



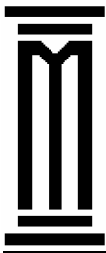
MILKEN INSTITUTE

prepared for the
**California
Manufacturers
& Technology
Association**



Manufacturing Matters: California's Performance and Prospects

August 2002



MILKEN INSTITUTE

Manufacturing Matters: California's Performance and Prospects

**PREPARED FOR: CALIFORNIA MANUFACTURERS
& TECHNOLOGY ASSOCIATION**

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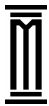


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Executive Summary

As California moves to a knowledge-based economy ? one in which intangible assets are often more valuable than tangible assets ? there is a common misperception that manufacturing has diminished in importance. Many see the high-skilled, highly paid service sectors such as software, web design and wireless communication technologies as the backbone of California's economy. While these service sectors are essential drivers of the state's economic prosperity, it is erroneous to view manufacturing as obsolete. It too is an important driver for growth in our diverse economy.

Manufacturing industries are among the highest investors in research and development in the nation. For example, pharmaceuticals, electronic components, communications equipment and computers heavily reinvest their profits back into research & development. The ability to incrementally improve product design is greatly aided by the interactive feedback from production operations. The most successful manufacturers are those whose innovation processes are organized in a collaborative framework with research, design and production engaging in dynamic, interactive learning processes. More effective research and design occurs where these activities are located near production operations. California's manufacturing prowess and innovative capabilities will diminish if more production activities locate outside the state.

The driving forces of California's economy are industries that produce goods and services for sale outside the state. Manufacturing is California's most export-intensive activity. The income and employment that manufacturing generates circulates, multiplies and ripples throughout California's regions. Despite intense global competitive pressures and high cost of doing business, manufacturing income in California represents a higher share of total income (17.5 percent) than for the nation as a whole (17.2 percent.) California is one of only a couple high cost states with an above U.S. average share of wages dependent upon manufacturing, indicating that California's firms are attractive targets for out of state recruiters. California's manufacturing wage and salary income per employee was \$54,600 in 2000, \$11,200 above the national average and ranking it 4th in the nation.

California's wage and salary performance is directly tied to the concentration of high-tech manufacturing in the state. For example, the state constitutes 22 percent of national wages in computers and machinery, 24 percent in electronic equipment and 28 percent in instruments. The average wage in computers and machinery of \$102,900 in California is nearly double the comparable wage for the nation. Additionally, electric and electronic equipment, instruments and related products, and transportation equipment excluding motor vehicles, all pay wages above the corresponding national figures. California manufacturers have been very successful in producing goods for export. Manufacturing exports represent 9.4 percent of



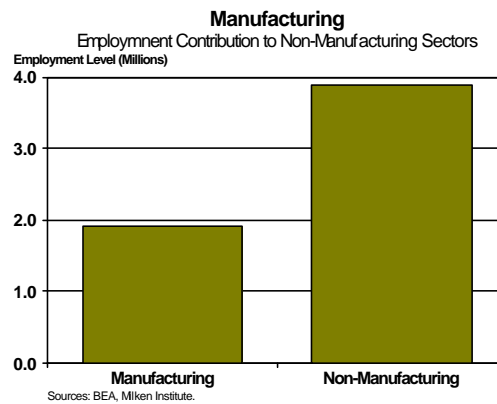
California's Gross State Product (GSP) and computers and electronic products constitute 54.3 percent of the state's total manufacturing exports.

The perception that manufacturing does not matter in California's advanced economy is wrong. This is demonstrated by looking at the ripple-effect of manufacturing activities on other industries and the state's economy as a whole. An industry multiplier is a measure of the multiple effects generated by a given economic activity. The U.S. Bureau of Economic Analysis developed a Regional Input-Output Modeling System (RIMS) that traces the direct, indirect, and induced demand effects of specific industries on all economic activities. They are classified by two-digit Standard Industrial Classification Code (SIC).

Using the employment multipliers from RIMS, we can translate the impact of adding one additional job in a manufacturing sector to incremental gains in non-manufacturing sectors. For example, the employment (direct-effect) multiplier for the electronics manufacturing sector is 3.3, meaning that for each job created in electronics, an additional 2.3 jobs are created in other sectors, resulting in a total of 3.3 jobs with electronics included. In contrast, each job created in retail trade translates into just 0.6 jobs in other sectors or a multiplier of 1.6. For manufacturing overall in California, the direct effect employment multiplier is 3.0. However, when the indirect and induced impacts on the overall economy are incorporated, the total impact multiplier for manufacturing employment is 3.5, an excellent indicator of the wealth effect that this industry generates.

The wealth effect is also illustrated by the high regional purchase coefficient. The Regional Purchase Coefficient (RPC) of California's high-tech manufacturing sectors is very high. Basically, the RPC measures the percent of local demand provided by local production. California's RPC in high-tech manufacturing ranges between 50 to 80 percent (60 percent on average), compared to the national average of 25 percent. For example, when Intel places an order for new semiconductor equipment gear, it is likely to be filled by California manufacturing firms such as Applied Materials.

Based on just the direct effect multiplier for manufacturing, 2001 figures indicate that California employed 1.9 million people in manufacturing and created an additional 3.8 million jobs in non-manufacturing industries that tied back to manufacturing. The accompanying graph illustrates manufacturing's significance to the state's economy.



California's performance in manufacturing over the past decade has been remarkable considering the higher tax burden and business costs that the state's firms confront. The bubble chart below displays a three-dimensional perspective on manufacturing's status by two-digit SIC in California's economy. The size of the bubble represents the importance of output for each sector relative to total manufacturing; the location quotient on the vertical depicts the importance of a sector to the state relative to the national average and the horizontal displays how fast a sector is growing relative to the national average.

Electronic equipment is California's largest manufacturing sector at 31 percent of the total, represented in the chart by the largest bubble. Industrial machinery is the next largest sector, followed by instruments and chemicals. Instruments has the highest concentration of firms relative to the national average as displayed with a location quotient of 2.1, meaning that this sector is more than twice as important to California than for the nation as a whole. Electronic equipment has the next highest concentration of firms in California, followed by industrial machinery and apparel. Six California manufacturing sectors out of 20 grew more slowly than their national counterparts between 1992 and 2001. The state's laggard manufacturing sector in growth was transportation equipment, which includes many aspects of California's aerospace industry.

Over the past decade, Gross State Product, generated in California by high-tech manufacturing, experienced robust growth. Gross output (fixed 1996\$) from the nine sectors that constitute high-tech manufacturing in the state rose more than 200 percent from \$41 billion in 1992 to \$131 billion in 2001. Particularly notable increases were registered by the electronic manufacturing sectors of computer equipment, communications equipment, and electronic components. These sectors alone generated \$101 billion in GSP in 2001, more than three-quarters of the total revenues contributed by all California high-tech manufacturing sectors.

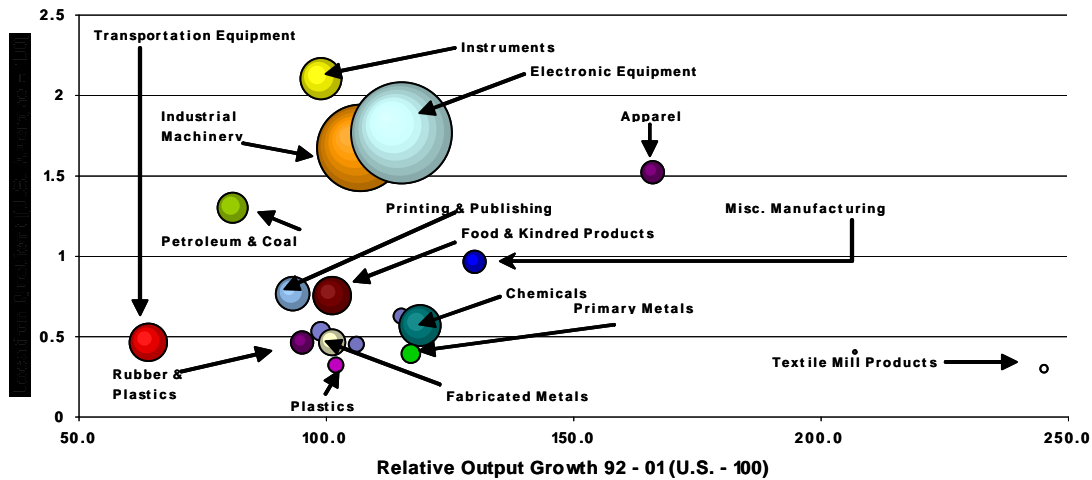
The biotech-related manufacturing sectors of drugs and medical instruments, which have a smaller presence in the state, contributed \$12 billion in 2001, 9.1 percent of the total high-tech manufacturing GSP for 2001. Though relatively nascent sectors,



they too have posted impressive growth, with GSP from drug manufacturers rising some two-and-a-half times between 1992 and 2001, and that from the medical instruments sector increasing nearly 1.4 times.

