

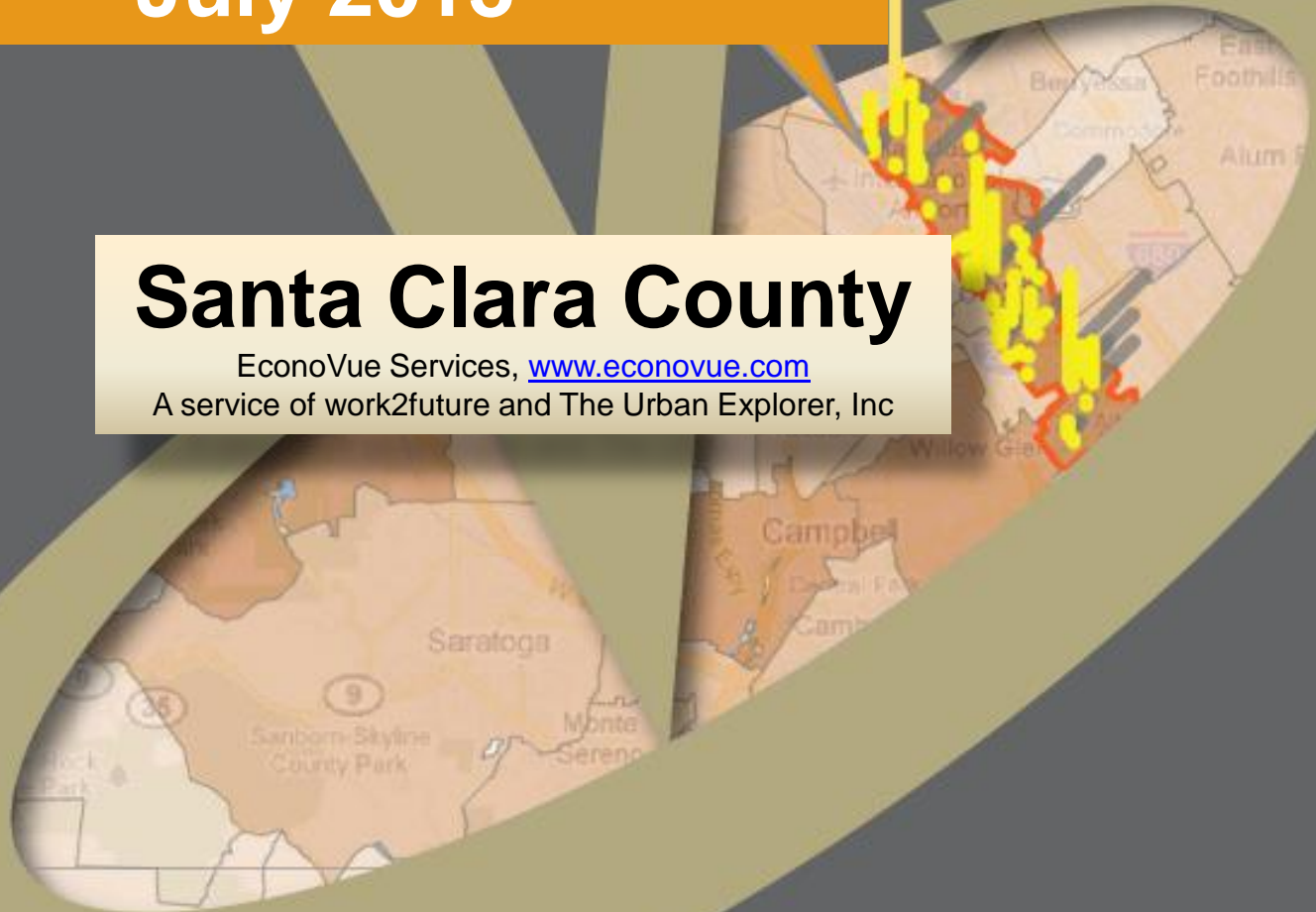


## **work<sup>2</sup>future** Snapshot of Advance Manufacturing in Santa Clara County

# Advanced Manufacturing July 2013

## Santa Clara County

EconoVue Services, [www.econovue.com](http://www.econovue.com)  
A service of work2future and The Urban Explorer, Inc



## Advanced Manufacturing in Santa Clara County

Since the beginning of the 2010 the United States has gained manufacturing jobs which has increased hopes for the future of the industry. Cognizant of the strong relationship between innovation and the manufacturing industry, the manufacturing movement placed increased attention on advanced manufacturing, identified technology as the source of the competitive power and targeted sustained employment gain as a longer term trend.

In our study, due to data and comparability purposes, we used 161 detailed NAICS industries to define advanced manufacturing cluster in Santa Clara County, which have been identified as advanced product and process intense and research relevant in other studies conducted in Michigan, Iowa and New Jersey.

San Jose metro area, which includes Santa Clara County, ranks #2 of the top 100 metro areas nationally for specialization in manufacturing. It also ranks #1 of the top 100 metro areas for GDP growth (20.7 %) between 2009 and 2011. Thirty-two manufacturing subsectors in Santa Clara County are considered highly “specialized”, meaning they are significantly more concentrated here than the national average. In March 2013, advanced manufacturing subsectors comprised 89.3 % of all manufacturing sectors in Santa Clara County. The ratio was 61.8% for the state of California.

In March 2013, the top ten most important subsectors for the local economy that showed regional specialization compared to California were:

- semiconductor and related device manufacturing;
- computer terminal and other computer peripheral equipment manufacturing;
- custom computer programming services;
- computer systems design services;
- printed circuit assembly;
- instrument manufacturing for measuring and testing electricity;

- radio and television broadcasting;
- computer storage device manufacturing;
- surgical and medical instrument manufacturing; and
- analytical laboratory instrument manufacturing subsectors.

Four of these sectors (computer terminal and other computer peripheral equipment manufacturing; printed circuit assembly; instrument manufacturing for measuring and testing electricity; analytical laboratory instrument manufacturing) are among the industries that have gained the highest number of jobs in the past year.

### **Here are two working definitions of Advanced Manufacturing**

City of San Jose Office of Economic Development definition of Advanced Manufacturing:

“Advanced Manufacturing is “a family of activities that (a) depend on the use and coordination of information, automation, computation, software, sensing, and networking, and/or (b) make use of cutting edge materials and emerging capabilities enabled by the physical and biological sciences, for example nanotechnology, chemistry, and biology. This involves both new ways to manufacture existing products, and especially the manufacture of new products emerging from new advanced technologies.”

