

The background of the cover is a photograph of a wind farm at sunset. The sky is a mix of light blue and orange, with the sun low on the horizon. Several wind turbines are visible, with the largest one in the foreground on the left. The ground is covered in dry grass. A large, white, semi-transparent graphic overlay, consisting of several overlapping geometric shapes like trapezoids and rectangles, is positioned on the right side of the cover, framing the title and date.

M A R C H 2 0 1 6

# THE ECONOMIC EFFECTS OF THE RENEWABLE ENERGY SECTOR IN IMPERIAL COUNTY

NATIONAL UNIVERSITY SYSTEM  
INSTITUTE FOR POLICY RESEARCH

## The Economic Effects of the Renewable Energy Sector in Imperial County

### Executive Summary

Since the Great Recession, there has been significant growth in the number of utility-scale renewable energy projects in California, particularly in Imperial County. Understanding how these projects affect the regional economy can help policy makers develop more effective economic strategies and industry outreach programs. Using a combination of industry interviews and public data, the National University System Institute for Policy Research (NUSIPR) found:

- **Major policy changes have facilitated industry investment.** Federal grant funding, renewable energy generation state mandates and SDG&E's Sunrise Powerlink have all played an important role in kick-starting renewable energy project construction.
- **Renewable energy projects are creating demand for some higher-wage jobs.** The construction, operations and maintenance jobs created by projects pay higher than the region's median hourly wage.
- **Projected job impacts from renewable projects need further verification.** Econometric modeling projected that 2015 projects had the capacity of hiring 1,963 workers; however more research is required in order to verify these figures.
- **Most industry jobs are temporary, not permanent.** Still, the high-level of continuous construction activity in Imperial County has sustained demand for thousands of jobs. With stricter renewable state mandates, this trend is likely to continue through the end of the decade.

## **Part 1: The Push for Renewable Energy in Imperial County**

Regional economic planners highlight Imperial County's abundant sunshine, low-priced available land, and geothermal activity as favorable for industry investment. A 2008 report estimated Imperial County had an estimated 42.2 gigawatts of renewal energy potential, including 2.4 gigawatts of geothermal, 28.9 gigawatts for solar, and 10.7 for wind.<sup>1</sup> As industry interest has grown in the last few years, the Imperial County Planning Department had approved at least twenty-two large scale renewable energy projects, spread across more than 19,600 acres. Combined these projects have a generation capacity of 2.64 gigawatts.<sup>2</sup> Half of these projects were operational as of February 2015.

Three major policies have facilitated industry investment and economic development in Imperial County.

### *Renewable Portfolio Standards*

One of the major reasons cited for renewable energy investment is the Renewable Portfolio Standards Program (RPS). Established in 2002 by Senate Bill 1078, the California Renewables Portfolio Standard Program requires electricity retail sellers (utilities, community choice aggregators, electric service providers) to acquire a minimum percentage of generated electricity from renewable energy sources. Under a bill signed by Governor Brown in 2015, this threshold was expanded from 33% by 2020 to 50% by 2030. As of November 2015, RPS programs were adopted in twenty-nine states and the District of Columbia.

At least a dozen major renewable energy projects built under RPS agreements in Imperial County that have been approved by the California Public Utilities Commission as of December 2015.<sup>3</sup>

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<sup>1</sup> *Renewable Energy Feasibility Study Final Report*. Blue Summit Consulting, LLC. April 1, 2018. Page 87. Accessed September 1, 2015. <<http://www.iid.com/home/showdocument?id=3896>>.

<sup>2</sup> Board Agenda Fact Sheet. Imperial County Planning Department. February 10, 2015. Accessed January 1, 2016. <[http://imperial.granicus.com/MetaViewer.php?view\\_id=2&clip\\_id=721&meta\\_id=99386](http://imperial.granicus.com/MetaViewer.php?view_id=2&clip_id=721&meta_id=99386)>.