Due to losses in the early 1990s, the military-related manufacturing sectors of guided missiles and search and navigation equipment experienced double-digit declines in GSP of 31.4 and 26.3 percent between 1992 and 2001, respectively.

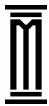
California's Manufacturing Performance



The extraordinary growth experienced by California high-tech manufacturing in terms of GSP was not enough to compensate for an overall decline in employment. This implies rapid growth in productivity, but is largely driven by a shift to higher value-added R&D activities. Although the technology boom of the late 1990s helped rejuvenate employment in some sectors, even accounting for the windfalls generated, total high-tech manufacturing employment experienced a decline of nearly 50,000 jobs, a drop of 7 percent, between the years 1992 and 2001. (If compared to 1991, the loss is doubly great: 100,000 jobs, a 14 percent decline.) Nevertheless, excluding aerospace, which suffered significant job losses in the 90's, high-tech manufacturers created 80,900 jobs in California between 1992 and 2001, an increase of 22 percent.

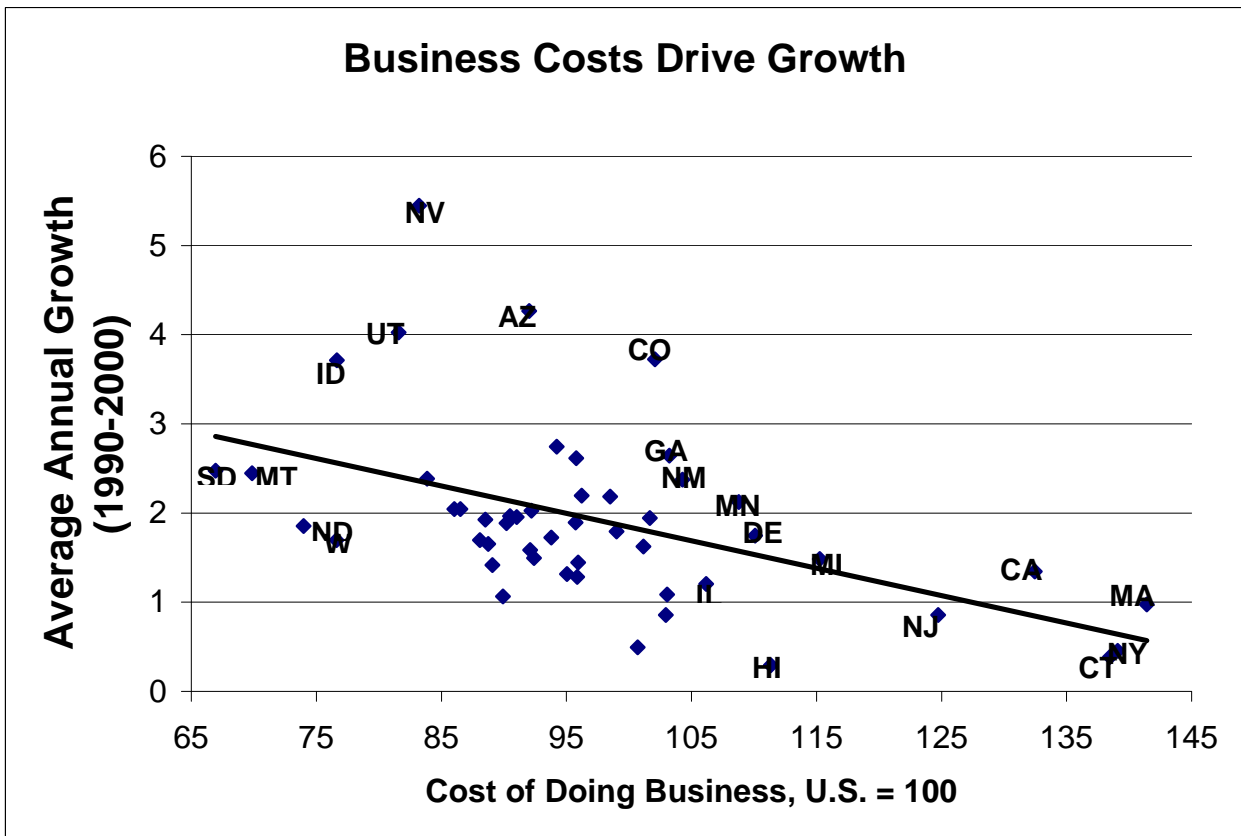
California's metropolitan economies are highly dependent upon manufacturing activities. The relative importance of employment in individual sectors of manufacturing, however, differs by metropolitan area. The leading sectors in the different areas are as follows:

- San Diego's leading manufacturing sectors are electronic components, aircraft and parts, toys and sporting goods, and communications equipment.



- Orange County's leading manufacturing sectors are electronic components, women's and misses outerwear, medical instruments and supplies, and plastic products.
- Los Angeles' leading manufacturing sectors are women's and misses outerwear, aircraft and parts, search and navigation equipment and commercial printing.
- San Jose's leading manufacturing sectors are electronic components, computers and office equipment, measuring and controlling devices, and communications equipment.
- San Francisco's leading manufacturing sectors are women's and misses' outerwear, computer and office equipment, drugs, and measuring and controlling devices.
- Oakland's leading manufacturing sectors are electronic components, computers and office equipment, petroleum refining, and commercial printing.
- Sacramento's leading manufacturing sectors are computer and office equipment, electronic components, ophthalmic goods, and millwork and plywood.

There are limits to California's ability to attract or even retain manufacturing production facilities in the state. California has many comparative disadvantages in tax and business-cost areas. California's composite cost of doing business index is 32 percent above the national average, slightly behind the three most expensive states, Massachusetts, New York, and Connecticut. The scatter diagram below displays the close historical relationship between relative business costs and job growth for states over the past 10 years. The vertical axis shows the differential in job growth for states. The horizontal axis shows the relative cost of doing business measure by state in 2001. If the index value is 120, then that state's cost-of-doing business was 20 percent higher than the national average. The graph displays that those states with a low cost of doing business, on average, had greater job growth.



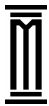
Other states are aggressively attempting to lure California manufacturers by highlighting their lower business costs, particularly electricity and tax rates, and by offering attractive location incentives. Manufacturing firms throughout the country – and the climate in which they operate – are directly impacted by state legislation, regulation and policy. Government-sponsored recruitment efforts in other parts of the world are taking advantage of the cost pressures burdening California's manufacturing base as well. Even countries with more highly developed, higher-cost industrial infrastructures are targeting California-based firms. Recognizing the strategic and economic benefits of manufacturing, governments around the world deploy large amounts of resources to build an industrial base and recruit manufacturing firms. For example, the government of Singapore has more investment promotion specialists based in California than in any other U.S. state or foreign nation.

Despite these challenges, California has a remarkably diverse industrial base. Virtually every industry in the four-digit SIC classification is now represented in the state; no single industry represents more than 5 to 6 percent of total output. A policy that encourages manufacturers to expand, improve productivity, and promote foreign sales represents more than a "high-tech" or "low-tech" strategy – it represents a strategy critical to wealth creation and upward mobility for future Californians.



Key findings include:

- Manufacturing is an economically and strategically vital component of California's modern economy. Manufacturing employs 1.9 million in California and pays an average annual wage of \$54,600. Computers and machinery pay annual wages of \$102,900 in California.
- When California loses manufacturers, it loses more than manufacturing income and jobs. An additional 3.8 million jobs in other sectors are tied back to manufacturing. When a manufacturing job is lost in California, an additional two and one-half jobs are lost in other sectors.
- In-state employment opportunities rise when California manufacturers succeed in producing goods for foreign markets. One would naturally assume that trade employment would be pushed up by manufacturing export growth, and it clearly is. But the data shows that positive spill-over effects do not end there, and manufacturing export growth proves to boost growth in total employment throughout the state.
- Manufacturing uniquely contributes to community building and individual empowerment. Manufacturing provides rewarding employment and opportunities for advancement. It empowers workers with skills that can be better leveraged in the job market.
- Economies like California's cannot truly be knowledge-driven if the knowledge its industries possess is only conceptual, and not applied. Without some form of manufacturing base, product innovation will be limited. Those parts of the U.S. and the world that are acquiring the manufacturing capabilities that California keeps relinquishing are thereby strengthening their potential to create the sorts of innovations that once characterized the Golden State
- Manufacturing supports the economies of California's major metros. For example, manufacturing in Greater Los Angeles is the nation's second largest manufacturing center after Chicago.
- Manufacturing supports the economic well being of California's smaller metros. In many of California's 19 smaller metropolitan areas, high-value added manufacturing activities such as electronics and industrial machinery have made inroads over the past 10 years.
- Manufacturing provides well paying jobs for inner city communities with high concentrations of ethnic and racial minorities. Manufacturing assists in keeping a broad spectrum of jobs available to residents of the inner cities. Low-paying service sector jobs don't provide the wages, training and future



employment opportunities that manufacturing does to inner city residents. Manufacturing also can provide additional options for rural areas that are attempting to diversify their economies from a high reliance on agriculture and other sectors.

