Building the Labor/Market ‘Crystal Ball’ for Workforce Development Organizations

2011 Clean Energy Workforce Education Conference
March 9, 2010
- David McFeely, Director of Industry Solutions and Grant Programs
- Justin Bradley, Chair, Energy Workforce Group, Principal, Bradley Consulting
Green Innovations Challenge Grant and the SolarTech SWIC Response
SolarTech’s, NOVA’s, Foothill-DeAnza CCD’s and San Jose St. Univ.
Partnership:

SolarTech Workforce Innovations Collaborative
A Best Practices Model? We think so.... Collaborative/Industry-Driven Approach

• A vision and a model for hotwiring effective workforce development – Clearinghouse!

• The industry data that workforce developers and trainers need

• Partnerships that work - Join us!
SolarTech Workforce Innovations Collaborative:
Program/Team Structure & Key Elements

SolarTech,
Program Mgr: David McFeely
Project Mgr: Justin Bradley
• Industry Association
• 100+ Members
• Representing some of the largest solar players world wide.

FHDA (Catherine Ayers):
• Spearhead Training Dev.
• Link with other CCDs

Nova (Laura Caccia):
• Case Management.
• Placement Coaching
SolarTech’s Industry Role

SolarTech’s Mission is to remove the barriers, hidden costs and inefficiencies in the delivery and growth of the Solar PV industry:

• Streamline the market and enable growth
• Ensure a vibrant competitive industry
• Meet Calif. Solar Initiative growth goals.
SWIC’s Bottom-Line Goal

• Find the right renewable energy jobs in the right timeframe,
• …with enough granular skill requirement details,
• …such that training providers can develop the right programs,
• …enabling talent coaches working with displaced workers to fill these positions.

• 245 trained. 172 placed.
• Rapid deployment.
• Experiment and figure out the best model.
SolarTech Workforce Innovations Collaborative, Placement Goals:

• Grant Targets
  – 245 participants that will receive training
  – 172 participants that will complete training and enter unsubsidized employment in the targeted industry

• We industry help, ideas and guidance.

• We need to leverage multiple business and partner channels?
SolarTech’s SWIC Role

Investigation
- Engage Industry through a variety of techniques
- Not dependent on any one technique
- Analysis: Connecting the dots and continuous validation

Dissemination & Outreach
- Engage Industry through a variety of techniques
- Not dependent on any one communication technique
- Creating a shared ownership and engagement

Often the same or similar process
Target Demographic and Student Profiles

Displaced Workers/Student Profiles:
• All senior level professionals recently exceeded from multiple different high tech industries.

• Most have previous high tech experience in product support, business development, project management, and/or have run their own business.

• Most have multiple undergraduate and graduate degrees, and a few are Ph.D. level.

• All are enrolled in Nova and can be researched in the Linked-in group established for this purpose:

“SWIC Placement Group”
Multiple Layers, Multiple Channels, Frequent

Multiple Data Source Channels Tapping Into Industry And Members

Workforce Committee

Surveys

Blogs

Industry Reports

Forums

Distilling of Recommendations

Analysis

Blogs

Reports

Seminars

Webinars

Multiple Communication Channels To Industry And Members
Results: Research and Reports

- Events
- Interviews
- Webinars
- Other Research Sources
- SWIC Primary Research
- Scraping Job Boards
- HR Surveys
Displaced Worker, Initial Training Offerings

Class Profiles and Opportunities

• Broad overview of both Energy and Renewable Energy industry; comprehensive and in-depth.

• Solar Technical Sales and Proposal Development: Comprehensive study of the solar PV industry from a sales prospective and elements of a well prepared proposal. Prepares candidates with previous high tech industry experience for residential solar sales, and back-end support/operations.

• Advanced Solar PV Design Engineering for Commercial Systems. AutoCAD for PV commercial design.