<sup>3</sup> California Public Utilities Commission. RPS Monthly Project Status Table. Updated December 22, 2015. Accessed January 17, 2016. <[http://www.cpuc.ca.gov/uploadedFiles/CPUC\\_Public\\_Website/Content/Utilities\\_and\\_Industries/Energy/Energy\\_Programs/Electric\\_Power\\_Procurement\\_and\\_Generation/Renewable\\_Energy/RPS\\_Project\\_Status\\_Table\\_2015\\_Dember.xls](http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Utilities_and_Industries/Energy/Energy_Programs/Electric_Power_Procurement_and_Generation/Renewable_Energy/RPS_Project_Status_Table_2015_Dember.xls)>.

Table 1: Approved RPS Projects in Imperial County

Commission Approval Date	Projects Approved and Online	Status	IOU <sup>4</sup>	Min. MW	Technology
3/13/2008	ORNI 18	Operational	SCE	50	Geothermal
1/12/2012	Ocotillo Express Wind Project	Operational	SDG&E	265	Wind
3/15/2007	Campo Verde /Mt. Signal Solar	Operational	SDG&E	49	Solar PV
7/28/2011	Imperial Solar Energy Center-South	Operational	SDG&E	130	Solar PV
1/13/2011	Centinela Solar (expansion)	Operational	SDG&E	30	Solar PV
12/1/2011	SG2 Imperial Valley	Operational	SDG&E	150	Solar PV
7/28/2011	Imperial Solar Energy Center-West	Operational	SDG&E	130	Solar PV
Commission Approval Date	Approved Contracts in Development	Status	IOU	Min. MW	Technology
6/27/2013	Seville Tallbear LLC	Delayed	SDG&E	20	Solar PV
6/27/2013	Calipatria	Delayed	SDG&E	20	Solar PV
2/19/2014	Midway Solar Farm I	On schedule	PG&E	50	Solar PV
3/26/2015	Mt. Signal Solar II and IV	On schedule	SCE	154/ 252	Solar PV

Source: California Public Utilities Commission

### Section 1603

In 2009, the United States Congress established a temporary grant program (Section 1603) within the American Recovery and Reinvestment Act to offer renewable energy project developers a one-time cash payment in lieu of the investment tax credit (ITC), production tax credit (PTC), and accelerated depreciation benefit available to them. The program was created in order to aid newer, smaller renewable energy developers recoup costs during the depth of the Great Recession and when these firms were having a particularly difficult time accessing credit markets.<sup>5</sup> These grants are typically equivalent to approximately 30% of total eligible project costs. According to the U.S. Treasury, as of December 2015 more than 104,000 renewable energy projects have been funded through this program, totaling \$24.9 billion in grant dollars, and resulting in 33.3 gigawatts (GW) of installed energy capacity.<sup>6</sup>

Overall, slightly more than \$6.4 billion in Section 1603 grants (26% of all awards) have been awarded to projects based in California and five projects in Imperial County that have received more than \$470 million of those dollars.

<sup>4</sup> "Investor-owned utilities" (IOU). SCE = Southern California Edison, SDG&E = San Diego Gas & Electric, PG&E = Pacific Gas & Electric.

<sup>5</sup> Goldberg, Marshall, Gian Porro and Daniel Steinberg. *Preliminary Analysis of the Jobs and Economic Impacts of Renewable Energy Projects Supported by the Section 1603 Treasury Grant Program*. U.S. Department of Energy. April 2012. Page iv. Accessed January 4, 2016. <<http://www.nrel.gov/docs/fy12osti/52739.pdf>>.

<sup>6</sup> United States Treasury. "Overview and Status Update of the Section 1603 Program." January 13, 2016. Accessed January 15, 2016. <<https://www.treasury.gov/initiatives/recovery/Documents/STATUS%20OVERVIEW.pdf>>.