Conclusions and Policy Prescriptions

The data highlighted in the first chapter of this report describes time horizons in the late 1990s that were unusually positive for California manufacturers. Even so, during this time period much of California's production capacity was relocated to lower cost areas of the U.S. and world. Now, at the start of the 21st century, with capital markets in recession, one that is especially deep in the technology sectors, California manufacturers are bereft of the benefits they had available to them in the previous decade, but are still stuck with the same high-costs that were byproducts of that era.

Unless public leadership acts to shore up California's manufacturing base, further deterioration of the state's industrial capacity is inevitable. Such action could include:

- Understanding the status of manufacturing in California and monitoring its health.
- Analyzing new policies with commercially available economic impact models that may capture certain aspects of specific changes in policy with greater richness and sector detail, in addition to models resident at state agencies, in order to understand their impacts on manufacturing.
- Finding ways to lower cost burdens in order to increase the state's competitive position and support manufacturing growth. A sales tax reduction on manufacturing equipment and policies for lower energy costs are two leading items that could be targeted.
- Developing a process to identify manufacturers at risk of leaving the state and giving officials the power to use targeted incentives for keeping and expanding manufacturing operations in California.



Introduction

This report examines the importance of manufacturing in California and its contribution to the state's economic welfare and growth.

The first section explains and details the profound multiplier effects that manufacturing generates for California's economy. It also looks at the central role manufacturing plays in the state's global competitiveness.

The second section highlights some of the underlying weaknesses in California manufacturing sectors. Increases in several high technology manufacturing sectors have masked difficulties confronting other manufacturing sectors.

The third section considers the value of income and other contributions made by the state's manufacturing sectors. It also highlights California's high-tech sectors and the importance of manufacturing to their innovation and economic growth.

The fourth section further addresses the issues of costs and how California measures up against other states.

The fifth and final section of the report considers the impact of public policy on manufacturing, focusing on the effects of California policy and how it compares to that of other states.

Appendix I analyzes the data that illustrates the still large, though often under-recognized, presence of manufacturing in California's six major and 19 smaller metropolitan areas. It also explores data specifically related to high-tech manufacturing.

Appendix II includes specific tax and business incentive programs that are offered by states.



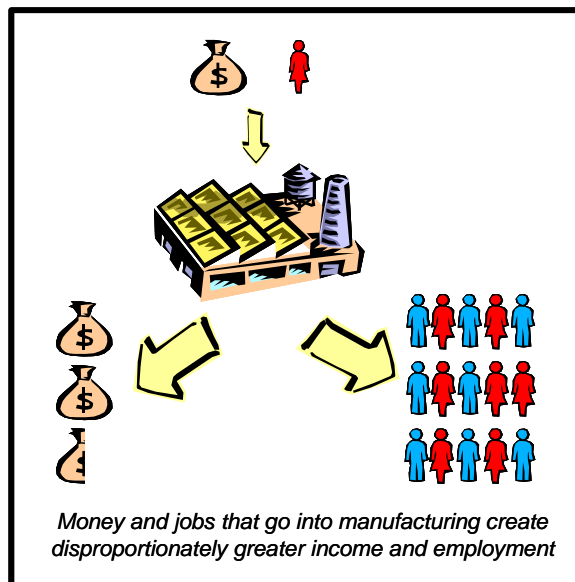
The Multiplier Effect of Manufacturing in California

The Power of Multipliers

It has become all too common among citizens and policy makers in the industrialized world to accept the decline of manufacturing as an “inevitable” byproduct of economic modernization. Manufacturing is frequently viewed as representative of a bygone economic era while the presumed replacement for production-related activities, the service sector, is seen as constituting the new platform for economic growth.

Although a typical conceptualization of industrial progress, such thinking is not only flawed but potentially threatens the economic vibrancy of a society. This paper will strip away many aspects of the fallacy that manufacturing does not matter in California's advanced economy. We start by considering the ripple-effect of manufacturing activities on the economy as a whole by looking at the power of manufacturing's multipliers.

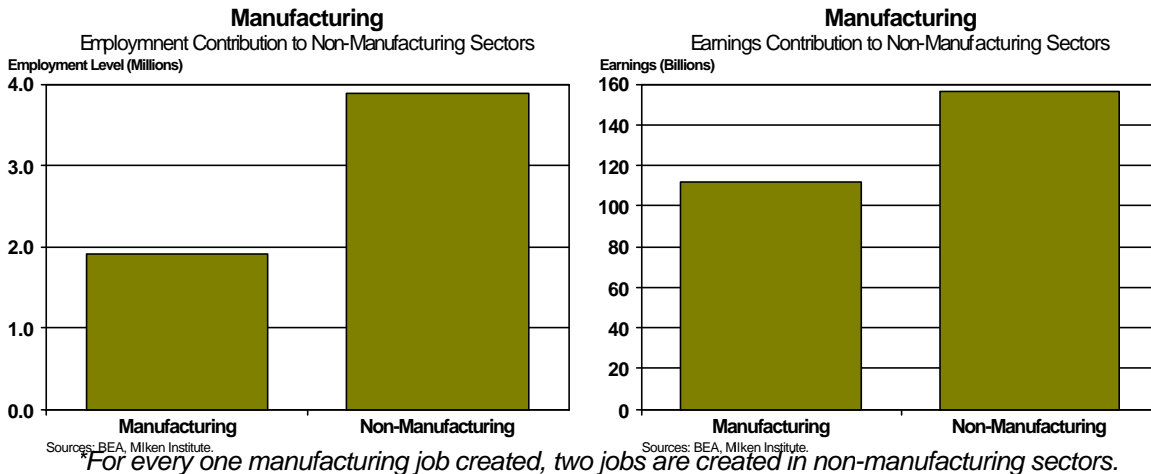
The Input-Output Principle of Multipliers



A multiplier, as the name implies, is a measure of the multiple effects produced by a given economic activity. Alternatively, this can also be viewed as a wealth effect. For example, in the case of electronics manufacturing, research shows that this sector has a multiplier of 2.2 for each dollar in value of output. Thus, for every million dollars worth of product a company like Intel, AMD, or some electronics startup



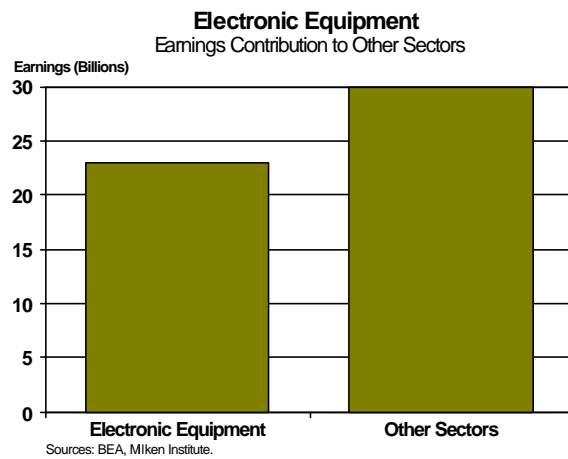
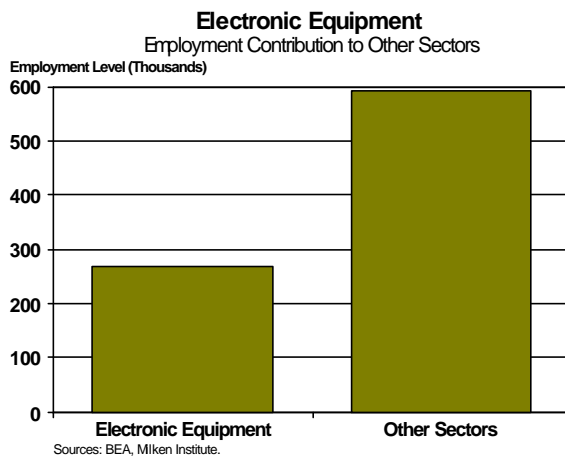
manufactures, in fact \$2.2 million is generated for businesses throughout California. This sector's multiplier for earnings (personal income) is 0.6, meaning that for every million dollars worth of product manufactured, an additional \$600,000 is generated for workers throughout the state. Every million dollars worth of output also equates to a multiplier of 15.8, meaning that nearly 16 jobs are likewise created in the electronics industry.



The above types of multipliers are known as “final demand multipliers” – they relate to the value of the final product made by a manufacturer. Multipliers that relate to the employment of a given sector are known as “direct-effect multipliers.” Again using the example of electronics manufacturing, the direct-effect multiplier for earnings is 2.3, meaning that for every dollar earned by an employee in that sector, \$2.30 is added to the total pool of income shared by other sectors’ employees throughout the state. At the same time, the direct-effect multiplier relating to job creation by the electronics manufacturing sector is 3.3. Thus, for every one job created by electronics manufacturers, a further incremental increase of 2.3 jobs is created for California’s non-manufacturing sectors. For manufacturing overall in California, the direct effect employment multiplier is 3.0. However, when the indirect and induced impacts on the overall economy are incorporated, the total impact multiplier for manufacturing is 3.5, an excellent indicator of the wealth effect that this industry generates.

