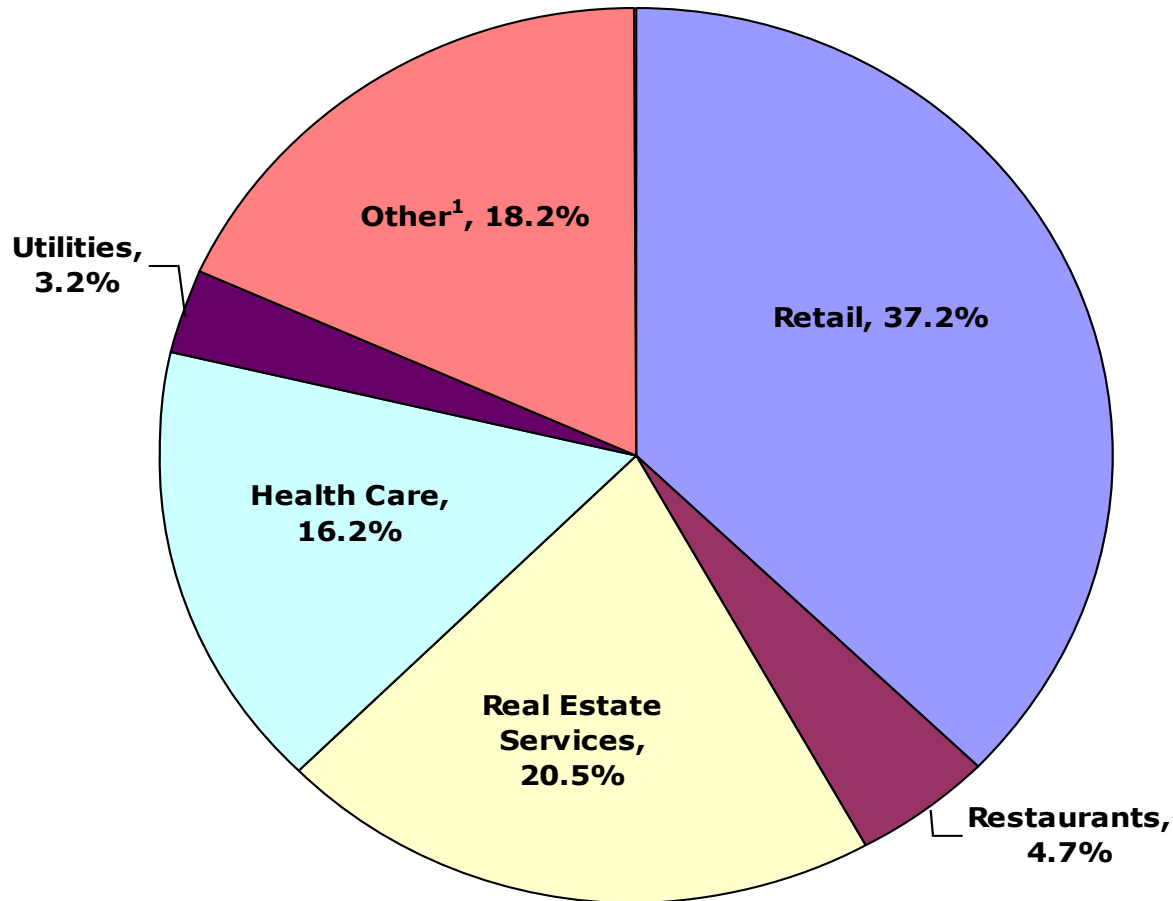
- Beneficiaries include providers of:
  - Solar panels and tracking equipment,
  - Materials for structures and roads,
  - Contracted services, etc.
- Many indirect impacts likely to accrue outside SLO County
  - Much of budget is for solar equipment manufactured out of County
- Top SLO opportunities:
  - Construction – building materials, equipment rentals, fuel, etc.
  - Operations – office/industrial supplies, fuel, repair/replacement labor, etc.
- Total Indirect Impacts in SLO County:
  - 230 jobs and \$10 million wages & benefits during construction
  - 130 jobs and \$5 million wages & benefits during operations

# Induced Impacts – Spending “Multipliers”

- Spending by direct and indirect workers purchasing:
  - Retail goods (food, clothing, vehicles, etc.)
  - Health care services
  - Housing
  - Educational and professional services, etc.