Table 2: Section 1603 Grant-Funded Projects in Imperial County

Project Name	Technology	Grant Awarded
Ocotillo Express LLC	Wind	\$ 115,890,946
Imperial Solar 1, LLC	Solar Electricity	\$ 8,213,892
Imperial Valley Solar 1, LLC	Solar Electricity	\$ 203,386,804
Imperial Valley Solar Company (IVSC) 1, LLC	Solar Electricity	\$ 23,680,942
ORNI 18 LLC	Geothermal Electricity	\$ 122,970,821
<b>TOTAL</b>		<b>\$ 474,143,405</b>

### *Sunrise Powerlink*

The Sunrise Powerlink is a 117-mile high voltage power transmission line erected between Imperial and San Diego Counties by San Diego Gas & Electric (SDG&E), and placed into service on June 2012. It took seven years to complete the design, approval and construction of the line, which has the capacity of delivering 1,000 megawatts of electricity. According to SDG&E, the Sunrise Powerlink was built in part to facilitate and promote renewable energy generation in Imperial County (specifically geothermal and solar) as well as secure transmission capacity from the Valley to SDG&E customers.<sup>7</sup> At the time, this came amid criticism that renewable energy sources in the Valley were “not yet developed.”<sup>8</sup> By December 2014, SDG&E had signed 10 operating agreements for renewable energy projects in Imperial County with the capacity of generating 1,244 megawatts of power.<sup>9</sup>

The first utility-scale renewable energy project with transmission over the Sunrise Powerlink was the Imperial Solar Energy Center South, a \$500 million, 130 megawatt photovoltaic project built in Calexico and connected to the SDG&E Imperial Valley Substation.<sup>10</sup> Imperial Solar Energy Center South started construction in December 2011 and began commercial operation in November 2013. CSOLAR IV South, LLC, the project operator, identified that 70% of the construction workers hired to complete the project were from Imperial County, and a June 2012 job fair held for the project drew more than 1,100 applicants. CSOLAR IV South also awarded more than \$20 million in construction contracts to local companies.<sup>11</sup>

<sup>7</sup> Final EIR/EIS, Sunrise Powerlink Project, Executive Summary. California Public Utilities Commission. October 2008. Page ES-21. <[http://www.cpuc.ca.gov/environment/info/aspen/sunrise/feir/001%20exec\\_summary\\_FINAL.pdf](http://www.cpuc.ca.gov/environment/info/aspen/sunrise/feir/001%20exec_summary_FINAL.pdf)>.

<sup>8</sup> Id., Page ES-25.

<sup>9</sup> “SDG&E’s Sunrise Powerlink Reaches 1,000 Megawatt Renewable Energy Goal.” San Diego Gas & Electric website. December 18, 2014. Accessed January 1, 2016. <<http://www.sdge.com/taxonomy/term/80>>.

<sup>10</sup> San Diego Gas & Electric. Sunrise Powerlink Newsletter. August 2012.

<sup>11</sup> Source: CSOLAR IV South, LLC.

## Part 2: Employment Impact of Renewal Energy Projects

Increasing employment opportunities from renewable energy projects is a public policy goal of regional economic development leaders.<sup>12</sup> Imperial County's 19.6% unemployment rate is the highest of any county in California and the county consistently ranks as one of the state's poorest. The 2014 American Community Survey identifies that nearly one out of four (23.7%) Imperial County residents live below the federal poverty level, compared to 16.4% statewide, and 14.7% in San Diego County.<sup>13</sup> Agriculture dominates the local economy - 13.4 % of the workforce employed in farming and another 5.3% employed in closely associated industries such as transportation and material moving occupations and diversifying the regional economy has been a long-term goal of county leaders.<sup>14</sup>

Imperial County officials have made a concerted effort to leverage the region's natural resources and expand the footprint of the renewal energy sector. Unlike agricultural work, renewable energy industry jobs are non-seasonal; they also have higher wages than farming jobs. It is useful to distinguish between three kinds of employment opportunities created by the renewable energy sector.

### *Construction Employment*

On solar projects, laborers complete most site preparation, civil and engineering work, including underground utility work. For geothermal projects, laborers typically complete pipe assembly, high-tech welding, site work prep and masonry.