	Final-demand multipliers			Direct-effect multipliers	
	Output (dollars)	Earnings (dollars)	Employment (# of jobs)	Earnings (dollars)	Employment (# of jobs)
California Industry					
Electronic and other electric equipment	2.205	0.603	15.758	2.344	3.256

*See footnotes on p. 14.



The table on the following page lists 38 sectors and their multipliers as they relate to the California economy. To conduct this systematic economic impact analysis, the Milken Institute relied on the Regional Input-Output Modeling System (RIMS) developed by the U.S. Bureau of Economic Analysis. The sectors listed are classified according to the two-digit industries definitions of the 1987 Standard Industrial Classification (SIC) system.



RIMS II MULTIPLIERS
Total Multipliers for Output, Earnings, and Employment by Industry Aggregation

California Industry	Final-demand multipliers			Direct-effect multipliers	
	Output ¹ (dollars)	Earnings ² (dollars)	Employment ³ (# of jobs)	Earnings ⁴ (dollars)	Employment ⁵ (# of jobs)
Agriculture, Forestry, and Fishing:					
1. Farm products and agricultural, forestry, and fishing services	2.253	0.687	31.434	2.050	1.691
2. Forestry and fishing products	2.038	0.503	16.660	2.562	3.009
Mining:					
3. Coal mining	1.748	0.455	11.804	1.874	2.542
4. Oil and gas extraction	1.881	0.329	8.729	2.376	3.526
5. Metal mining and nonmetallic minerals, except fuels	1.961	0.535	14.016	1.981	2.632
Construction:					
6. Construction	2.375	0.768	25.086	2.134	2.229
Manufacturing:					
7. Food and kindred products, and tobacco products	2.160	0.450	15.537	3.696	4.139
8. Textile mill products	1.807	0.413	15.467	2.234	2.080
9. Apparel and other textile products	2.191	0.557	24.551	2.410	1.986
10. Paper and allied products	1.842	0.427	12.409	2.237	2.678
11. Printing and publishing	2.009	0.560	17.905	1.984	2.200
12. Chemicals and allied products, and petroleum and coal products	1.979	0.340	9.041	3.347	5.212
13. Rubber and misc, plastic products and leather and leather products	1.913	0.474	15.600	2.136	2.150
14. Lumber and wood products, and furniture and fixtures	2.085	0.545	19.241	2.287	2.167
15. Stone clay and glass products	2.116	0.570	17.281	2.236	2.486
16. Primary metal industries	1.962	0.466	13.349	2.409	2.935
17. Fabricated metal products	2.061	0.555	16.844	2.167	2.377
18. Industrial machinery and equipment	2.243	0.597	15.162	2.477	3.609
19. Electronic and other electric equipment	2.205	0.603	15.758	2.344	3.256
20. Motor vehicles and equipment	2.016	0.444	12.915	2.567	3.743
21. Other transportation equipment	2.257	0.658	16.142	2.262	3.298
22. Instruments and related products	2.152	0.660	16.363	2.037	2.958
23. Miscellaneous manufacturing industries	2.195	0.591	21.445	2.384	2.117
Transportation & Public Utilities:					
24. Transportation	2.295	0.707	22.519	2.151	2.286
25. Communications	2.185	0.572	15.514	2.621	4.051
26. Electric, gas, and sanitary services	2.134	0.382	9.516	3.425	7.376
Trade:					
27. Wholesale trade	2.051	0.654	19.106	1.901	2.224
28. Retail trade	2.102	0.688	29.997	1.827	1.556
Finance, Insurance, & Real Estate:					
29. Depository and nondepository institutions, and security and commodity brokers	2.204	0.662	18.730	2.224	2.753
30. Insurance	2.782	0.930	27.304	2.486	2.883
31. Real estate	1.441	0.171	6.447	3.686	2.851
Services:					
32. Hotels and other lodging places, amusement and recreation services, and motion pictures	2.604	0.850	31.534	2.320	2.176
33. Personal services	2.333	0.790	40.317	1.971	1.516
34. Business services	2.289	0.856	26.722	1.832	1.984
35. Eating and drinking places	2.306	0.669	37.040	2.111	1.494
36. Health services	2.332	0.597	26.631	1.761	2.002
37. Miscellaneous services	2.322	0.709	28.524	2.138	1.821
Households:					
38. Households	1.451	0.422	15.341	0.000	0.000

Source: BEA

1 Each entry in column 1 measures the total dollar change in output in all row industries that results from a \$1 change in output delivered to final demand by the industry corresponding to the entry.

2 Each entry in column 2 measures the total dollar change in earnings of households employed by all row industries that results from a \$1 change in output delivered to final demand by the industry corresponding to the entry.

3 Each entry in column 3 measures the total change in number of jobs in all row industries that results from a \$1 million change in output delivered to final demand by the industry corresponding to the entry. Because the employment multipliers are based on 1997 regional data and 1992 national data, output delivered to final demand should be in 1997 dollars.

4 Each entry in column 4 measures the total dollar change in earnings of households employed by all row industries that results from \$1 change in earnings paid directly to households employed by the industry corresponding to the entry.

5 Each entry in column 5 measures the total change in number of jobs in all row industries that results from a change of one job in the industry corresponding to the entry.

Source: U.S. Department of Commerce. Bureau of Economic Analysis. Multipliers are based on the 1992 Benchmark Input-Output Table for the U.S. and 1997 state data released July 1999.

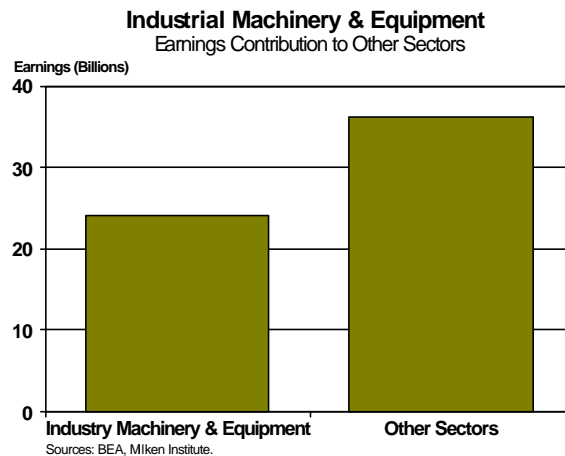
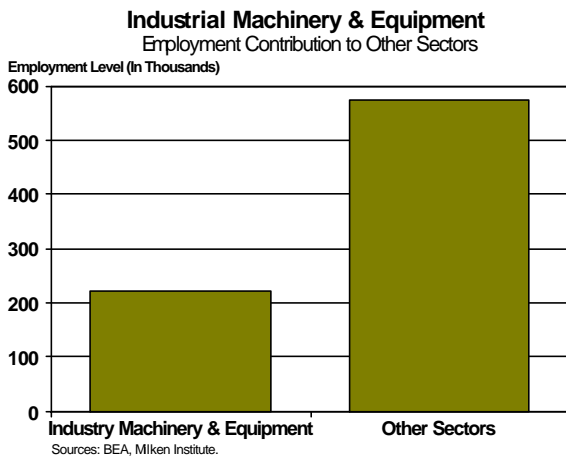


Comparing sectors listed on the table puts the power of manufacturing's multipliers in further perspective. Jobs in the apparel and textile product industry – which with a direct-effect multiplier of 2.0 ranks as the manufacturing sector with the lowest job-for-job impact – produce more additional employment opportunities for Californians than jobs provided by the retail trade industry (whose multiplier is 1.6) and food services (eating and drinking places, whose multiplier is 1.5). The discrepancies in multiplier effects demonstrate how even among industries associated with low-skilled labor, the ripple effect on economic opportunity provided by jobs in manufacturing is significantly greater. Putting the numbers in real life-dimensions, for every 1,000 people employed by the garment industry, 500 more jobs are being created than the spillover effect produced by the same number of people working at restaurants.

Within manufacturing, there are further differences in multiplier effects. For example, for every job created in the industrial machinery & equipment sector, 3.6 jobs are generated throughout California's economy, whereas every new job in the apparel industry creates 1.9 additional jobs. Accordingly, if an industrial machinery manufacturer hired 500 new employees, this would generate 1,800 total additional jobs (500 multiplied by 3.6) in the overall economy. 500 new jobs in a garment manufacturer, on the other hand, would result in about 1,000 additional jobs (500 multiplied by 2).

California Industry	Final-demand multipliers			Direct-effect multipliers	
	Output (dollars)	Earnings (dollars)	Employment (# of jobs)	Earnings (dollars)	Employment (# of jobs)
Industrial machinery and equipment	2.243	0.597	15.162	2.477	3.609

*See footnotes on p. 14.



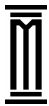
The average worker in the electronic & other electric equipment industry makes \$82,000 per year, while an average worker in the retail trade industry makes \$19,000.



The higher salary of \$82,000 is more likely to attract high-skilled workers from abroad, and within the United States. The electrical equipment industry is thus more capable of creating what economists call a “wealth effect” into the state economy. As it employs high-skilled workers in California, along with this employment comes the need for workers to fill jobs in the services and retail sectors.