\*Also includes successive rounds of spending after first induced impacts
- Most induced impacts likely to accrue within SLO County
  - Greatest impacts are in retail sector and health care services, which will be sourced near workers’ homes and workplaces
- Total Induced Impacts from Direct & Indirect Workers:
  - 74% of employee spending expected to be captured in SLO County
  - 480 “job-years” and \$59M in spending during 3-year construction
  - 160 “job-years” and \$19M in spending during 25-year operations

# Induced Spending by CVSR Project Workers



[1] Includes wholesale trade, transportation and warehousing, information, finance & insurance, professional & business services, education services, social assistance, leisure & hospitality, and other services including government services.

# Additional Impacts – Tax Revenues

- **Property Taxes**
  - Increased value of land and value of taxable improvements estimated to generate \$400-500K in added taxes annually
  - County's share (28.2%) would sum to **\$3M+** over 25 years
- **Sales and Use Tax**
  - Taxes paid on acquisition of construction materials and equipment (excluding exempt solar equipment)
  - Direct and indirect activity estimated to generate **~\$8M** to County during 3-year construction period
  - Negligible amounts during operations period
- Estimates based on Aspen Environmental Group, Economic Impact Analysis, August 2010

# Summary of Economic Impacts - Construction

- Construction Jobs, Compensation and Output in SLO County

<b>Impact</b>	<b>Economic Activity</b>	<b>Job-Years<sup>1</sup></b>	<b>Employee Compensation<sup>2</sup></b>	<b>Economic Output<sup>3</sup></b>
Direct	Project Development	680	\$72,000,000	\$115,000,000
Indirect	Local Supply Chain	230	\$10,000,000	\$43,000,000
Induced	Employee Spending	480	\$14,000,000	\$59,000,000
<b>Total</b>		<b>1,390</b>	<b>\$96,000,000</b>	<b>\$217,000,000</b>

[1] Job estimates for indirect and induced employment include part-time and full-time employment.

[2] Employee compensation includes wages as well as fringe benefits paid for by employers.

[3] Economic output includes all local spending on labor, materials, and services, not the value of the power plant being created, and thus is a gross underestimation of the traditional "economic output."

# Summary of Economic Impacts - Operations

- Operations Jobs, Compensation and Output in SLO County

<b>Impact</b>	<b>Economic Activity</b>	<b>Job-Years<sup>1</sup></b>	<b>Employee Compensation<sup>2</sup></b>	<b>Economic Output<sup>3</sup></b>
Direct	Project Operations	300	\$31,000,000	\$55,000,000
Indirect	Local Supply Chain	130	\$5,000,000	\$24,000,000
Induced	Employee Spending	160	\$4,000,000	\$19,000,000
<b>Total</b>		<b>590</b>	<b>\$40,000,000</b>	<b>\$98,000,000</b>

[1] Job estimates for indirect and induced employment include part-time and full-time employment.

[2] Employee compensation includes wages as well as fringe benefits paid for by employers.

[3] Economic output includes all local spending on labor, materials, and services, not the value of the energy being created, and thus is a gross underestimation of the traditional "economic output."

# Total Economic & Tax Impacts in SLO County

- Construction and Operations Phases Combined

<b>Impact</b>	<b>Economic Activity</b>	<b>Job-Years<sup>1</sup></b>	<b>Employee Compensation<sup>2</sup></b>	<b>Economic Output<sup>3</sup></b>
Direct	Project Development	980	\$103,000,000	\$170,000,000
Indirect	Local Supply Chain	360	\$15,000,000	\$67,000,000
Induced	Employee Spending	640	\$18,000,000	\$78,000,000
<b>Total Economic Impacts</b>		<b>1,980</b>	<b>\$136,000,000</b>	<b>\$315,000,000</b>
<b>Tax Impacts<sup>4</sup></b>				<b>\$11,000,000+</b>

[1] Job estimates for indirect and induced employment include part-time and full-time employment.

[2] Employee compensation includes wages as well as fringe benefits paid for by employers.

[3] Economic output includes all local spending on labor, materials, and services, not the value of the energy being created, and thus is a gross underestimation of the traditional "economic output."

[4] Does not include property tax that would be levied on the Visitor Center and O&M building.