National Council for Advanced Manufacturing (NACFAM) defines advanced manufacturing as an entity that:

"Makes extensive use of computer, high precision, and information technologies integrated with a high performance workforce in a production system capable of furnishing a heterogeneous mix of products in small or large volumes with both the efficiency of mass production and the flexibility of custom manufacturing in order to respond rapidly to customer demands." (Fowler, 2010)

For the Advanced Manufacturing Snapshot go to [http://www.work2future.biz/content/labor-market-information\\_research-studies-and-reports/](http://www.work2future.biz/content/labor-market-information_research-studies-and-reports/)

Sources:

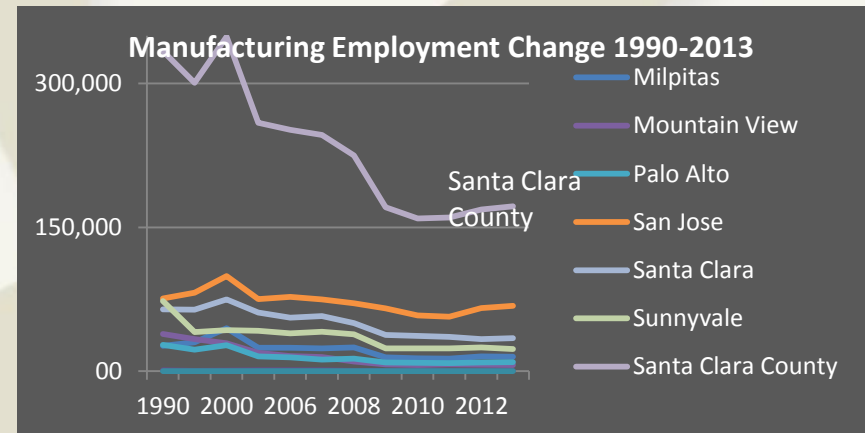
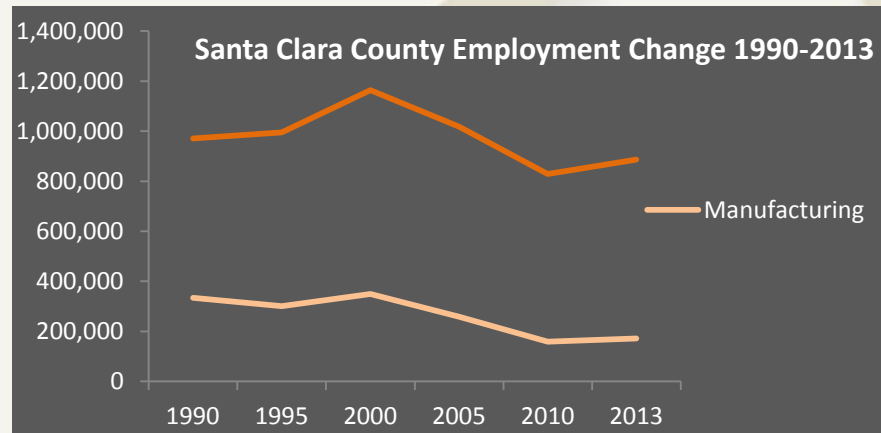
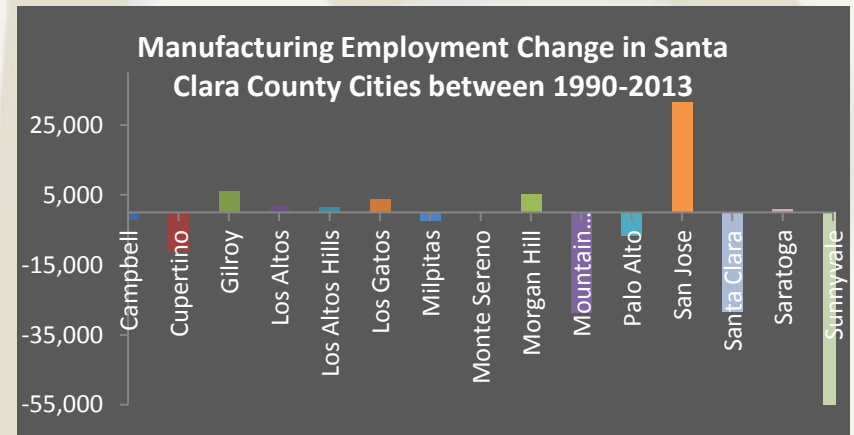
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STPI, White Papers on Advanced Manufacturing Questions, April 2010.

# Santa Clara County: Advanced Manufacturing

## Manufacturing Highlights

Manufacturing employment in Santa Clara County has declined from 34% of all jobs in 1990 to 30% in 2000 and 19% in 2013. The sector experienced a 48.5% decline in employment between 1990 and 2013 and a 22% decline between 2008 and 2013. Manufacturing has 51,339 fewer jobs compared to five years ago in Santa Clara County.

Among Santa Clara County cities, while Sunnyvale, Santa Clara, and Mountain View have lost significant number of manufacturing jobs, the city of San Jose has gained 31,568 jobs since 1990. However, almost every city, including San Jose (-30,077), Santa Clara (-33,918), Sunnyvale (-26,933) and Milpitas (-15,284) have lost jobs during the last five years.