Take for example, an average family household of four with one of the household members having a high-paying job as an electronics engineer. From the family of four, two members of the household are students who will find part-time work in the services or retail industries, thus boosting up employment in those sectors. With the engineer's high income, it is likely that he or she drives a “luxury” car, dines at more expensive restaurants, and can afford to go on vacations at top tier resorts. This individual is likely to spend more money than the average worker in the retail trade industry, and therefore contributes more toward the state economy's well being.

The point above illustrates that a high-skilled worker employed in a high-tech industry stimulates more wealth in the economy, and through multiplier effects, indirectly creates jobs in other sectors. This demonstrates how an electronic engineer creates more value for the economy than the retail trade employee.



Manufacturing and Economic Growth

“To live well, a nation must produce well.”¹ This axiom of economic existence applies as much to federated states as it does to nation-states. In fact, with a Gross State Product (GSP) of \$1.3 trillion, the only places with economies larger than California's are the entire United States, Japan, Germany, and Britain.² As the fifth largest economy on the planet, California already operates in the big league of countries that drive the global economy.

**California's Top 10 Manufacturing Exports
2000**

Industry	US\$ Bil.
1 Electronic Electric Equipment Excluding Computer	37.8
2 Industrial Machinery Computer Equipment	37.6
3 Instruments & Related Products	12.0
4 Transportation Equipment	8.6
5 Chemicals & Allied Products	5.0
6 Food & Kindred Products	4.5
7 Misc. Manufacturing Industries	2.3
8 Fabricated Metal Products	2.3
9 Rubber & Misc. Plastics Products	1.9
10 Primary Metal Industries	1.9

Sources: Economy.com, Milken Institute

**California's Fastest-Growing Manufacturing Exports
1992-2000**

Industry	Growth
1 Textile Mill Products	176.8%
2 Electronic Electric Equipment Exc. Computers	152.8%
3 Industrial Machinery Computer Equipment	148.8%
4 Instruments & Related Products	137.9%
5 Rubber & Misc. Plastics Products	123.9%
6 Stone Clay & Glass Products	115.2%
7 Chemicals & Allied Products	92.2%
8 Misc. Manufacturing Industries	90.7%
9 Paper & Allied Products	80.2%
10 Printing & Publishing	79.0%

Sources: Economy.com, Milken Institute

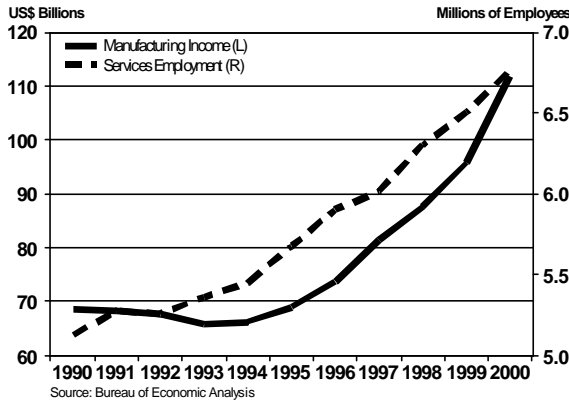
In spite of the unusually high costs that confront manufacturers in the state, California has been producing well, allowing Californians of all types to reap the rewards of a high-value output, export-oriented manufacturing base. The charts below compare California's manufacturing export growth to growth in employment, further illustrating the sort of multiplier effects that manufacturing has on the state's overall economy.

¹ Michael Dertouzos, Richard Lester, Robert Solow and the MIT Commission on Industrial Productivity, *Made in America: Regaining the Productive Edge* (New York: Harper Perennial, 1990), 1.

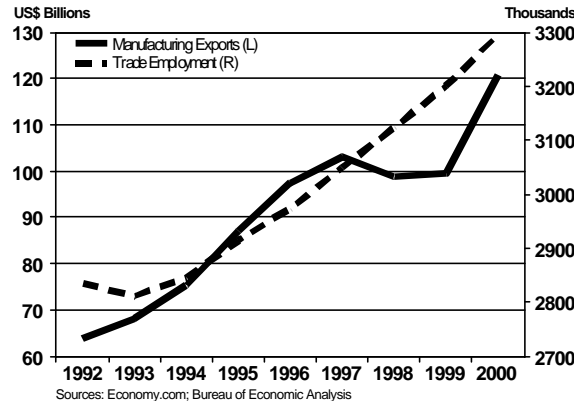
² Gross Product and rankings based on data from the World Bank and UCLA Anderson Forecasting Project, presented by the California Trade, Technology, and Commerce Agency, available at http://commerce.ca.gov/tca/pdfs/link_overview/ersi/CALIFORNIA_ECONOMY_%20FIFTH_LARGEST_IN_THE_WORLD.pdf



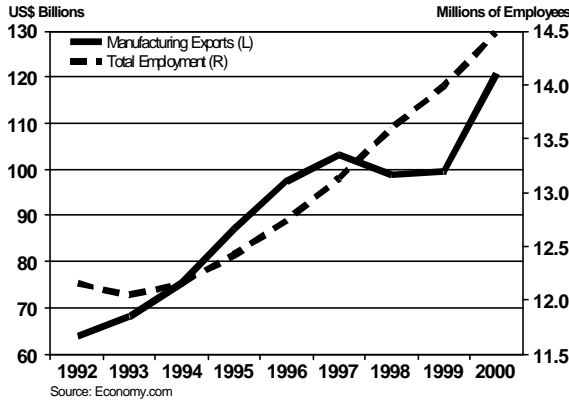
Manufacturing Income vs. Services Employment
California



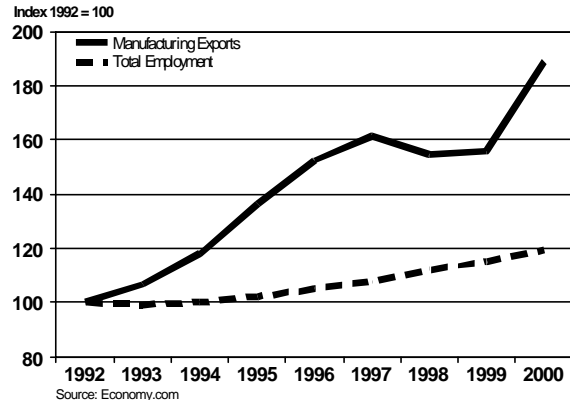
Manufacturing Exports vs. Trade Employment
California



Manufacturing Exports vs. Total Employment
California



Manufacturing Exports vs. Total Employment
California



These charts illustrate how in-state employment opportunities rise when California manufacturers succeed in producing goods for foreign markets. One would naturally assume that trade employment would be pushed up by manufacturing export growth, and it clearly is. But positive spill-over effects do not end there, as the charts comparing manufacturing export growth with growth in total employment, and with service sector employment illustrate.

California Computer and Electrical Manufacturing Exports, 1997 - 2000 (\$,000)

	1997	1998	1999	2000	% Change, '99 - '00	% Change, '97 - '00
Computers and Electronic Products	46,599,909	44,952,703	49,219,802	65,917,452	33.9%	41.5%
Total California Manufacturing Exports	95,420,413	90,864,951	95,269,719	121,457,785	27.5%	27.3%
Of Which computers and electrical equipment	48.8%	49.5%	51.7%	54.3%		

Source: Economy.com

Not surprisingly, California's manufacturing export growth is led by sectors that are the bedrock of the high-tech economy for which the state is now famous. According to the latest figures available, more than half of the value of all California-manufactured



exports came from just one manufacturing category: computers and electronics products. This sector has particularly high economic multipliers and has seen its export values grow at a rate more than 14 percent above that for California's manufacturing exports as a whole. The sector is "an engine within an engine" of the state's global economic growth.



Underlying Weaknesses

Although the latest data points to California's many successes in manufacturing, these accomplishments are being undermined by underlying structural weaknesses in the state's economy. Growth from high-tech manufacturing, in particular, masks fundamental problems confronting other manufacturing sectors. In fact, despite increased manufacturing productivity and exports led by California technology manufacturers, the number of total manufacturing jobs in the state has been declining since the last decade.