• Site deployment: Foothill, De Anza, & Ohlone Colleges; Solar Training Institute
Displaced Worker, Training Programs Under Development/Consideration

- Building Performance Institute Certification prep course, written and field testing. Solar Sales. Cabrillo College.
- Solar PV Electric Vehicle charging Living Lab, and Automotive Technology.
- Financial Analysis for Solar and multiple renewable energy technologies: energy management analysis combining finance and engineering skills.
- Internship programs for older professionals and college students to build experience in order to break the glass employment barrier.
Displaced Worker Talent: NOVA’s Role

- Fiscal Agent
- Recruitment & Screening
- Coaching & Case Management
- Tactical/individual placement assistance combined with SolarTech’s broader strategic outreach role.
- Tools for employer engagement: LinkedIn Group
Accomplishments:

- 55 SWIC enrollees
- Self-Assessment Checklist & Career Exploration process
- Coordination with neighboring WIBs and Community Colleges
- Employer Outreach Strategy: -warm introductions from SolarTech
  -build relationships with Human Resources
  -use social media tools: LinkedIn
University Connection: Sustainability and Growing the Economic Pie
SJSU Specifics

• Quantitative Primary Research:
  – Conduct 5 periodic Job Surveys targeting HR in Renewable Energy
  – First launched this month
• Academic Programs with schools of Business and Engineering:
  – Investigate/develop/collaborate with other CSUs for Renewable Energy specific curriculum
  – Internships & Student Research Projects: Continue to develop/expand/institutionalize process with industry
  – Completed several finance and consumer study projects. Starting permitting and performance study study this semester.
  – Approaching PG&E and Cal East Bay on engineering and finance.
Windex for the Crystal Ball

VISION
- Data: Real Time, Localized, Granular
- Tools: Automated, Intelligent
- Partnerships: Broad, Public / Private

PROCESS
- TODAY: SWIC Study is manual input & analysis
- Quality is high with granularity & customization
- TOMORROW: Released RFP for real time data base portal linking research to HR, Trainers and WIBs
Next Steps: 2011 into 2012

- Work with IREC, DOE, regions, colleges and WIBs

Silicon Valley Pilot

Expand throughout Calif. with other colleges and WIBs

SolarTech Workforce Innovations Collaborative
SolarTech Workforce Innovations Collaborative:

An Experiment in Process

SolarTech Workforce Innovations Collaborative

Industry

Training

Talent

An initiative of SolarTech, NOVA WB, & Foothill-DeAnza CCD
Questions on the vision and method?

The following backup slides available for specific questions on data gathered.
Results of our Research

• Scope of SWIC Research Activities
• SWIC Job Board Studies
• Renewable Energy Labor Market Studies
• Upcoming: Solar Workforce Staffing Survey
SWIC Job Board Studies

• SolarTech analyzes job posting statistics on a monthly basis across multiple sectors;

• Postings are compiled from job board aggregator www.simplyhired.com;

• Sample over 300 data points from ≈ 3,500 jobs (10%)
  – October & November: Solar (PV & CSP)
  – December: Energy Efficiency
  – January: Demand Response & Utility

• Working to automate collection and streamline analysis
Solar Employment at a Glance

Industry Segments

<table>
<thead>
<tr>
<th>Category</th>
<th>% of Postings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developer / Installer</td>
<td>34%</td>
</tr>
<tr>
<td>Manufacturer - Component</td>
<td>19%</td>
</tr>
<tr>
<td>Manufacturer &amp; System</td>
<td>17%</td>
</tr>
<tr>
<td>EPC / Project Development</td>
<td>11%</td>
</tr>
<tr>
<td>NA</td>
<td>6%</td>
</tr>
<tr>
<td>Manufacturer - Equipment</td>
<td>4%</td>
</tr>
<tr>
<td>Distributor</td>
<td>3%</td>
</tr>
<tr>
<td>Professional Services (IT, etc)</td>
<td>3%</td>
</tr>
<tr>
<td>Manufacturer - Materials</td>
<td>2%</td>
</tr>
<tr>
<td>Not-for-Profit</td>
<td>1%</td>
</tr>
<tr>
<td>Utility &amp; IPP</td>
<td>1%</td>
</tr>
<tr>
<td>Financing</td>
<td>1%</td>
</tr>
<tr>
<td>Retailer</td>
<td>0%</td>
</tr>
</tbody>
</table>