According to Mike Dea, Business Agent of the Laborers' International Union of North America (LIUNA) 1184, an entry-level journeyman in Imperial County can make \$25 to \$33 an hour. For entry level and apprenticeship positions across all of the trades, hourly wages range from \$17 to \$31 an hour in take home pay, plus benefits (healthcare, pension, vacation time).

In addition to construction workers required for site preparation and the physical construction of the facilities, skilled electricians are needed for installing, maintaining and testing the wiring of renewable energy projects and other project equipment that connects to the electrical grid.<sup>15</sup> The hourly wage rate for union electricians in Imperial County is \$39.25, not including paid benefits such as health insurance and pension contributions.<sup>16</sup> With 2,000 hours of work, a fully employed electrician earns \$78,500 a year.

Occupational employment data from the California Employment Development Department shows that hourly and annual wage rates for construction-related occupations in Imperial County have steadily

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<sup>12</sup> Imperial County Community and Economic Development. *Imperial County Comprehensive Economic Development Strategy*. Accessed February 9, 2016.

<<http://www.co.imperial.ca.us/announcements%5CPDFs%5C04-22-14CEDSDraft%28PublicComment%29.pdf>>.

<sup>13</sup> Source: American FactFinder online database. <http://factfinder.census.gov>

<sup>14</sup> California Employment Development Department. *Monthly Labor Force Data for Counties*. January 22, 2016. Accessed February 2, 2016. <<http://www.labormarketinfo.edd.ca.gov/file/lfmonth/1512pcou.pdf>>.

<sup>15</sup> Bureau of Labor Statistics. *Careers in Solar Power*. Webpage. Accessed January 5, 2016. <[http://www.bls.gov/green/solar\\_power/](http://www.bls.gov/green/solar_power/)>.

<sup>16</sup> Philips, Peter. *Environmental and Economic Benefits of Building Solar in California*. University of California. November 2014. Accessed January 5, 2016. <<http://www.irlle.berkeley.edu/vial/publications/building-solar-ca14.pdf>>.

increased in pay since 1<sup>st</sup> Quarter 2011. These occupations include electricians, carpenters, construction laborers, and equipment operators.<sup>17</sup> This contrasts with the overall county mean wage that has been flat.

Table 3: Job Growth and Wage Rates in Imperial County, Q1 2011- Q1 2015

	2011	2012	2013	2014	2015
<b>Total Payroll Employment</b>	50,290	49,530	51,960	51,990	55,540
<b>Mean Hourly Wage</b>	\$19.25	\$19.94	\$19.64	\$19.79	\$19.68
<b>Mean Annual Wage</b>	\$40,034	\$41,468	\$40,867	\$41,164	\$41,325
<b>Construction and Extraction Occupations</b>	1,460	1,190	1,290	1,470	1,860
<b>Mean Hourly Wage</b>	\$21.15	\$22.75	\$22.76	\$23.73	\$26.21
<b>Mean Annual Wage</b>	\$43,994	\$47,322	\$47,342	\$49,352	\$54,520

The growth in construction jobs does not seem to be explained by growth in non-renewable construction projects in Imperial County. Residential building recovered somewhat from the lows of 2010 but has been generally flat since then. Meanwhile, between 2011 and 2014, total construction employment in Imperial County increased by nearly 700 jobs.<sup>18</sup>

Table 4: Total Units for Construction of Privately-Owned Residential Buildings in Imperial County, 2010-2014

Year	2010	2011	2012	2013	2014
<b>Units</b>	102	257	287	303	246

With regard to workforce development, it's worth noting that most projects statewide are built under project labor agreements (PLAs), which require contractors to financially support apprenticeship and

<sup>17</sup> Note that while the wage data corresponds to the identifying year, the jobs data lags one year behind the year. OES Employment and Wages Data Tables, 1<sup>st</sup> Quarter 2011 – 2015. State of California Employment Development Department webpage. Accessed December 8, 2015. <<http://www.labormarketinfo.edd.ca.gov/data/oes-employment-and-wages.html>>.