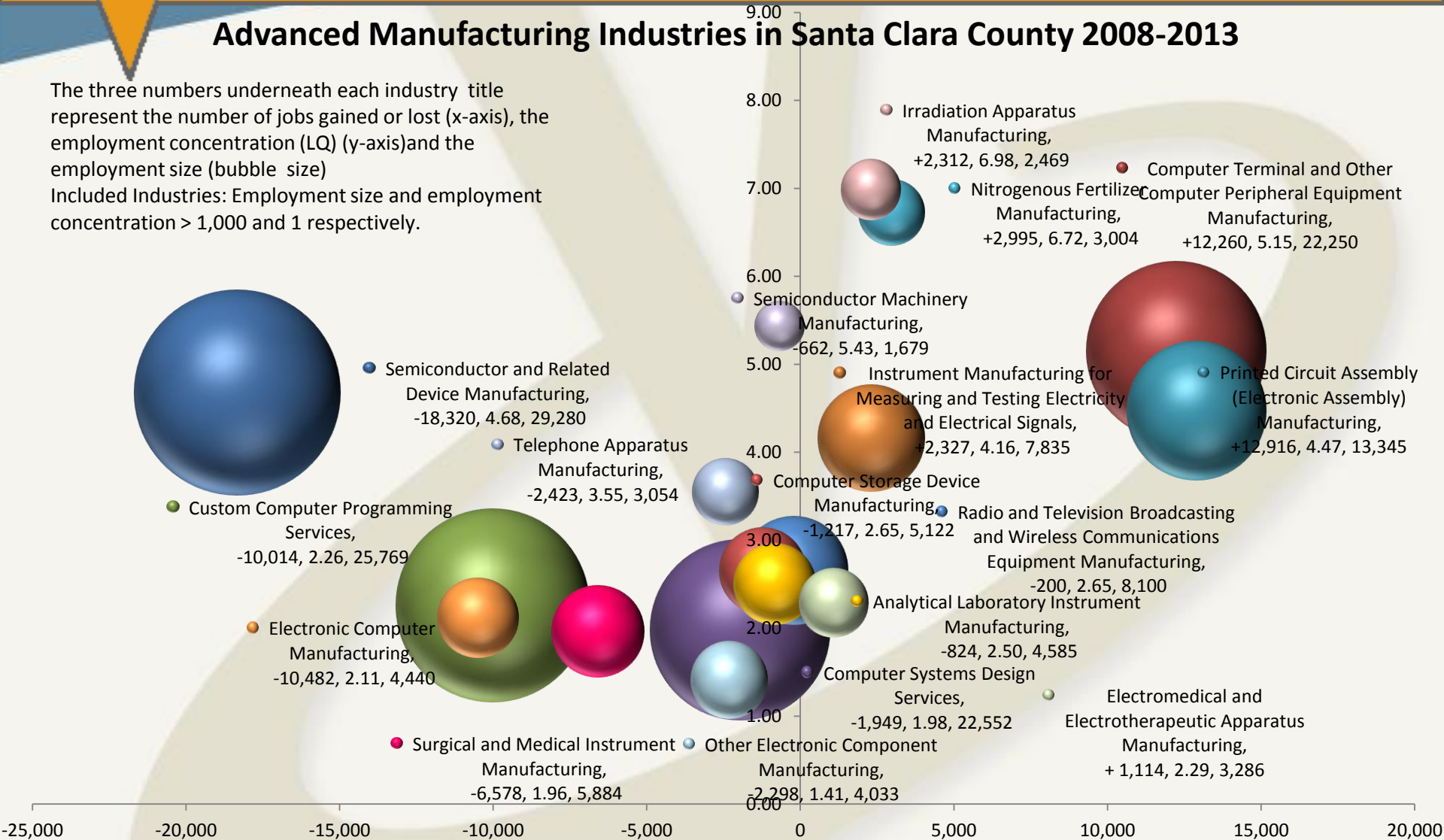
Source: EconoVue Services 2011-2013



# Santa Clara County: Advanced Manufacturing

## Advanced Manufacturing Industries in Santa Clara County 2008-2013

The three numbers underneath each industry title represent the number of jobs gained or lost (x-axis), the employment concentration (LQ) (y-axis) and the employment size (bubble size)  
 Included Industries: Employment size and employment concentration > 1,000 and 1 respectively.



Source: EconoVue Services 2011-2013

# Santa Clara County: Advanced Manufacturing

## Advanced Manufacturing Highlights

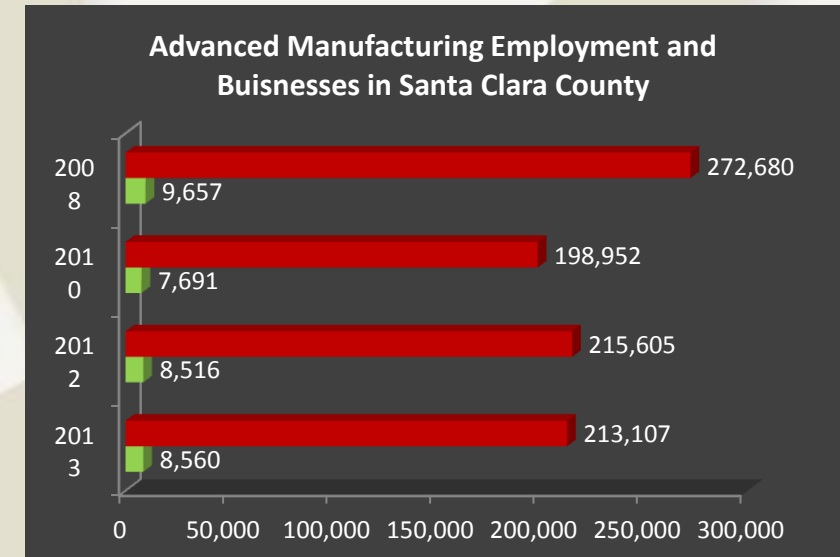
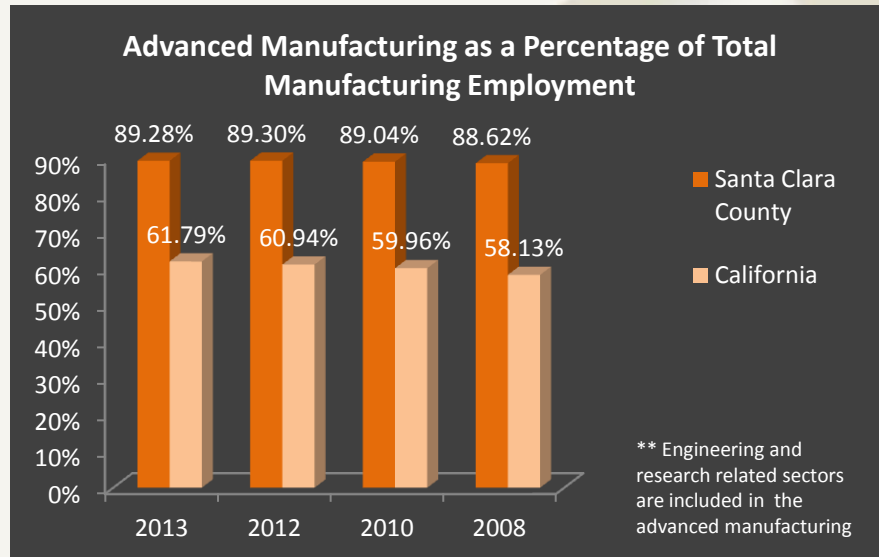
161 out of 473 NAICS based industries are classified as advanced manufacturing in Santa Clara County through the analysis of studies conducted in other states such as Michigan, Iowa and New Jersey.

In 2013 March, there were 8,560 businesses and 213,107 people employed in advanced manufacturing (including engineering and research related industries) in Santa Clara County.

Nearly 90% of all manufacturing employment in Santa Clara county occurred in advanced industries in 2013. Compared to the state of California, Santa Clara County has a very high representation of advanced manufacturing industries.

When engineering and research related sectors are not included within the advanced manufacturing classification, the percentage of advanced manufacturing within total manufacturing decreases to 86%.

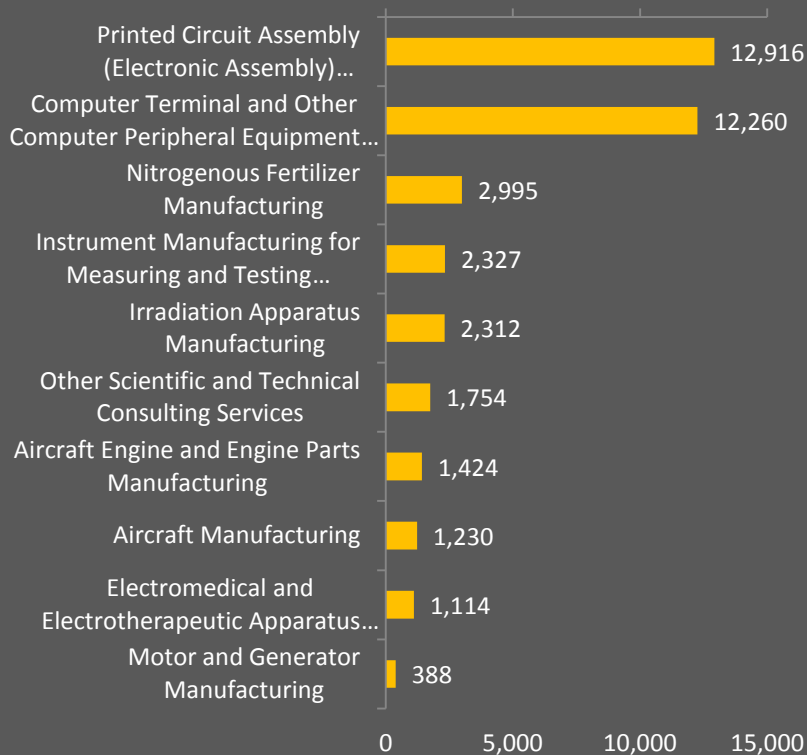
Compared to five years ago, there is 1,097 fewer advanced manufacturing businesses and 59,573 fewer jobs in Santa Clara County. However, the percentage of advanced manufacturing jobs within total manufacturing jobs has increased over the last five years