64% of the employers are companies involved in system deployment

1) Developer / Installer
2) Manufacturers w/ system development business
3) EPC
4) Utility / IPP

31% of the companies are involved in manufacturing:

1) Components (modules & balance of system)
2) Equipment
3) Materials
Top Solar Jobs - System Level

By Function

- PV System Project: 29%
- PV System Sales: 24%
- PV System Engineering: 21%
- Engineering: 2%
- PV Installation: 11%
- Product Development: 2%
- Component Sales / Business: 2%
- Manufacturing: 3%
- Operations / Supply Chain: 3%
- Technician: 2%
- Finance: 2%
- IT: 2%
- Construction: 2%
- Product Management: 2%
- Marketing: 2%
- Science / R&D: 1%
- Human Resources: 1%
- Sales Engineer: 1%

Postings are classified according to 16 functions

64% of the jobs pertain to PV system deployment

Top Jobs:
- 29% - System Project
- 24% - System Sales
- 21% - System Engineering
- 11% - Installation
Top Solar Jobs – Manufacturing level

By Function

% of Total
% Manufacturing

PV System Project 18% 18%
PV System Sales 14%
PV System Engineering 10%
Engineering 8%
PV Installation 8%
Product Development 5%
Component Sales / Business 5%
Manufacturing 3%
Operations / Supply Chain 3%
Technician 3%
Finance 3%
IT 2%
Construction 2%
Product Management 2%
Marketing 2%
Science / R&D 1%
Human Resources 1%
Sales Engineer 1%

Postings are classified according to 16 functions

31% of the jobs pertain to component, equipment or material manufacturing

Top Jobs with Manufacturers:

31% - Engineering
15% - Product Development
8% - Sales
8% - Technicians
7% - Other Manufacturing
(i.e. Process development, QA, assembly)
## Candidate Requirements - Experience

### Experience

<table>
<thead>
<tr>
<th>Experience</th>
<th>% of Total</th>
<th>% Manufacturing</th>
<th>% System</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-5 years</td>
<td>23%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-7 years</td>
<td>23%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NA</td>
<td>20%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-15 years</td>
<td>11%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7-10 years</td>
<td>9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-2 years</td>
<td>9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15+ years</td>
<td>2%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Most jobs require about 5 yrs. professional experience**
- **High number of unspecified amount of experience (NA)**
- **10% require less than 2 yrs.**
- **Manufacturers have a greater number of jobs requiring more experience (33% > 7 yrs)**
Candidate Requirements - Education

**Education**

- Bachelor's Degree: 57%
- Master's Degree: 4%
- High School: 3%
- Some College: 3%
- Trade (Electrician or...): 3%
- Professional: 2%
- Associate's Degree: 1%
- Doctorate: 1%
- Apprenticeship: 1%
- Some High School: 0%

- Majority of jobs require a Bachelor’s Degree
- 4% of jobs are available to candidates with Associate’s Degree or “Some College”
- Limited opportunities exists for candidates with high school (3%)
- High number of unspecified education could be lower requirements (26%)
Seniority & Source of Posting

- 50% are mid-level jobs
- Moderate percentage of entry-level jobs (22%)

- More than 50% of job postings listed on employers’ websites

**Seniority**

<table>
<thead>
<tr>
<th>Position</th>
<th>0%</th>
<th>20%</th>
<th>40%</th>
<th>60%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-Level Independent Contributor</td>
<td></td>
<td></td>
<td></td>
<td>50%</td>
</tr>
<tr>
<td>Entry-Level Associate</td>
<td>8%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manager</td>
<td>14%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Director</td>
<td>22%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Executive (VP &amp; C-Level)</td>
<td>4%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Source of Posting**