Biggest Employment Losers 1992-2001

Industry	Growth Rate
1 Guided Missiles, Space Vehicles, Parts	-67%
2 Ordnance & Accessories	-61%
3 Women' and Children's Undergarments	-59%
4 Pulp Mills	-53%
5 Greeting Cards	-51%
6 Miscellaneous Textile Goods	-50%
7 Paper Mills	-47%
8 Pottery And Related Products	-47%
9 Rubber & Plastic Footwear	-44%
10 Aircraft and Parts	-44%
11 Industrial Organic Chemicals	-41%
12 Petroleum Refining	-40%
13 Footwear, Except Rubber	-40%
14 Girls' and Children' Outerwear	-39%
15 Search And Navigation Equipment	-38%
16 Photographic Equipment and Supplies	-37%
17 Hose & Belting & Gaskets & Packing	-35%
18 Metal Cans and Shipping Containers	-31%
19 Electric Distribution Equipment	-30%
20 Industrial Inorganic Chemicals	-30%

Sources: Economy.com, Milken Institute

Most of the major issues facing California manufacturers grow out of the comparative costs of doing business in the state. A subsequent chapter of this report is dedicated to that very subject. For now, at least two other factors can be highlighted here that help illustrate how the condition of manufacturing in California is not as strong as it may seem:

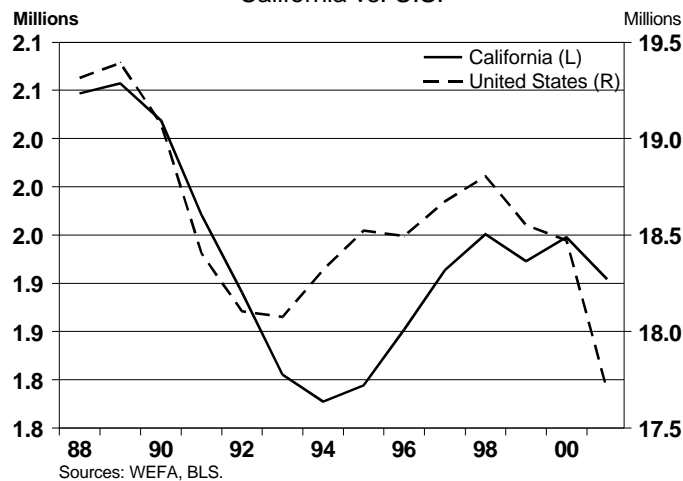


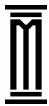
1. The 1990s Provided Exceptional Economic Stimulation

Extraordinary levels of private investment were lavished on California companies, especially high-tech manufacturers, during the final years of the 1990s. Regardless of the rationale (or lack thereof) for such investing and that an unfortunately large amount of funding was wasted on many unprofitable and unproductive Internet-related ventures, money did reach profitable and highly productive enterprises as well, from startups with promising new technologies to flagship firms like Hewlett-Packard and Intel. The multiplier effect meant that the impact of higher levels of investment spread throughout California's economy. The lowered cost of capital that electronics and other high-tech manufacturers enjoyed also meant that rising costs in other areas – such as taxation, land, and electricity – were partially offset.

The charts and table shown in the first chapter of this report (“The Multiplier Effect of Manufacturing in California”) generally describe time horizons that were unusually positive for California manufacturers. Even so, during this time period much of California's production capacity was relocated to lower cost areas of the U.S. and world. Now, at the start of the 21st century, with capital markets in recession, one that is especially deep in the technology sectors, California manufacturers are bereft of the benefits they had available to them in the 1990s, but are still stuck with the same high-costs that were byproducts of that era. As indicated in the graph below, in recent years California has lagged behind the rest of the U.S. in manufacturing employment cycles. When U.S. manufacturing employment grew in the 1990s, California took two-to-three years to match that growth. Since the latest recession began in 2000, the trend has been in the opposite direction. From 2000 to 2001, U.S. manufacturing jobs fell precipitously. This suggests that California may continue to witness manufacturing job losses over the next year.

Manufacturing Employment
California vs. U.S.





2. Other States and Nations are Actively Poaching California Manufacturers

Relevant to the flight of California manufacturers from the state, other parts of the world are taking advantage of the cost pressures burdening California's manufacturing base. Note, for example, the words from a website, one linked directly to the home page of the popular siliconvalley.com technology business news site:

Georgia: Be Here Now

No, it's not Silicon Valley, but frankly, most of us are very glad it's not. We do have a thriving broadband community here. So if a fantastic job is what brings you to Georgia, you can rest assured there'll be other great jobs waiting when you're ready to move on to that next entry on your resume. AEA recently ranked Georgia number five in the country in high-tech job creation. The Atlanta area added 106,300 new jobs in 1999, more than any other city in the country. And just in case you're ever in the mood to switch fields, Georgia offers an eclectic diversity of industries, from satellite technology to automotive to shipbuilding.³

The text is targeted at high-tech workers but such advertising is backed by concerted efforts to bring entire companies from California to Georgia. The same is true of other states. The publicly funded economic initiative that is behind this kind of advertising is also very overt in the importance it places on all types of manufacturing activities (witness the ad's highlighting "an eclectic diversity of industries" including the automotive and shipbuilding sectors).

Government-sponsored recruitment efforts that target California manufacturers are also originating from abroad, whether the targeting nation has a still-emerging manufacturing capability or is already well established but wanting to further upgrade its industrial sectors. The Republic of Ireland, for example, which had effectively no manufacturing base at all as recently as the 1970s, has steadily progressed from recruiting basic-industry manufacturers to bringing in high-tech sector operations. It was in fact a California manufacturer, Intel, whose decision to set up a fabrication facility near Dublin in 1989 that helped stir the rest of the world to recognize this once famously impoverished island-nation as the "Celtic Tiger." The government of Ireland has specifically used a two-pronged marketing strategy to lure manufacturers to its shores by simultaneously touting the advantages of its highly-educated, low-wage workforce and the nation's low (12.5 percent) corporate tax rate.

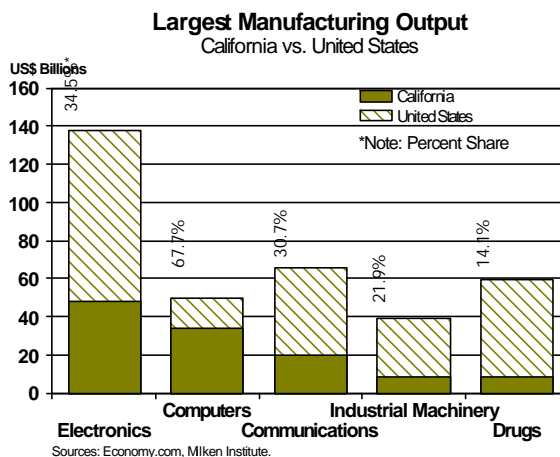
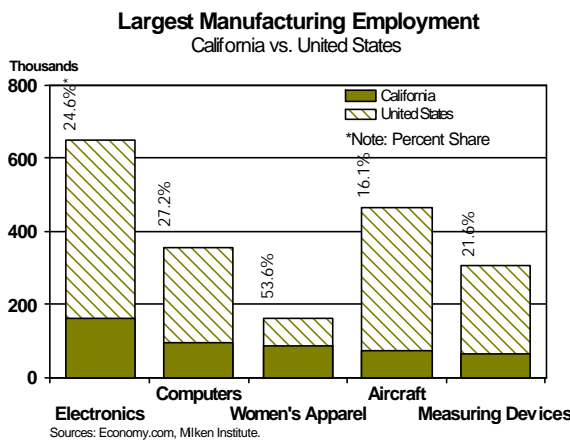
Even countries with more highly developed, higher-cost industrial infrastructures are exerting concerted efforts to bring in U.S. manufacturers, with California-based companies being particularly targeted. The government of Singapore (which looks after a resident population that is less than one-tenth that of California's) has more

³ Georgia state's "Yamacraw" website: <http://www.yamacraw.org/georgia/index.asp>



investment promotion specialists based in California than in any other U.S. state or foreign nation. Though higher up the evolutionary chain of industrial development than a country like Ireland, Singapore uses similar tactics for drawing in manufacturers. Despite inflationary pressures exerted by Singapore's advanced infrastructure, the government works hard to ensure that the city-state's cost factors are kept under control. Witness, among other initiatives, a new corporate tax policy announced in May 2002 that allows companies "a single tax deduction for expenses incurred on R&D outsourced to any R&D organization, local or overseas."⁴ This policy is but another indication of Singapore's ongoing commitment to luring and retaining high-end product-based companies even if such companies' design work is based elsewhere. Inherent in Singapore's strategy is the awareness that R&D is difficult to separate from manufacturing over the long-term (more on this topic is discussed in the following section). The Asian city-state knows from experience with companies like Hewlett-Packard that even low-level divisional manufacturing operations can, with enough efforts and inducements, later result in the acquisition of research and design capabilities that used to be based at a company's headquarters. Regardless of their final intent, such proactive inducements from countries like Singapore are particularly attractive to export-oriented California manufacturers who are burdened by swelling cost pressures.

California's attractiveness as a poaching target is reflected in the following two bar charts that describe the state's share of employment and output in select manufacturing sectors. The state's strong presence in these sectors means that when other parts of the US and world look to attract these industries, California-based manufacturing operations will likely appear as primary targets.



The state's still unresolved energy crisis adds to the host of issues that makes the poaching of California manufacturing firms that much easier. In an article titled:

⁴ Economic Development Board of Singapore: <http://www.sedb.com/edbcorp/bizresourcetaxmd.jsp>.



