WORKFORCE NEEDS FOR DISTRIBUTED SOLAR PROJECTS

Center for Energy Efficiency & Renewable Technologies
Research by Rhonda S. Mills and Alexandra Kravetz
Presented to InterSolar-North America
July 12, 2011
THE SOLAR MECCA
CALIFORNIA AND THE US SOUTHWEST

Solar Fuel Offers Huge Potential for the Regional Energy Economy.
The largest rooftop PV system in the US was built in 2010 in Mira Loma, California by PermaCity Solar. 3.4 MW PV System.
11kW Building-Integrated PV in Santa Monica, California. Energy powers common areas in the multi-use residential complex.

www.ceert.org
## California Unemployment Statistics by County

### July 2010

<table>
<thead>
<tr>
<th>County</th>
<th>Unemployment Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imperial</td>
<td>31.30%</td>
</tr>
<tr>
<td>Kern</td>
<td>14.40%</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>12.50%</td>
</tr>
<tr>
<td>Riverside</td>
<td>15.30%</td>
</tr>
<tr>
<td>San Bernardino</td>
<td>14.80%</td>
</tr>
<tr>
<td>San Luis Obispo</td>
<td>9.70%</td>
</tr>
</tbody>
</table>

Source: July 2010 Statistics
CA EDD, Labor Market Information Division

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Monthly Construction Jobs Estimates
In Full-Time Equivalent Jobs (FTEs)
10 PV Projects - 30 MW Total
Rooftops/Carports
Length of Construction: 6 Months

- Assembly Workers (Semi-Skilled): 10
- Carpenters: 20
- Cement Masons: 25
- Construction Staff: 50
- Electricians: 50
- Engineers: 20
- Laborers: 60
- Project and Construction Managers: 60
- Security: 60
- Solar Field Craft*: 60
- Surveyors: 30
- Tradesmen: 30
- Welders: 20
- Administrators: 50

*The Solar Field Craft is a CEC job category. These crews may include Foremen, Equipment Operators, Ironworkers, Carpenters, Masons, and Pipefitters and Welders.

Source: PermaCity Solar Response, CEERT Jobs Survey

Data Source: PermaCity

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<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction-Related Earnings</td>
<td>$20.9 Million</td>
</tr>
<tr>
<td>Lifecycle O&amp;M Earnings</td>
<td>$24 Million</td>
</tr>
<tr>
<td>Estimated Annual Employee Earnings &amp; Tax Receipts Over 20 Years on 30MW Distributed PV Generation</td>
<td></td>
</tr>
<tr>
<td>ANNUAL INDIVIDUAL INCOME TAXES Paid by Employees</td>
<td>State: $2 Million</td>
</tr>
<tr>
<td></td>
<td>Federal: $7.2 Million</td>
</tr>
<tr>
<td>ANNUAL EMPLOYMENT TAXES Paid by Developer/Operator</td>
<td>State (Unemployment, Other): $600,000</td>
</tr>
<tr>
<td>ANNUAL CORPORATE INCOME TAXES Paid by Owner/Operator</td>
<td>State: $180,000</td>
</tr>
<tr>
<td></td>
<td>Federal: $690,000</td>
</tr>
<tr>
<td>PROPERTY TAXES Annually Over 20 Years</td>
<td>County, State: $37,500</td>
</tr>
</tbody>
</table>

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SUBSTANTIAL DIRECT EMPLOYMENT POTENTIAL

CONSTRUCTION JOBS TO BUILD 2,000 PV PROJECTS (6GW TOTAL DG)

(Assumes 10-Year Construction Period to Build 6GW: 600MW Per Year.)

OVER 10 YEARS

10,400 JOBS
Monthly Average

12,860 JOBS
Monthly Peak

Assumes 2,000 DG units of 3MW each and approximately 20 Full-Time jobs per 3 MW project. Total Direct Employment 104,000 FTEs.

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Estimated Payroll Earnings On 6GW of PV Installations

$4.2 BILLION
Total Construction Payroll
Estimate Based on $2.1 Million Payroll per 3MW.
($2.1 Million X 2,000 3MW Systems)

$42 MILLION
Annual Construction Payroll

$240 MILLION
Total O&M Earnings