

Economic Impact - Solar Companies in the Tucson MSA

- There are currently close to 50 companies in the Tucson region that are involved in solar related activities. This includes 5 firms involved in the manufacturing of products such as thin film solar modules, portable solar chargers, solar mounting brackets and solar panel components. Currently, the United States accounts for about two thirds of all global thin-film production.
- There are 29 firms included in this analysis that provide design and installation, as well as 8 firms that are distributors of residential and commercial solar products. An additional 4 professional services firms were identified that specialize in sustainable building design. TREO gathered information on these companies to determine current employment and payroll levels, as well as information on real estate values and square footage through the county assessor.
- The companies included in this analysis directly employ approximately 912 people with a combined payroll of \$48.8 million per year. The majority of jobs are in manufacturing (42 percent) or design and installation (45 percent).
- In addition to these private companies, the Tucson Region also supports research and coordination for the solar industry through AZRise, a global institute at the University of Arizona whose mission is to create partnerships among researchers, economists, academia, industry and government to promote the growth of solar energy in Arizona. AZRise has a staff of 12 people and a budget of \$2 million, provided mainly from the state's Technology and Research Innovation Fund. Most of this funding is being used for seed projects which, to date, have yielded a return on investment of approximately \$5 million.

ECONOMIC IMPACTS OF SOLAR COMPANIES BY TYPE ON GREATER TUCSON

Type of Firm	Direct Impacts				Total Impacts		
	Firms	Jobs	Income	Output	Jobs	Income	Output
Solar Modules & Related Mfg	5	385	\$27,392,555	\$162,756,026	1,257	\$75,992,710	\$317,231,517
Design and Installation	29	406	\$15,132,046	\$38,737,925	557	\$22,744,753	\$60,779,789
Wholesaler/Distributor	8	51	\$2,276,952	\$6,433,814	79	\$3,471,520	\$10,166,279
Sustainable Building Design	4	70	\$4,068,960	\$7,899,361	136	\$6,377,133	\$14,474,116
Total	46	912	\$48,870,513	\$215,827,127	2,028	\$108,586,116	\$402,651,700

- All together, the 46 companies in this analysis create a total annual economic impact of \$402.7 million on the Tucson MSA economy. They directly and indirectly support over 2,000 jobs and \$108.6 million in payroll, including the 912 jobs created by the solar industry directly. The multiplier effect of the solar industry on the region's economy stems from local supplier purchases as well as employee spending activity. The total impact includes both the direct impacts as well as the secondary impacts created by other local businesses and their employees.

- The secondary impacts of supplier and employee expenditures are called multiplier effects. Multiplier effects are a way of representing the larger economic effects on the local economy. The multiplier effects translate an increase in output into a corresponding increase in jobs and personal income. In essence, the multiplier effect represents the amplification of local spending. This process creates new business opportunities in the region's economy.
- The most significant multiplier effects are in manufacturing and sustainable design. For every \$1 of economic activity or production value in these industries, an additional \$830,000 to \$950,000 in new demand is created in the local economy. In the case of manufacturing, Tucson has a supplier network to support solar module manufacturing, which serves to increase the local economic impacts. In addition, these types of firms provide high skill, high wage jobs that support additional household spending impacts.
- Through the multiplier effect, these solar companies support jobs at local suppliers and consumer businesses. Every job created in the solar industry supports approximately 1.2 additional jobs in the Tucson region at an average wage of \$53,500 per year.
- Average wages in solar manufacturing firms are estimated at \$71,000 per year. Average wages in sustainable building design are approximately \$58,000, and wages in wholesale and installation range from \$37,000 to \$45,000 per year. All of these industries create jobs that are well above the all-industry average wage for Pima County of \$34,500.¹

State and Local Revenue Impacts

- In addition to creating new demand in the local economy, the solar companies in Tucson also generate tax revenues. Solar manufacturing, in particular, is capital intensive and creates significant local property tax revenues. Based on information from the Pima County Assessor and information provided by some of these companies regarding their capital investment, it is estimated that the 46 solar firms in this analysis have a combined capital investment of \$98.3 million in Pima County. This translates into \$2.7 million per year in property tax revenues to the city, county and local school districts.
- These solar companies also generate sales tax through their own sales, as well as through employee spending. Although information was not available to estimate taxable sales from wholesalers, distributors and installers, the nature of these types of businesses generally result in a sizeable amount of taxable activity.
- Also, since these companies support high wage jobs, they support a higher level of consumer spending activity. State and local indirect sales tax revenues from consumer spending by people directly employed in the solar industry are estimated at \$1.1 million per year.²

¹ County Business Patterns, Pima County 2007.

² Indirect sales tax revenues are equal to 28 percent of payroll (the amount spent on taxable goods according to the Census Consumer Expenditure Survey) times the combined state and local tax rate of 8.1 percent.

**TAX REVENUES GENERATED BY THE SOLAR INDUSTRY
IN GREATER TUCSON**

Type of Firm	Capital Investment*	Direct Local Property Taxes	Indirect Sales Taxes**
Solar Modules and Related Mfg	\$91,626,383	\$2,530,340	\$621,263
Design and Installation	\$3,350,004	\$92,513	\$343,195
Wholesaler/Distributor	\$1,514,461	\$41,823	\$51,641
Sustainable Building Design	\$1,814,311	\$50,104	\$92,284
Total	\$98,305,159	\$2,714,780	\$1,108,383

* Capital investment includes real property and equipment for manufacturers.

** Indirect sales taxes include state and local portions.

Generation Activities and Construction Impacts

- In addition to the solar companies identified here, Tucson is also the site of several planned solar generation projects, including a 5 megawatt concentrating solar power plant that will be developed by Bell Independent Power Corporation. The capital investment associated with this project is expected to be between \$30 and \$40 million, including both construction and equipment costs. The construction activity associated with this project will have a positive economic impact on the community.
- Another generation project that was recently announced is a 25 megawatt single axis tracking photovoltaic array that will be operated by Fotowatio Renewable Ventures. Construction costs are not available at this time but, given the size of this project, it is also likely to have a significant construction impact on the region over the next several years.

Industry Projections and Future Impacts

- The solar PV industry experienced remarkable growth in the United States from 2001 to 2008. Although the ongoing financial crisis will have some impact on the growth of solar companies, the supportive incentive programs at the state and federal level will boost future development and drive additional investment to this sector.
- According to a 2005 study on Solar PV Development by the Renewable Energy Policy Project, Arizona ranked 3rd among the states in total investment and jobs in the solar industry. This included both manufacturing jobs and construction/installation jobs.
- With a projected federal investment of \$500 billion in clean energy over the next 10 years, it is expected that Arizona could capture about \$9.4 billion, according to the Apollo Alliance.³ This would result in an estimated 75,100 new direct and indirect jobs created in the state over a 10 year period.

Source: Applied Economics - As of 10/09

³ www.apolloalliance.org