"Silicon Valley Swats Away Pesky Poachers," the Sacramento *Business Journal* recently observed:

Now a small but growing number of businesses say California's power crisis is making it easier to expand or relocate nontechnical divisions in other areas of the country. And that, some fear, could exacerbate Silicon Valley's already precarious economic situation. "Because of our problems, particularly energy, we could see some job loss," says Jim Tucker, director of economic development for the San Jose Silicon Valley Chamber of Commerce. While crowded streets and housing shortages have always been issues, "the energy thing is a wild card."

...

So far, the economic data aren't setting off alarms. But since relocation decisions can take most companies six months or more, a shift in attitude may not show up in state statistics for a year or more. And the numbers don't track companies that select other states over California for new facilities.

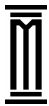
And smaller firms - which are more vulnerable to economic problems and can move more easily - appear to be voting with their feet.

Reno snags Cisco and Intuit; Acuson Corp., a Siemens unit that provides medical devices and training, selected Ann Arbor, Mich., over San Francisco for a 260-person center. And software-maker Compuware Corp. recently shifted 200 jobs from Campbell to downtown Detroit.⁵

After "Silicon Valley" became a household name in the 1970s, it was considered a sign of success for a technology company to locate its manufacturing operations there or in at least some part of California. Now, however, California is commonly known to be a high-cost state. The senior management of technology firms, under increasing pressures to cut costs, will now cite the leaving of California as "good news" for shareholders.

In the early 1990s, when California-headquartered technology companies felt compelled to move or expand a large percentage of their manufacturing to lower-cost states or countries, at least some portion of manufacturing was typically retained. (The benefits to holding on to some measure of production capacity in high-tech firms is discussed in the section on "Why Manufacturing is an Integral Part of the Capacity to Innovate.") But with management being pushed to demonstrate that any costs perceived as "unnecessary" are being cut, California manufacturing operations are that much easier targets. The image of a manufacturing presence in California has thus come full circle: once a positive attribute, it is now more likely seen as a liability.

⁵ Sacramento *Business Journal*, "Silicon Valley Swats Away Pesky Poachers," June 22, 2001: 4.



This is why a company like San Jose-based Komag, the world's largest independent supplier of thin-film disks for data storage, recently heralded to Wall Street that the firm's "announced strategy" is "to locate 100% of our production capacity overseas."⁶ At least in terms of manufacturing, abandoning California has become a positive sign in the eyes of many investors.

The combination of growing costs with lack of proactive policy responses has contributed to severe downsizing in what were previously major California industries. For example, California was once a thriving base for automobile assembly plants but over time its automotive industrial capacity has been gutted. As recently as the 1980s the state boasted seven automobile factories. Southern California's last assembly plant – GM's massive 100-acre factory in Van Nuys – was shuttered in 1992. Its closure at the time was observed to

... mean the loss of up to 2,600 high-paying jobs at the sprawling Van Nuys plant at a time when Southern California has already lost thousands of aerospace and other manufacturing jobs to lower-wage factories abroad and other regions of the United States. Auto-component suppliers, stores and other businesses that serve the Van Nuys facility and its work force may also feel the ripple effect of the factory shutdown.⁷

Today the only remaining automobile plant in the state is the GM-Toyota joint-venture based in Fremont, New United Motor Manufacturing Inc.

⁶ PR Newswire, "Komag Announces Second Quarter Results," July 19, 2001.

⁷ James Peltz, "General Motors Plant in Van Nuys to Close," Los Angeles *Times*, July 20, 1991.



Wages and the High-Tech Contribution

Manufacturing Wage and Salary Income

Over the last decade, the nation as a whole has become less dependent on manufacturing income. Some states have diversified their industrial mix by focusing on establishing their services and trade sectors. Despite all of this, income from the manufacturing sector still accounts for 17.2 percent of the nation's wage income. As the table below shows, some states, such as Michigan and Indiana, rely more on manufacturing income than others. States such as California (ranked 25th in the nation in manufacturing income share) are not as dependent relative to other states. The only western states to generate a larger share of manufacturing income than California are Arizona (5th) and Oregon (17th). However, California's manufacturing sector is responsible for the health of its nonmanufacturing sectors.

Rank	State	2000
1	Michigan	30.7
2	Indiana	30.7
3	Wisconsin	27.4
4	Ohio	25.6
5	Arizona	23.4
10	South Carolina	22.3
15	Minnesota	20.6
20	Connecticut	20
25	California	17.5
36	Texas	14.4
	U.S. Average	17.2

Sources: BEA, WEFA.

California's manufacturing wage and salary income per employee of \$54,577 ranks fourth in the United States. Only Connecticut, New Jersey and Massachusetts offer a higher manufacturing wage. (See table below)



Manufacturing Income Per Employee
All States, 2000

State	\$ US
Connecticut	58,461
New Jersey	57,739
Massachusetts	55,683
California	54,577
Michigan	53,785
New York	49,436
Arizona	46,448
Washington	45,119
Maryland	44,344
United States	43,398
Oregon	43,391
Texas	43,388
Nevada	35,831
Utah	33,826
New Mexico	33,797

Sources: BEA, WEFA

Among western states, California's manufacturing wage income is the highest. By the same token, California is by far the most expensive place to live in the west, so to a certain extent, its relatively high manufacturing salaries are attributable to the high cost of living in the state. California's technology clusters attract high-skilled human capital from around the world, and to continue to do so, it must offer competitive wages in these high-tech industries as incentive. The demand for high quality work requires individuals with higher education and exceptional skills in the computer and electronics fields.

The computer and machinery, electronics, and instruments industries have generated much of California's manufacturing sector income growth over the past decade. California's annual salary and wage income per employee in the computer and machinery industry is \$102,895, nearly double the United States average. From 1991 to 2000, these industries' wage per employee income grew by 155 percent, 124 percent, and 80 percent, respectively.

High-Tech Manufacturing Wage and Salary per Employee
Selected States, 2000, \$US

High-Tech Manufacturing Industry	California	Connecticut	Mass.	New Jersey	U.S. Average
Computer and Machinery	102,895	54,704	65,929	49,204	53,068
Electric and electronic equipment	81,684	79,449	76,073	48,826	55,875
Instruments and related products	76,212	64,312	72,274	66,477	57,947
Transportation equipment excluding motor vehicles	55,965	66,032	62,347	40,912	50,862

Sources: BEA, WEFA



New Jersey's high-tech industrial mix differs from California's. New Jersey has a large pharmaceutical cluster, thus its highest paid manufacturing sectors are chemicals and allied products, petroleum and coal products, and the food and kindred products industries. In Connecticut, the highest paying manufacturing industries are similar to those of New Jersey, with the addition of the electrical and other electric equipment industry. That industry's average annual pay is \$79,449, and is the second highest paying manufacturing industry in state. Massachusetts' manufacturing salary and wage structure is similar to that of California's with higher wages paid in the high-tech manufacturing industries.

California's wages and salaries in its high-tech manufacturing sector are among the nation's highest. It pays nearly one-fourth of the nation's wages in the computer and machinery (22 percent), electronic and other electric equipment (24 percent), and instruments (28 percent) industries. These industries comprise the heart of the state's high-tech manufacturing sector.

The annual salary per employee in low-tech industries such as apparel, lumber, and food and kindred products, is lower than the salaries paid in the high-tech manufacturing sectors for two reasons: the labor involved in these industries is not high-skill intensive, and low-skilled manufacturing industries tend to locate in parts of the state where cost of living is lower. For example, industrial cities such as Stockton, or agricultural metros like Fresno, tend to offer lower manufacturing wages, however, these cities also offer a lower cost of living and more affordable housing.

The wage gap between the highest and lowest tier manufacturing job is \$83,000, as seen in the table below.

Manufacturing Wage & Salary Income Per Employee
California, 2000

Manufacturing Industry	\$ US
Computer and Machinery	102,895
Electric and electronic equipment	81,684
Petroleum and coal products	78,632
Instruments and related products	76,212
Chemicals and allied products	68,279
Transportation equipment excluding motor vehicles	55,965
Paper and allied products	43,350
Printing and publishing	40,823
Primary metal industries	39,911
Motor vehicles and equipment	38,146
Stone, clay and glass products	37,480
Food and kindred products	35,912
Fabricated metal products	34,665
Rubber and miscellaneous plastic products	33,443
Lumber and wood products excluding furniture	28,642
Miscellaneous manufacturing industries	28,346
Furniture and fixtures	25,610
Textile mill products	25,284
Leather and leather products	22,736
Apparel and other textile products	19,796

Sources: BEA, WEFA.



The Social Significance of Manufacturing

There are broader economic equity and societal issues with respect to maintaining a solid manufacturing production base in California than the aggregate numbers alone would imply. Manufacturing provides well-paying jobs with upward mobility for many immigrants and their children and grandchildren. Manufacturers provide training opportunities for entry-level workers that allow them to move into management positions or, at least higher-skilled and better-paying positions. A manufacturing job is a means to enter the middle class and send sons and daughters to post-secondary education. For California to avoid becoming a state of haves and have-nots, it is important that state policy officials recognize manufacturing's role in creating jobs for its citizens; burdening manufacturers with higher costs severely constrains their ability to create jobs in the state.

