

**Central Valley Roundtable Series  
UC Center, Fresno**

**Central Valley Solar Manufacturing  
Project Opportunity**

**Project Name:** Central Valley Solar Manufacturing

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**Location of Project:** San Joaquin Valley

**Description:**

The security and vitality of our economy rests on energy. One of the surest, cleanest and most efficient ways to provide that energy is through solar power. Grid connected solar energy production can be used on site and any surplus turns the meter backwards to offset the annual utility bill.

The most immediate problem with this solution is the extreme shortage and high cost of semiconductor grade silicon. Triple junction thin-film uses 100 times less silicon than crystalline photovoltaic products for the equivalent output. The Central Valley Solar Manufacturing Project will supply the building integrated photovoltaic (BIPV) products necessary to provide clean distributed generation at a reasonable cost. In the process it will create manufacturing jobs locally and indirectly create jobs for installers of new systems and retrofitted systems. It will also produce a considerable amount of sales tax revenue for the participating communities.

**Proposal:**

Ovonic Solar plans to construct a photovoltaic manufacturing plant in the Central Valley using the latest, most cost efficient equipment for the production of triple junction thin film photovoltaic products provided by the leader in amorphous solar technology, Energy Conversion Devices (ECD). These plants will be operated as a joint venture of the local communities, ECD and other strategic investment partners.

It is important to distinguish between amorphous and crystalline photovoltaics. While amorphous conversion efficiency is somewhat less than crystalline, it provides energy for a longer period of the day and under a wider range of conditions than crystalline PV modules. Even more importantly, it offers the lowest cost per watt produced of all the technologies and can be easily integrated with the building materials to make BIPV products. Both the technology and the manufacturing equipment is patented and produced by Energy Conversion Devices, Inc.

**Projected Cost:**

The \$80 million cost of the 30 MW production machine now being built at ECD's new facility in Auburn Hills, Michigan is used as a guideline for the cost of similar machines in California. Additional capital required for the procurement or lease of a suitable location, startup operating and material expenses required prior to the point when production generates a positive cash flow is estimated at an additional \$20 million.

**Financing:**

Financing will be provided by the Joint Venture partners in the form of capital contributions, loans, leases or the proceeds from corporate or municipal bond issues. Commitments to purchase future production at attractive prices can be used to secure lending from traditional lenders as well as various government agencies responsible for business development.

**Royalties:**

Royalties paid to ECD for their Intellectual Property are assumed to be 10% of the gross revenue. As part of the Royalty and Technical Support service enhancements to the production technology will be made available to the Joint Venture. Costs of implementing the enhancements will be the responsibility of the Joint Venture partners.

**Job Creation:**

The 25-30 MW plant will create 200 manufacturing jobs and it is estimated that distribution, sales, design and installation of the products from the plant will create more than 2000 indirect job opportunities. Additional plants spread throughout the Central Valley area could add 10's of thousands of new jobs to the area. While new construction will only experience a slight increase in labor requirements, the retrofitting of existing residential and commercial building will require a significant labor component which could take decades to complete.

After benefit costs and taxes approximately 50% of the \$10 million payroll will directly impact the local economy.

Approximately 30% of the material expenses will directly impact the local economy.

**Factory Size:**

The 160,000 ft.<sup>2</sup> plant expansion will produce 200 kW or 9 miles of solar cells every 72 hours using a roll to roll manufacturing process. The manufacturing equipment requires a 26' clear ceiling height and clear floor space in bays a minimum of 60' foot wide and 400' feet long.

**Sales Tax Revenue:**

The revenue for local sales will generate sales taxes for the local communities. Assuming all the production is consumed locally this will amount to approximately \$5.7 million.

**Financial Projection Assumptions:**

- Plan is constructed using conservative business/manufacturing/cost assumptions.
- Plan is in 2006 constant U.S. dollars and based on a 10 year plan.
- Production equipment is depreciated over 10 years.
- Plan assumes 24 hour operation/7 days per week with four work shifts.
- Plan includes one 25MW (30MW) machines.
- ECD has overall responsibility for installation.
- The value of the machine in this plan is \$80.0M.
- The Royalty rate in this plan is 10% of Module Revenues.
- This plan includes ECD's Technical Support charged at \$1 Million/Year.
- This plan assumes pricing at \$3.25/watt.
- Completion of installation and start-up of production in the 2nd year .
- 10MW production in the second year.
- 20MW production in the third year.
- Increased production to 25MW by the fifth year
- 200 Total employees.
- 180 Manufacturing Employees
- 50K average annual cost of employees.
- No taxes are included.

<b>Summary Financial Benefits</b> (in \$000, assuming full capacity reached in 2012)						
<b>Year</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
Projected Revenue	\$ 32,500	\$ 65,000	\$ 74,750	\$ 81,250	\$ 91,000	\$ 97,500
Projected Labor Expenses	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000
Projected Other Expenses	\$ 22,250	\$ 40,500	\$ 45,975	\$ 49,625	\$ 55,100	\$ 58,750
<b>Projected EBITDA</b>	<b>\$ 250</b>	<b>\$ 14,500</b>	<b>\$ 18,775</b>	<b>\$ 21,625</b>	<b>\$ 25,900</b>	<b>\$ 28,750</b>

<b>Key Benefits to the Region</b>
* assume that about 50% of the Labor Expenses will directly impact the local economy
* assume that about 30% of the Other Expenses will directly impact the local economy
* significant long term savings for the region based on energy cost savings
* stable job market and economic growth as demand for solar will continue to grow