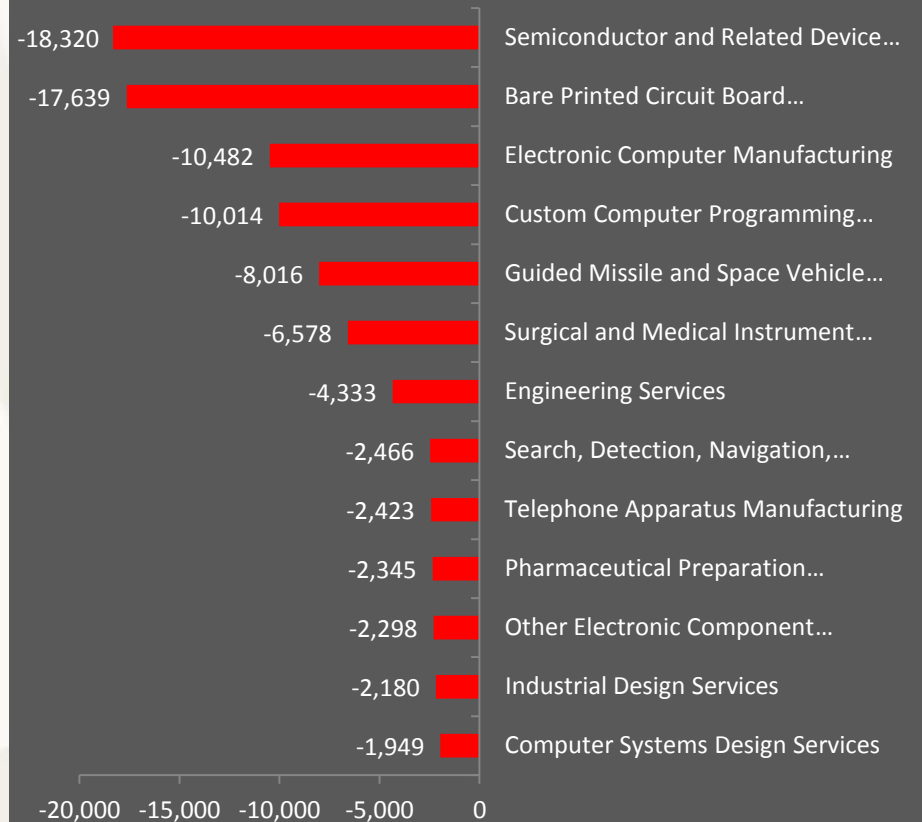
Source: EconoVue Services 2011-2013

# Santa Clara County: Advanced Manufacturing

## Highest Employment Gain in Advanced Manufacturing Sectors in Santa Clara County 2008-2013 March



## Highest Employment Loss in Advanced Manufacturing Sectors in Santa Clara County 2008-2013 March

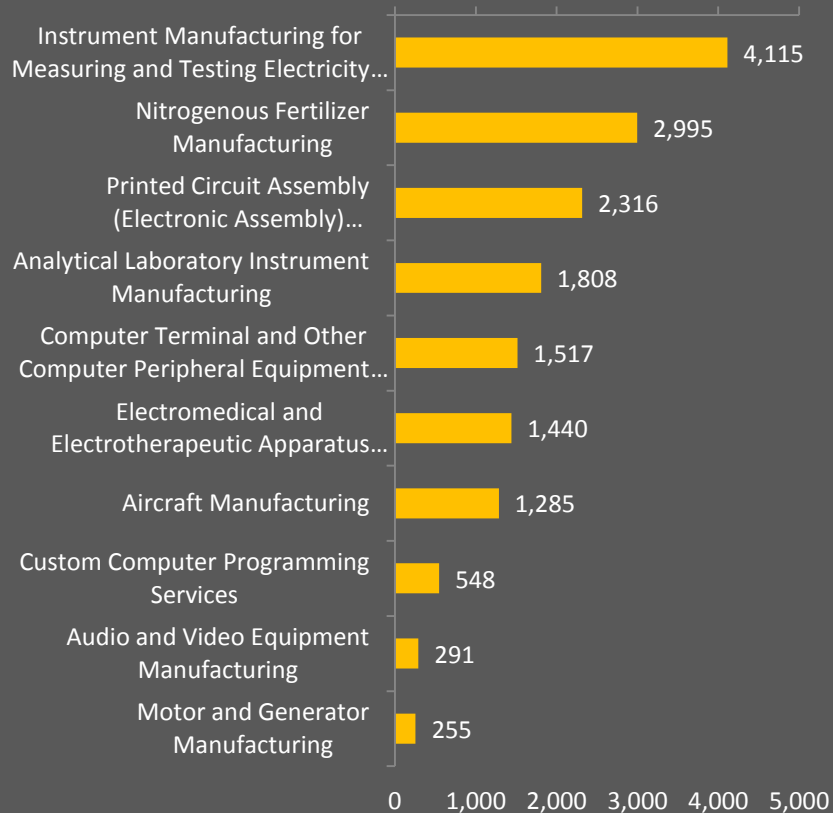


Source: EconoVue Services 2011-2013

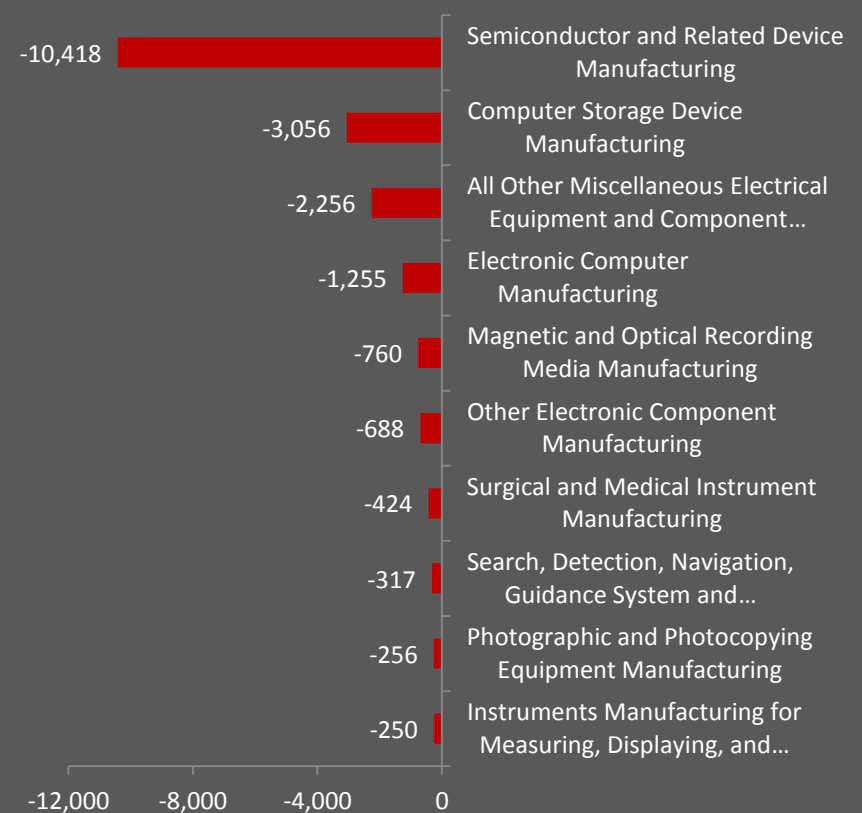


# Santa Clara County: Advanced Manufacturing

## Highest Employment Gain in Advanced Manufacturing Sectors in Santa Clara County 2012-2013 March



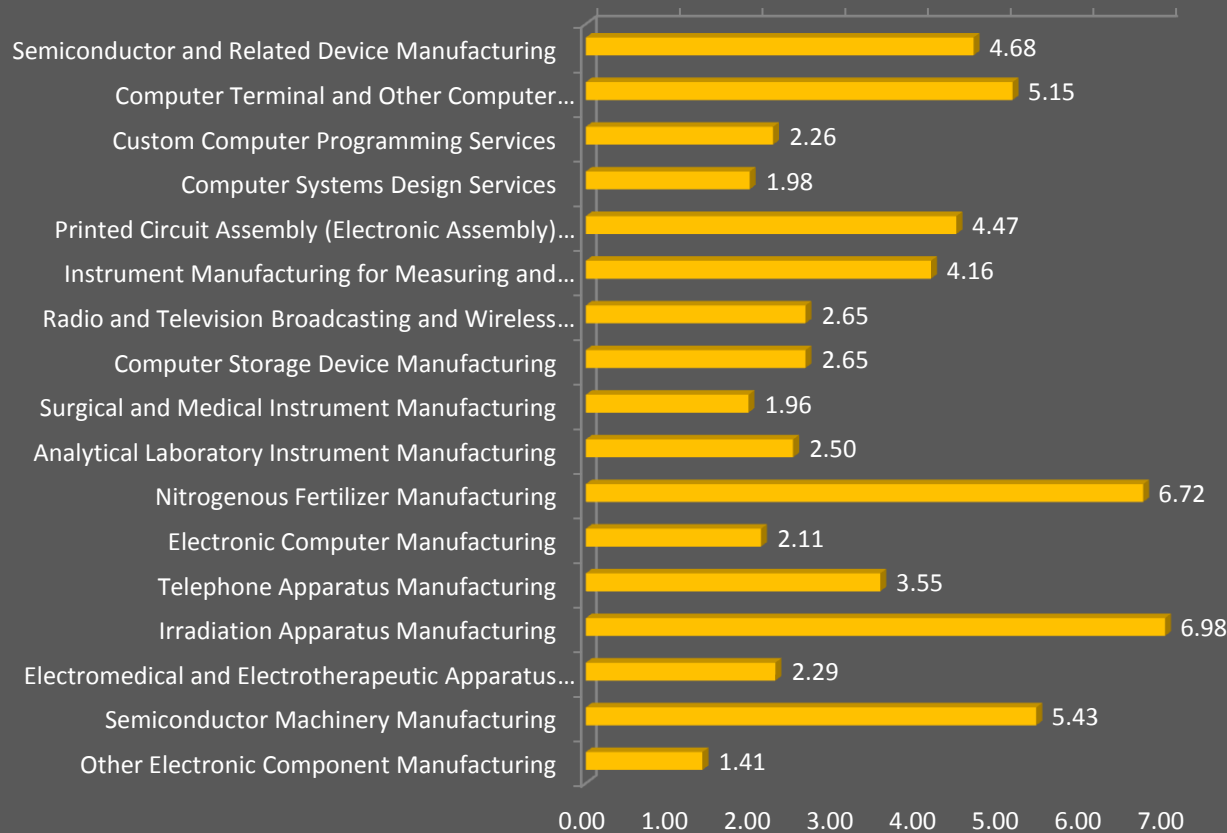
## Highest Employment Loss in Advanced Manufacturing Sectors in Santa Clara County 2012-2013 March



Source: EconoVue Services 2011-2013

# Santa Clara County: Advanced Manufacturing

## Employment Concentration in Advanced Manufacturing Sectors in Santa Clara County March 2013



The accompanying figures reveal which advance manufacturing subsectors are strong in Santa Clara County relative to California. These sectors, if lost, would constitute the greatest impact on the local economy. The sub sectors which show regional specialization are: semiconductor and related device