<table>
<thead>
<tr>
<th>Source</th>
<th>0%</th>
<th>20%</th>
<th>40%</th>
<th>60%</th>
<th>80%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employer</td>
<td></td>
<td></td>
<td></td>
<td>54%</td>
<td></td>
</tr>
<tr>
<td>Job Board</td>
<td></td>
<td></td>
<td></td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td>Staffing Agency</td>
<td></td>
<td></td>
<td></td>
<td>19%</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td>1%</td>
<td></td>
</tr>
</tbody>
</table>
Energy Efficiency

Energy Efficiency Jobs

<table>
<thead>
<tr>
<th>Job Title</th>
<th>% of Job Postings</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE Engineer</td>
<td>37%</td>
</tr>
<tr>
<td>Project Manager</td>
<td>13%</td>
</tr>
<tr>
<td>Sales</td>
<td>12%</td>
</tr>
<tr>
<td>Consultant</td>
<td>8%</td>
</tr>
<tr>
<td>Program Manager</td>
<td>7%</td>
</tr>
<tr>
<td>Specialist</td>
<td>6%</td>
</tr>
<tr>
<td>Energy Analyst</td>
<td>5%</td>
</tr>
<tr>
<td>Funding Facilitator</td>
<td>4%</td>
</tr>
<tr>
<td>Researcher</td>
<td>2%</td>
</tr>
<tr>
<td>Marketing</td>
<td>2%</td>
</tr>
<tr>
<td>Energy Auditor</td>
<td>1%</td>
</tr>
<tr>
<td>Logistics</td>
<td>1%</td>
</tr>
<tr>
<td>Product Manager</td>
<td>1%</td>
</tr>
<tr>
<td>Technician</td>
<td>1%</td>
</tr>
</tbody>
</table>

Top Jobs:
- **37% - Energy Efficiency Engineer**
- 13% - Project Manager
- 12% - Sales

Sector Specific Jobs:
- Energy Efficiency Engineer
- Energy Analyst
- Funding Facilitator
- Energy Auditor
Requirements for EE jobs

More than half (58%) require ≤ 5 years experience

Most positions (64%) require a Bachelor’s degree (BS)

**Experience**

<table>
<thead>
<tr>
<th>Experience</th>
<th>% of Job Postings</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-5 years</td>
<td>45%</td>
</tr>
<tr>
<td>6-10 years</td>
<td>32%</td>
</tr>
<tr>
<td>0-2 years</td>
<td>13%</td>
</tr>
<tr>
<td>11-15 years</td>
<td>5%</td>
</tr>
<tr>
<td>+15 years</td>
<td>5%</td>
</tr>
</tbody>
</table>

**Education**

<table>
<thead>
<tr>
<th>Education</th>
<th>% of Job Postings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor’s</td>
<td>64%</td>
</tr>
<tr>
<td>Master’s</td>
<td>19%</td>
</tr>
<tr>
<td>Doctorate</td>
<td>10%</td>
</tr>
<tr>
<td>High School</td>
<td>5%</td>
</tr>
</tbody>
</table>
Integrated Demand Side Management

CA only jobs / 2 search terms:
• “Energy Efficiency” (EE)
• “Integrated Demand Side Management” (DSM)

1) 80% DSM jobs w/ IOUs vs. 30% of all EE jobs
2) Engineering & Environmental services rank 2nd for EE total

Note: 100 EE job postings yielded 50 unique postings (50% duplicate); Total = EE & DSM
EE & DSM Employment at a Glance

Postings are classified according to 15 functions

Combined EE & DSM:
• Energy Efficiency Engineer (17%)
  - All engineers = 26%
• Project Management (17%)
• Analyst (13%)

Top DSM Jobs:
• Analyst (33%)
• Product Management (33%)
• Engineer (20%) or “Program Engineer”
Required Credentials
Education & Years of Experience

Over 75% of the positions require a Bachelor’s degree

Greatest number of jobs require 5-7 yrs & 7-10yrs
EE NA: 10% entry-level jobs
DSM NA: all mid-level jobs