<sup>18</sup> Building Permits Database by State and County. United States Census Bureau. Accessed February 1, 2016. <<http://censtats.census.gov/cgi-bin/bldgprmt/bldgdisp.pl>>.

pre-apprenticeship training.<sup>19</sup> In effect, the projects are providing on-the-job training for much of the construction workforce. Local hire provisions within PLAs also facilitate employment for local workers.

### *Operations and Maintenance Employment*

Generally, renewable energy sites require permanent, full-time plant technicians, site operators, and power plant control room operators, often working between daytime and nighttime shifts. These workers are needed for monitoring operations, electricity generation and facility equipment. Average wage rates for local industry job openings are higher than the median hourly wage (\$14.05).<sup>20</sup> Environmental impact reports (EIR) for renewable energy projects also indicated that these projects create a demand for vegetation management, dust control, landscaping, preventative maintenance, routine equipment testing, as well as road and drainage maintenance.<sup>21</sup> NUSIPR identified that intermittent jobs are also required for solar panel washing, while wind farms require visual inspections, gearbox lubrication and routine oil changes. Finally, security guards are commonly contracted for patrols and on-site monitoring of renewable energy sites.

### **Part III: Workforce Training & Education**

A number of educational institutions that are providing entry-level training and education for the Imperial County workforce.

Located in the town of Imperial, the Imperial Valley College (IVC) offers a nine-course Alternative Energy-Solar Technology Certificate, designed to expand career opportunities in solar system maintenance, installation and operation. They provide base curriculum required to take the North American Board of Certified Energy Practitioners (NABCEP) entry level exams for photovoltaic and solar heating system installation. Other IVC programs include an A.S. in Energy Efficiency Technology, an Energy Efficiency Technology Certificate, and an A.S. degree in Electrical Technology.

San Diego State University has been working on an industry initiative over the last few years. With federal grant funding, SDSU has established the Center for Energy Sustainability (CES) at its Brawley Campus, which will test renewable energy technologies, cultivate early-stage firms, and provide industry education. As part of that effort, CES will develop a power plant management and operations program that allows students to train in a power plant simulator, with donated equipment and software. Plans are in place to increase industry partnerships, program funding and hands-on student learning opportunities in the near future.

Since 2014, SDSU's Brawley campus has also been home to Community 1 Solar Generating Facility, the largest university based solar field in California. The Imperial Irrigation District has a 25 year power purchase agreement for the energy generated. Also on campus is a full-scale demonstration unit of

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<sup>19</sup> Philips, pp. 33.

<sup>20</sup> Control room operators make on average \$16.00 an hour; instrument and control technicians, \$21.00 an hour; general power plant operator, \$24.73 an hour; and geothermal power plant operators, \$18.00 an hour.

<sup>21</sup> NUSIPR reviewed 18 separate EIRs for Imperial County renewable projects, found on the Imperial County Planning & Development Services website, <ftp://ftp.co.imperial.ca.us/icpds/eir/>.

Hyperlight Energy's solar thermal technology, which received \$2 million in funding from the California Energy Commission and Southern California Gas Company.<sup>22</sup>

Labor unions participating in the construction and assembly of renewable energy projects have also invested in local regional training programs. In August 2009, the International Brotherhood of Electrical Workers (IBEW) Local 569 and the San Diego and Imperial Counties Chapter of the National Electrical Contractors Association (NECA) opened the Imperial Electrical Training Center in Imperial, to provide electrical apprenticeship training in the region. Previously, local workers would have to train at IBEW's facility in San Diego. The Laborers Local 1184 have built a laborers training school in Brawley, which officially opened in January 2014, hosting courses in fencing, mechanical pipe installation, and photovoltaic solar assembly, among others. More than 250 union members have been trained in solar and renewable industry curriculum from the Brawley center since 2014.