manufacturing; computer terminal and other computer peripheral equipment manufacturing; custom computer programming services; computer systems design services; printed circuit assembly; instrument manufacturing for measuring and testing electricity; radio and television broadcasting; computer storage device manufacturing; surgical and medical instrument manufacturing; analytical laboratory instrument manufacturing, etc. 6 of these important sectors are among the industries with the highest employment loss between 2008-2013, including: semiconductor and related device manufacturing; electronic computer manufacturing; custom computer programming services, and computer systems design services. These sectors should be given special attention.

Source: EconoVue Services 2011-2013

# Santa Clara County: Semiconductor and Related Device Manufacturing

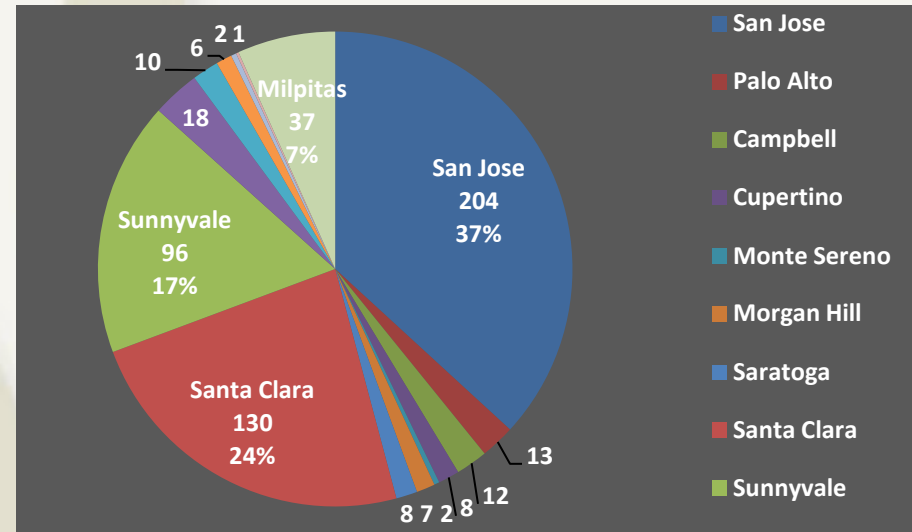
Semiconductor and Related Device Manufacturing is one of the most important advanced manufacturing sectors in Santa Clara County. The sector comprises 554 firms and 29,280 jobs. Relative to California, it shows a high employment concentration (LQ=4.67). Unfortunately, the sector has lost 10,418 jobs since March 2012 and 18,320 jobs since 2008.