Education

<table>
<thead>
<tr>
<th>Education</th>
<th>% Total</th>
<th>% DSM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor’s Degree</td>
<td>77%</td>
<td>80%</td>
</tr>
<tr>
<td>NA</td>
<td>14%</td>
<td>13%</td>
</tr>
<tr>
<td>Master’s Degree</td>
<td>9%</td>
<td>7%</td>
</tr>
<tr>
<td>High School</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Associate’s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doctorate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional</td>
<td></td>
<td></td>
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<tr>
<td>Trade...</td>
<td></td>
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<tr>
<td>Apprenticeship</td>
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</table>

Experience

<table>
<thead>
<tr>
<th>Experience</th>
<th>0%</th>
<th>20%</th>
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<th>60%</th>
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</thead>
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<tr>
<td>5-7 years</td>
<td></td>
<td></td>
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<td>40%</td>
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<td></td>
<td>28%</td>
<td></td>
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<td>15%</td>
<td></td>
</tr>
<tr>
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<td>3%</td>
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<tr>
<td>15+ years</td>
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</tbody>
</table>
Employment at a Glance
Level of Seniority & Source of Posting

Most jobs are mid-level w/out staff management responsibilities

- ≈50% postings linked to job boards
- ≈ 35% employers’ website
- Top agency: Sequence Staffing

**Seniority**

<table>
<thead>
<tr>
<th>Role</th>
<th>% Total</th>
<th>% DSM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-Level Independent Contributor</td>
<td>75%</td>
<td>100%</td>
</tr>
<tr>
<td>Manager</td>
<td>9%</td>
<td></td>
</tr>
<tr>
<td>Entry-Level Associate</td>
<td>9%</td>
<td></td>
</tr>
<tr>
<td>Director</td>
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</table>

**Source of Posting**

<table>
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<tr>
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<th>% Total</th>
<th>% DSM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employer</td>
<td>38%</td>
<td>33%</td>
</tr>
<tr>
<td>Staffing Agency</td>
<td>13%</td>
<td>13%</td>
</tr>
<tr>
<td>Job Board</td>
<td>40%</td>
<td>50%</td>
</tr>
</tbody>
</table>
SolarTech Report
Renewable Energy Labor Market Study

• 1st SolarTech Renewable Energy Labor Market Analysis
• Output from last SolarTech Renewable Energy Workforce Forum, October 2010
• Special emphasis on solar PV sales professionals
• Presents industry analysis of job growth & hiring trends for solar integrators
• Includes national & regional data
• Download: www.solartech.org
# Renewable Energy Labor Market Study #1

## PV System Sales

### CA SOLAR EMPLOYMENT 2010(2)

| ≈1,072 Firms | 36,000 Jobs |

### CA INSTALLER & DEVELOPERS 2010

| 49% in Installation(3) | 16,920 Jobs |

### CA PV SYSTEM SALES JOBS 2011

| Total ≈1,692-3,384 | New ≈650-1,300 |

### Key Finding:

- 10% - 20% of workforce pure-play installation companies are sales

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Source: (2) Solar Foundation, National Job Census 2010, P. 63; (3) P. 14
Renewable Energy Labor Market Study #2

- Output from December 2010 Renewable Energy Workforce Forum,
- Special emphasis on Solar Manufacturing
- Presents industry analysis of job growth & hiring trends of manufacturing companies
- Includes global, national & regional data
- Download: http://www.solartech.org
Solar Manufacturing Jobs in CA PV & CSP

Key Finding:
CA manufacturers are driven out to other U.S. states and oversees.

≈ 10,000 employed w/ CA start-up manufacturers:
• R&D
• Engineering
• Product development
• Supply chain
• Business development

Source: (1) Solar Foundation, National Job Census 2010, P. 63; (2) California Alternative Energy and Advanced Transportation Financing Authority.
Solar Workforce Staffing Survey

• SolarTech partnership with SJSU’s School of Business to perform quantitative research

• Conduct targeted needs analysis of renewable energy employers

• Focus of next survey: Demand and hiring practices for Solar PV Sales professionals

• Results available at upcoming SolarTech Solar Summit March 29-30
Contact

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(408)529-0508