#### **Part IV: Other Economic Benefits**

Beyond job creation and workforce training, we found that economic benefits associated with renewable industry projects generally include increases in tax revenue (property tax, sales tax, payroll tax); increases in property values; land lease revenues; and infrastructure improvements.<sup>23</sup>

As part of our economic investigation, we chose to conduct an economic impact analysis of renewable energy projects that started construction or were under construction in 2015.<sup>24</sup> To identify the renewable energy projects under construction we started with the U.S. Energy Information Administration's online database of planned generation projects which were then cross referenced with construction status reports from the Imperial County Planning Department. Table 5 identifies those projects. To estimate their economic impact we used the National Renewable Energy Laboratory's (NREL) Jobs and Economic Development Impacts (JEDI) Photovoltaic (PV) Model. The JEDI PV Model measures the economic impact of construction, project operations, and estimates temporary and permanent job impacts. The JEDI model was then supplemented with Imperial County household expenditure data and regional industry multiplier values found in the IMPLAN input-output economic modeling software program.<sup>25</sup>

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<sup>22</sup> SoCalGas, California Energy Commission Collaborate to Advance Hyperlight Technology: Low-Cost, Utility-Scale Renewable Power. Press Release. May 8, 2014. Accessed January 4, 2016. <<http://www.prnewswire.com/news-releases/socalgas-california-energy-commission-collaborate-to-advance-hyperlight-technology-low-cost-utility-scale-renewable-power-258453271.html>>.

<sup>23</sup> *Renewable Energy Feasibility Study Final Report*. Blue Summit Consulting, LLC. April 1, 2018. Page 87. Accessed September 1, 2015. <<http://www.iid.com/home/showdocument?id=3896>>.

<sup>24</sup> "Economic impact" aggregates the direct spending by businesses (and their employees) on goods and services in a geographic region with the "multiplier effect" that is created when industry dollars are recirculated in the local economy. Specialized software programs are used that calculate the economic effects within a region using economic models, proprietary algorithms and business sector data. For economic analyses, NUSIPR uses IMPLAN, a leading regional input/output model. Input/output models are an econometric technique used to explore economic relationships within a designated geography.

<sup>25</sup> "For renewable generation facilities, direct jobs and economic activity are the jobs and economic activity associated with the design, development, management, construction/installation, and maintenance of generation facilities. Indirect jobs and economic activity are the jobs and activity associated with the manufacturing and

This analysis suggested that the 320 MW of capacity being constructed in Imperial County in 2015 are projected to generate the one year equivalent of 7,850 direct jobs, and in total support 16,985 jobs in Imperial County. Over their construction phases, these projects will generate approximately \$1.07 billion worth of economic activity in the region. Once completed, they are estimated to generate 320 megawatts of electricity, support 59 operations and maintenance jobs, and have \$2.6 million in annual economic output.

Table 5: JEDI Economic Impact Analysis of Imperial County Renewable Energy Projects Under Construction in 2015

Project Name	Megawatts	Direct Jobs	Indirect Jobs	Induced Jobs	Total Jobs	Operating Jobs	Construction Output (\$000)	Total Annual Output (\$000)
Seville 2	30	736	745	112	1,592	6	\$ 100,795	\$ 251
Imperial Solar West	150	3,680	3,724	558	7,962	28	\$ 503,973	\$ 1,256
Centinela Solar	100	2,453	2,483	372	5,308	19	\$ 335,982	\$ 837
Calipat Solar Farm I	20	491	497	74	1,062	4	\$ 67,196	\$ 167
Imperial Valley Solar 2	20	491	497	74	1,062	4	\$ 67,196	\$ 167
<b>TOTAL</b>	<b>320</b>	<b>7,850</b>	<b>7,945</b>	<b>1,190</b>	<b>16,985</b>	<b>59</b>	<b>\$ 1,075,141</b>	<b>\$ 2,678</b>

Due to the parameters of the JEDI program, the jobs and impact figures condense the economic benefits of the projects into the equivalent of one year. In other words, if a project lasts more than 1 year it is necessary to divide the results by a longer time period to get a gauge of the *annual* employment impacts. Since utility-scale solar projects take anywhere from 14-22 months to complete construction work, and that the listed projects are at various stages of construction, NUSIPR conservatively estimates 1/4 of the total figures from the JEDI model reflect the actual construction activity for 2015. Therefore,