Employment 2013 March	Frequency	Percent	Cumulative Percent
1-10	177	31.9	31.9
11-49	118	21.3	53.2
50-100	38	6.9	60.1
101-250	26	4.7	64.8
251-500	14	2.5	67.3
501-1000	12	2.2	69.5
1001-2500	2	.4	69.9
Missing	167	30.1	100.0
<b>Total</b>	<b>554</b>	<b>100.0</b>	

The breakdown of the size of the semiconductor and related device manufacturing firms in Santa Clara County shows that 53% of firms have less than 50 employees. Only 5% of the firms (28) have more than 250 employees and they account for 64% of the total employment in the semiconductor manufacturing sector.

There is 54 semiconductor manufacturing firms with employment larger than 100 in Santa Clara County. These firms, even though constitutes 9.7% of the firms, make up 78.7% of total employment in the sector.

37% of the semiconductor and related device manufacturing firms are located in the city of San Jose followed after the cities Santa Clara (24%), Sunnyvale (17%) and Milpitas (7%).



Firms in the city of San Jose, Santa Clara, Sunnyvale and Milpitas constitutes 49.3%, 23%, 11% and 11% of total industry employment respectively. These figures indicates that San Jose and Milpitas home to firms with higher employment concentration compared to other cities in Santa Clara County.

Major employers (employment>750) in the semiconductor and related device manufacturing sector are as follows:

**San Jose:** LSI Corporation (2,400), Hewlett-Packard Company (1,000), Xilinx Inc. (988), Maxim Integrated Products Inc (956), Cypress Semiconductor Corp (930). **Santa Clara:** National Semiconductor Corp (1,700), Marvell Semiconductor Inc. (900)

**Sunnyvale:** Solar Semiconductor Inc (1,000). **Milpitas:** Linear Technology Corporation (900), Intersil Communications Inc. (750)

# Santa Clara County: Computer Terminal and Other Computer Peripheral Equipment Manufacturing

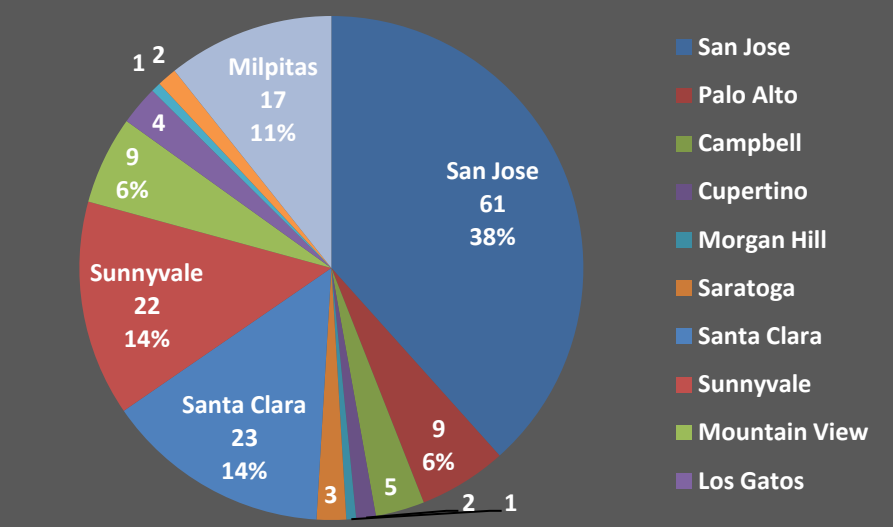
Computer terminal and other computer peripheral equipment manufacturing is one of the most important advanced manufacturing sectors in Santa Clara County. The sector comprises 159 firms and 22,250 jobs. Relative to California, it shows a high employment concentration (LQ=5.15).

The sector has gained 1,517 jobs since March 2012 and 12,260 jobs since 2008.

Employment 2013 March	Frequency	Percent	Cumulative Percent
1-10	70	44.0	44.0
11-49	37	23.3	67.3
50-100	8	5.0	72.3
101-250	7	4.4	76.7
251-500	4	2.5	79.2
501-1000	11	6.9	86.2
1001-2500	1	.6	86.8
8000-10000	1	.6	87.4
Missing	20	12.6	100.0
Total	159	100.0	

The breakdown of the size of the computer terminal manufacturing firms in Santa Clara County shows that 67% of firms have less than 50 employees. Only 10.6% of the firms (17) have more than 250 employees and they account for 87% of the total employment in the computer terminal and other computer peripheral equipment manufacturing sector.

In Santa Clara County, there are 24 computer terminal manufacturing firms with employment larger than 100. These firms, even though constitutes 15% of the firms, make up 93% of total employment in the sector.



61% of the computer terminal and other peripheral equipment manufacturing firms are located in the city of San Jose followed after the cities Santa Clara (14%), Sunnyvale (14%) and Milpitas (11%).

Firms in the city of San Jose, Santa Clara, Sunnyvale and Milpitas constitutes 64%, 3.6%, 17% and 11% of total industry employment respectively. These figures indicates that city of San Jose has a dominance in the industry (because of Cisco Systems Inc) and the city of Santa Clara homes to smaller size firms relative to other cities in the county.

Major employers (employment>750) in the computer terminal and other peripheral equipment manufacturing sector are as follows:

- San Jose:** Cisco Systems Inc (800), Brocade Communications Systems Inc (800)
- Sunnyvale:** Juniper Networks Inc (2,000)

Source: EconoVue Services 2011-2013





# Santa Clara County: Custom Computer Programming Services

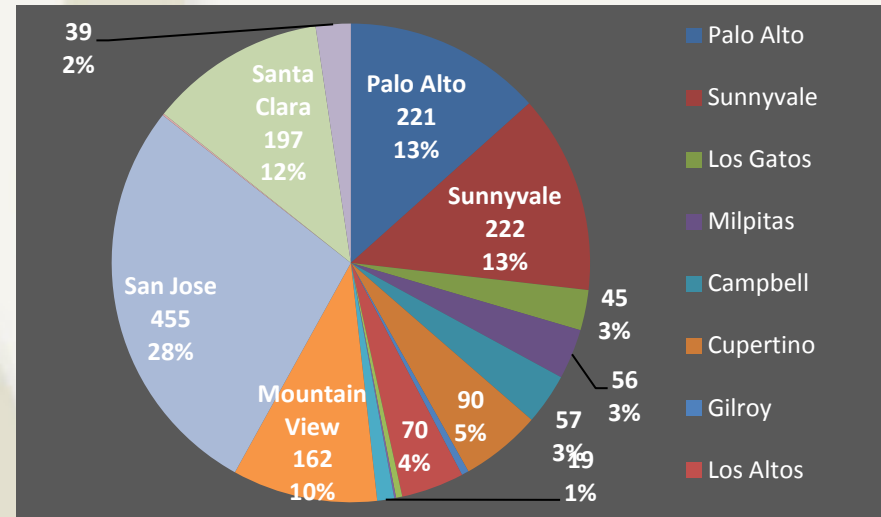
Custom computer programming services is one of the most important advanced manufacturing sectors in Santa Clara County. The sector comprises 1,652 firms and 25,769 jobs. Relative to California, it shows an employment concentration of 2.26.