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supply of equipment, materials, and services for the generation facility, as well as the upstream suppliers that provide raw materials and services to these manufacturers. Induced jobs and economic activity include the jobs and economic activity that occur as a result of spending earnings by individuals directly and indirectly employed by the projects, which could include jobs at local grocery stores and restaurants, clothing retailers, hospitals, and schools.” Goldberg, Marshall, Gian Porro and Daniel Steinberg. *Preliminary Analysis of the Jobs and Economic Impacts of Renewable Energy Projects Supported by the Section 1603 Treasury Grant Program*. U.S. Department of Energy. April 2012. Accessed January 4, 2016. <<http://www.nrel.gov/docs/fy12osti/52739.pdf>>.

renewable energy projects had the potential of creating or supporting approximately 4,246 in total jobs and \$268.7 million in regional economic activity.

Table 6: 2015 Economic Impact of Imperial County Renewable Energy Projects

	Direct Jobs	Indirect Jobs	Induced Jobs	Total Jobs	Construction output (\$000)
<b>TOTAL</b>	1,963	1,986	298	4,246	\$ 268,785

*Variance with Payroll Data from California Employment Development Department.*

Interestingly, NUSIPR did not find the projected jobs figures reflected in the regional workforce data available to the public. The Quarterly Census of Employment and Wages (QCEW) identified an increase of 727 construction industry jobs from 4<sup>th</sup> Quarter 2014 to 2<sup>nd</sup> Quarter 2015 (the most current data available).<sup>26</sup> The California Employment Development Department’s (EDD) monthly industry employment and labor force dataset for Imperial County identified that between January 2015 and January 2016, 1,100 jobs were created within the “mining, logging and construction” industries.<sup>27</sup> Though there has been some uptick in areas likely related to renewables, the increase is not of the magnitude predicted by either JEDI or Implan.

There are some possible explanations for this variance. Public datasets have limitations. In counties like Imperial the EDD data reflects a sampling procedure that has some margin of error which makes gauging these kinds of impacts more difficult. Moreover, it is common for construction jobs to be counted by EDD in the county where the firm is headquartered, not the county of the project site. Some of the construction firms working on renewable energy projects in Imperial County are based in neighboring San Diego and Riverside counties and so an unknown number of workers on these project may be counted in those county’s construction employment numbers. Independent contractors and workers paid in cash are also not reflected within EDD datasets. Finally, while the NREL JEDI model is the best-in-class program for industry economic impact analysis, it is plausible that the projected growth in temporary jobs is, to some degree, overstated and that as solar project developers have become more skilled and as projects have become more standardized, fewer jobs are being created by these projects.

Given these limitations and the variance between projections and the EDD data NUSIPR believes that Imperial County economic developers should strongly consider implementing post-completion data collection. Our own requests to developers and union representatives for assistance in verifying the projected workforce figures for the 2015 projects received no response. Payroll data could be collected from project developers as part of the final checklist during the permitting process and/or the submittal of payroll data could be required from the trade unions as part of the Project Labor Agreements. Given the importance of these projects to the prosperity of Imperial County, it is vital that planners and elected officials understand the true impact of the projects on employment and where there may be opportunities to further increase the benefits the county derives from the investment.

<sup>26</sup> Quarterly Census of Employment and Wages online database. California EDD. Accessed February 8, 2016. <<http://www.labormarketinfo.edd.ca.gov/qcew/cew-select.asp>>.

<sup>27</sup> Industry Employment Data – El Centro MSA. California EDD Labor Market Information Division. Accessed February 8, 2016. <[http://www.calmis.ca.gov/file/indhist/ecen\\$hws.xls](http://www.calmis.ca.gov/file/indhist/ecen$hws.xls)>.

## **ABOUT THE NATIONAL UNIVERSITY SYSTEM INSTITUTE FOR POLICY RESEARCH**

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