The sector has shown a slight recovery by adding 548 jobs since March 2012 which still is not enough to clear the effects of 10,014 lost jobs since 2008.

Employment 2013 March	Frequency	Percent	Cumulative Percent
1-10	1227	74.3	74.3
11-49	244	14.8	89.0
50-100	66	4.0	93.0
101-250	25	1.5	94.6
251-500	8	.5	95.0
501-1000	3	.2	95.2
1001-2500	2	.1	95.3
Missing	77	4.7	100.0
Total	1652	100.0	

The breakdown of the size of the custom computer programming services firms in Santa Clara County shows that 74% of firms (1,227) have less than 10 employees and they make 15% of the industry employment. Less than 1% of the firms (13) have more than 250 employees and they account for 29% of the total employment in the custom computer programming services sector. There is 38 custom computer programming services firms with employment larger than 100 in Santa Clara County. These firms, even though constitutes only 0.1% of the firms, make up 45% of total employment in the sector.

27.5% of the custom computer programming services firms are located in the city of San Jose followed after the cities Palo Alto and Sunnyvale (both 13.4%), Santa Clara (11.9%) and Mountain View (9.8%).



Firms in the city of San Jose, Palo Alto, Sunnyvale and Santa Clara, constitutes 29%, 12%, 14% and 16% of total industry employment respectively. These figures indicates that custom computer programming services industry in Palo Alto is mostly dominated by small sized firms in comparison to other cities in the county.

Major employers in the custom computer programming services are as follows:

**San Jose:** International Bus Mchs Corp (1,500), Bea Systems Inc.(1,000), Magma Design Automation Inc (410) **Santa Clara:** Oracle America Inc (1,100), Cignex Technologies Inc (325) **Sunnyvale:** Access Systems Americas Inc (518), Horizon Technologies Inc (213), Hcl America Inc (200) **Palo Alto:** Cloudera Inc (301), Sap Labs LLC (300), Palantir Usq Inc (190) **Mountain View:** Bristlecone Incorporated (1,000), Synopsys Inc (500), Group Avantica Inc (260)

Source: EconoVue Services 2011-2013



# Santa Clara County: Computer Systems and Design Services

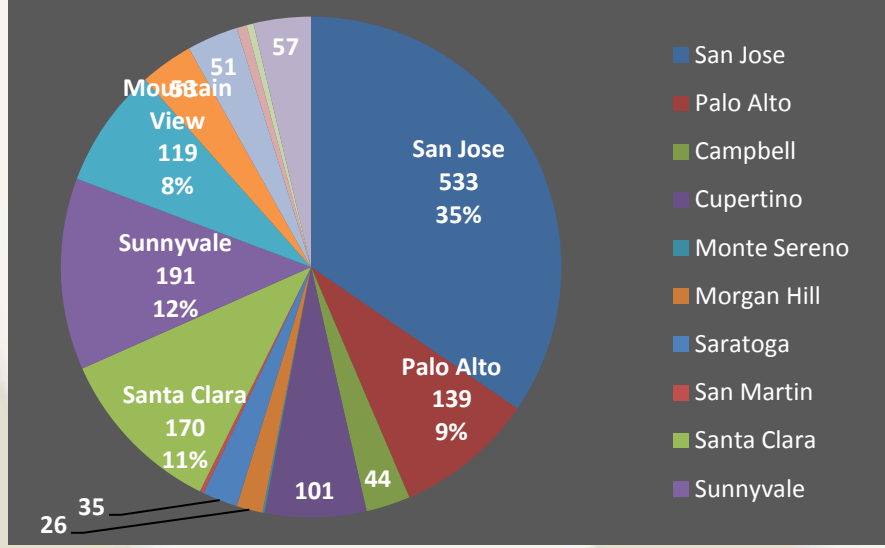
Computer Systems and design services is one of the most important advanced manufacturing sectors in Santa Clara County. The sector comprises 1542 firms and 22,552 jobs. Relative to California, it shows an employment concentration of 1.98. Unfortunately, the sector has lost 1,949 jobs since 2008 with a slight recovery of 141 jobs during the last year.

Employment 2013 March	Frequency	Percent	Cumulative Percent
1-10	1251	81.1	81.1
11-49	161	10.4	91.6
50-100	46	3.0	94.6
101-250	21	1.4	95.9
251-500	9	.6	96.5
501-1000	2	.1	96.6
1001-2500	3	.2	96.8
Missing	49	3.2	100.0
Total	1542	100.0	

The breakdown of the size of the computer systems and design services firms in Santa Clara County shows that 92% of firms have less than 50 employees. Only 1% of the firms (16) have more than 250 employees and they account for 41% of the total employment in the computer systems and design services sector.

There is 35 computer systems and design services firms with employment larger than 100 in Santa Clara County. These firms, even though constitutes 2.3% of the firms, make up 53.5% of total employment in the sector.

35% of the computer systems and design services firms are located in the city of San Jose followed after the cities Sunnyvale (12%), Santa Clara (11%), Palo Alto(9%) and Mountain View (8%).



Firms in the city of San Jose, Sunnyvale, Santa Clara, and Palo Alto constitutes 41%, 20%, 12% and 5% of total industry employment respectively. These figures indicate that especially San Jose and Sunnyvale home to firms with larger employment in the computer systems an design services sector compared to other cities in Santa Clara County.

Major employers in the computer systems and design services sector are as follows:

- San Jose:** Ericsson Inc (2,200), Lockheed Martin Corporation (1,018), Northrop Grmmn Spce & Mssn Sys (600).
- Sunnyvale:** Netapp Inc (1,600), Fujitsu America Inc (400)
- Santa Clara:** Intellipro Group Inc (380), Predictive Systems Inc (312)
- Mountain View:** Mozilla Corporation (425),
- Milpitas:** At Road Inc (350), Oracle America Inc (251),
- Los Gatos:** Infogain Corporation (186),
- Cupertino:** Brigade Inc (110),
- Campbell:** Intellectsoft LLC (120)

Source: EconoVue Services 2011-2013



# Santa Clara County: Printed Circuit Assembly (Electronic Assembly) Manufacturing

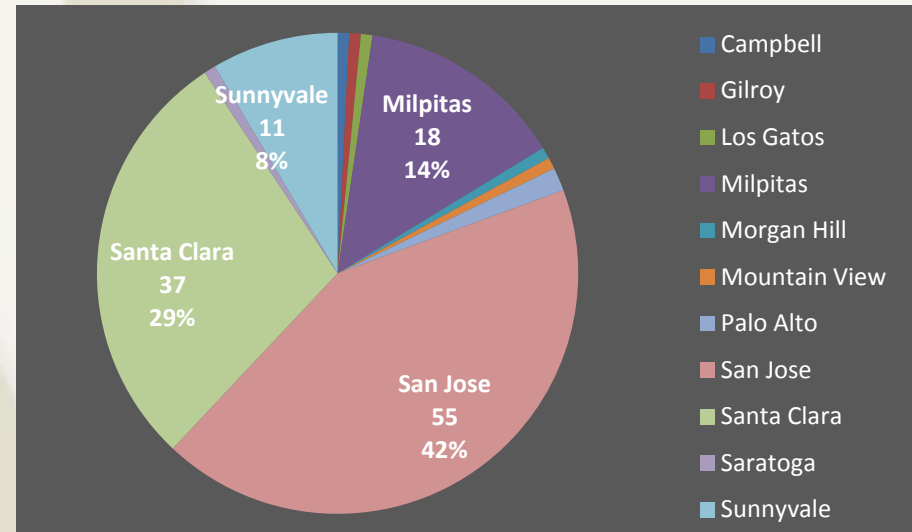
Printed circuit assembly is one of the most important advanced manufacturing sectors in Santa Clara County. The sector comprises 129 firms and 13,345 jobs. Relative to California, it shows an employment concentration of 4.47.

The sector has shown a huge employment gain by adding 12,916 jobs since 2008, 2,316 of which has been added since March 2012.

Employment 2013 March	Frequency	Percent	Cumulative Percent
1-10	30	23.3	23.3
11-49	34	26.4	49.6
50-100	14	10.9	60.5
101-250	13	10.1	70.5
251-500	9	7.0	77.5
501-1000	1	.8	78.3
1001-2500	3	2.3	80.6
Missing	25	19.4	100.0
Total	129	100.0	

The breakdown of the size of the printed circuit assembly firms in Santa Clara County shows that 50% of firms (64) have less than 50 employees and they make only 7.6% of the industry employment. 10% of the firms (13) have more than 250 employees and they account for 66% of the total employment in the printed circuit assembly sector. There is 26 printed circuit assembly firms with employment larger than 100 in Santa Clara County. These firms, even though constitute 20% of the firms, compose 85% of total employment in the sector.

42.6% of the printed circuit assembly firms are located in the city of San Jose followed after the cities Santa Clara (29%) and Milpitas (14%).



Firms in the city of San Jose, Santa Clara, Milpitas and Sunnyvale constitutes 49%, 38%, 7% and 3% of total industry employment respectively.

Major employers in the printed circuit assembly sector are as follows:

**San Jose:** Smtc Manufacturing Corp Cal (1,875), Flextronics Intl USA Inc (892), Jabil Circuit Inc (500), Sanmina-SCI Corporation (375), Sanmina Corporation (318), **Santa Clara:** Hadco Santa Clara Inc (2,000), Sanmina-SCI Corporation (1,200), **Sunnyvale:** Sierra Circuits Inc (105), Westak Inc (100), **Milpitas:** Flextronics Intl USA Inc (530), Ddi Milpitas Corp (210), **Morgan Hill:** Paramit Corporation (260)

# Santa Clara County: Instrument Manufacturing for Measuring and Testing Electricity and Electrical Signals

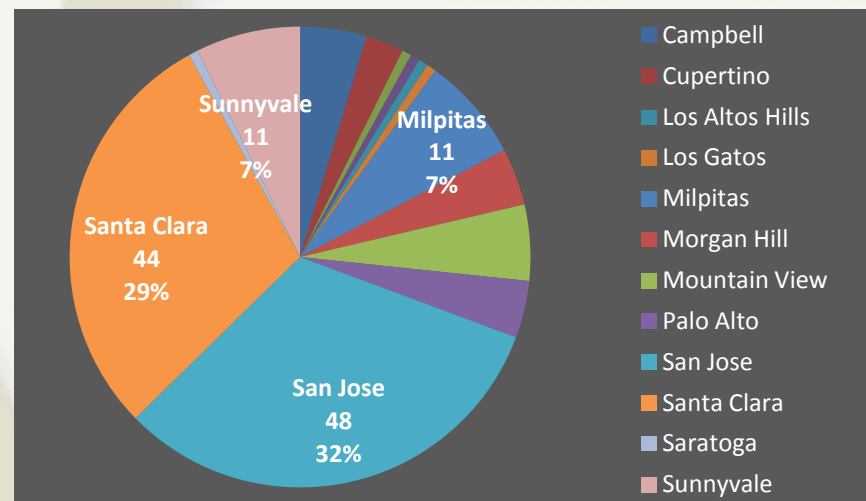
Instrument manufacturing for measuring and testing electricity and electrical signals is one of the most important advanced manufacturing sectors in Santa Clara County. The sector comprises 152 firms and 7,835 jobs. Relative to California, it shows an employment concentration of 4.16.

The sector has shown a huge employment gain by adding 2,327 jobs since 2008. The gain is even higher as 4,115 since March 2012.

Employment 2013 March	Frequency	Percent	Cumulative Percent
1-10	88	57.9	57.9
11-49	31	20.4	78.3
50-100	9	5.9	84.2
101-250	6	3.9	88.2
251-500	2	1.3	89.5
501-1000	1	.7	90.1
2501-5000	1	.7	90.8
Missing	14	9.2	100.0
Total	152	100.0	

The breakdown of the size of the instrument manufacturing for measuring and testing electricity and electrical signals firms in Santa Clara County shows that 78% of firms (119) have less than 50 employees and they make 13% of the industry employment. Only 2.7% of the firms (4) have more than 250 employees and they account for 66% of the total employment in the sector. There is 10 firms with employment larger than 100 in Santa Clara County. These firms, even though constitutes only 6.6% of the firms, make up 79% of total employment in the sector.

31.6% of the instrument manufacturing for measuring and testing electricity and electrical signals firms are located in the city of San Jose followed after the city of Santa Clara (28.9%).



Firms in the city of San Jose, Santa Clara, Sunnyvale and Milpitas, constitutes 15%, 62%, 2% and 5% of total industry employment respectively. These figures indicate that the city of Santa Clara dominate the instrument manufacturing for measuring and testing electricity and electrical signals industry because of the presence of Agilent and Sangfor Technologies firms.

Major employers in the custom computer programming services are as follows:

**San Jose:** Teradyne Inc (225), Echelon Corporation (185), Photon Dynamics Inc (112), S V Probe Inc (100), **Santa Clara:** Agilent Technologies Inc (3275), Sangfor Technologies (900), Infiniti Solutions Usa Inc (100) **Morgan Hill:** Anritsu US Holding Inc (500), **Milpitas:** KLA-Tencor Corporation (150), **Cupertino:** Verigy (us) Development Inc (99)

# Santa Clara County: Advanced Manufacturing

For your questions, please contact:

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Thanks!