Manufacturing stands out for the ways in which it produces positive spillover effects for the entire California economy from the wide range of jobs offered, to its multiplier effects on other industrial sectors, to the superior wages manufacturing-related employment tends to offer.

The "wealth effect" generated by manufacturing goes still further than these phenomena suggest, however. Manufacturing is an important part of community building. At a basic level, manufacturing, whether it involves metal shops or subcontracted high-tech manufacturing, ensures that accessible jobs are provided throughout California's metropolitan areas. It also reinforces a community's economic infrastructure by deepening its industrial diversity and supply chain mechanisms.

At a personal level, a manufacturing base ensures that rewarding employment and opportunities for advancement are not limited to only certain segments of a community. Manufacturing empowers workers with skills that can be better leveraged in the job market. Even entry-level positions on a factory floor typically include or lead to training in functions such as the basic computer programming required to operate modern factory equipment, operations flow planning and scheduling, and design improvements in areas like product engineering or production management. Entry-level positions in basic service sectors – such as domestic service, hotels, restaurants, and retail sales – can, for people already possessing the right education or social skills, lead to increasing positions of responsibility. Even here, however, any increase in job opportunities within basic service sectors is frequently confined to the industry in which a person acquires expertise. This condition can reinforce a ghetto-like division of society by primarily providing jobs to specific ethnic groups or social classes. Manufacturing is more inclusive of the people it admits and promotes through its ranks. The skills it confers are also more broad-based and valuable in a competitive job market. Throughout U.S. and California history, various waves of immigrants have used manufacturing employment as a stepping stone toward economic betterment and social assimilation.



High-Tech Manufacturing GSP

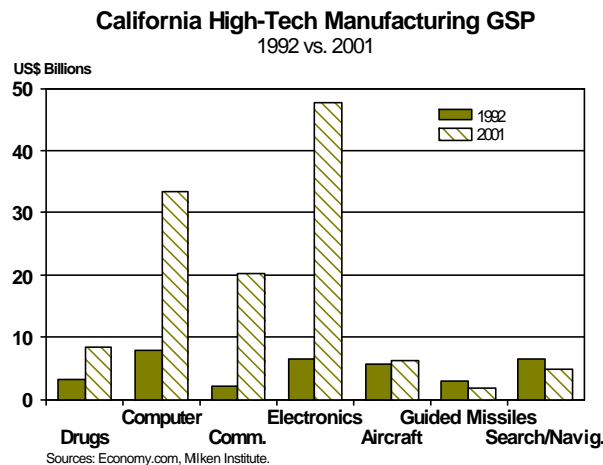
The Gross State Product generated in California by high-tech manufacturing since 1991 was exceptionally robust. Gross output (fixed 1996\$) from the nine sectors that constitute high-tech manufacturing in the state rose more than 200 percent from \$41 billion in 1992 to \$131 billion in 2001. Particularly notable increases were registered by the electronic manufacturing sectors of computer equipment, communications equipment, and electronic components, which grew 332 percent, 877 percent, and 636 percent, respectively. These sectors by themselves generated \$101 billion in GSP in 2001, more than three-quarters of the total revenues contributed by all California high-tech manufacturing sectors.

The promising biotech-related manufacturing sectors of drugs and medical instruments, less established in the state, contributed \$12 billion in 2001, 9.1 percent of the total high-tech manufacturing GSP for 2001. Though relatively new sectors, they too have posted impressive growth, with GSP from drug manufacturers rising some two-and-a-half times between 1992 and 2001, and that from the medical instruments sector increasing nearly 1.4 times. Growth in the drugs sector has been especially strong during the last three years on record, 1999-2001.

California
GSP Growth in High-Tech Manufacturing Sectors, 1992 - 2001

Manufacturing Sector	GSP, in 1996\$ millions						Growth '92-'01
	1992	1995	1998	1999	2000	2001	
Drugs	3,262.2	3,746.2	4,466.9	6,756.6	7,990.7	8,421.1	158.1%
Computer	7,743.0	9,795.1	14,931.8	23,069.1	31,749.2	33,469.1	332.3%
Communications	2,072.1	4,624.3	8,768.0	13,119.6	18,515.8	20,234.2	876.5%
Electronics	6,461.9	11,931.9	23,734.9	33,061.0	47,326.1	47,584.6	636.4%
Measuring/Control	4,222.6	4,168.2	4,964.0	4,945.6	5,440.6	5,086.0	20.4%
Medical Devices	2,570.2	2,383.9	2,880.0	3,232.9	3,642.6	3,494.7	36.0%
Aerospace	15,024.4	10,182.4	14,160.5	13,972.6	14,271.8	12,979.1	-13.6%
Total excluding Aerospace	26,332.0	36,649.6	59,745.6	84,184.7	114,665.0	118,289.6	349.2%
Total GSP / Average Growth	41,356.4	46,832.0	73,906.1	98,157.3	128,936.7	131,268.8	217.4%

Source: Economy.com

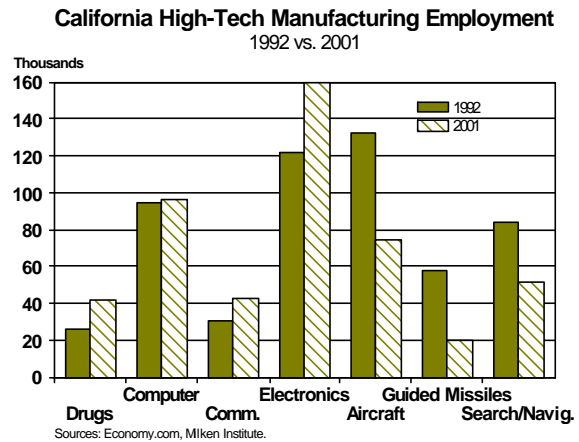
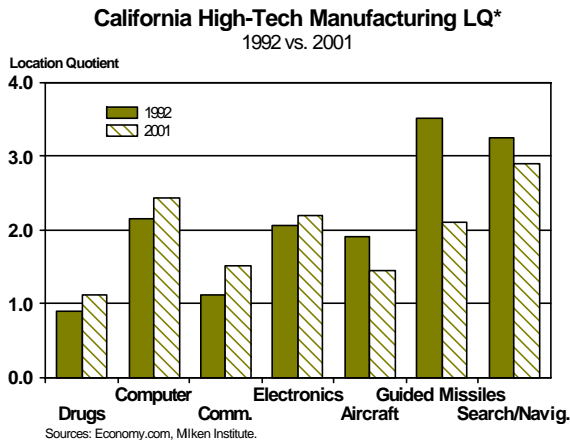


In the early 1990s, the military-related manufacturing sectors of guided missiles and search and navigation equipment have experienced double-digit declines of 31.4 and 26.3 percent respectively. Government defense spending cutbacks alone do not explain why California's manufacturing base in these sectors has been so heavily gutted. Due to the heavy capital investments required by these sectors and the labor-intensive nature of their manufacturing processes, they are especially cost sensitive. It is thus not only the sharp decline in government spending, but also California's relative lack of competitiveness in terms of wage and business costs that have driven so much manufacturing from these industries out of California and into nearby Western states.

High-Tech Manufacturing Employment Levels

Due to losses in the early 1990s, the military-related manufacturing sectors of guided missiles and search and navigation equipment experienced double-digit declines in GSP of 31.4 and 26.3 percent between 1992 and 2001, respectively.

The extraordinary growth experienced by California high-tech manufacturing in terms of GSP was not enough to compensate for an overall decline in employment. This implies rapid growth in productivity, but is largely driven by a shift to higher value-added R&D activities. Although the technology boom of the late 1990s helped rejuvenate employment in some sectors, even accounting for the windfalls generated, total high-tech manufacturing employment experienced a decline of nearly 50,000 jobs, a drop of 7 percent, between the years 1992 and 2001. (If compared to 1991, the loss is doubly great: 100,000 jobs, a 14 percent decline.) Nevertheless, excluding aerospace, which suffered significant job losses in the 90's, high-tech manufacturers created 80,900 jobs in California between 1992 and 2001, an increase of 22 percent.



*The Location Quotient (LQ) equals % employment in CA divided by % employment in the U.S. If the LQ>1.0, the industry is more concentrated in CA than in the U.S. on average.

This contravening trend can be seen as another indication of how compounded costs are squeezing out California's high-tech industrial infrastructure. With labor, land, and other operational expenses higher than that of other parts of the nation, not to mention the world, California's high-tech manufacturers have been paring back, shifting capital- and labor-intensive work elsewhere. This leaves lower-skilled Californians with fewer job opportunities, despite the state's still strong-performing high-tech manufacturing industry.

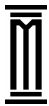
The computer and office equipment manufacturing sector exemplifies the dynamics of the situation. The sector as a whole has enjoyed phenomenal growth in GSP output, which nearly doubled between 1992 and 1998, and then more than doubled again between 1998 and 2000. Despite a GSP that swelled some 330 percent from 1992 to 2001, jobs in this sector increased only 2 percent. (If compared back to 1991, employment in fact has experienced a net decline.)

California

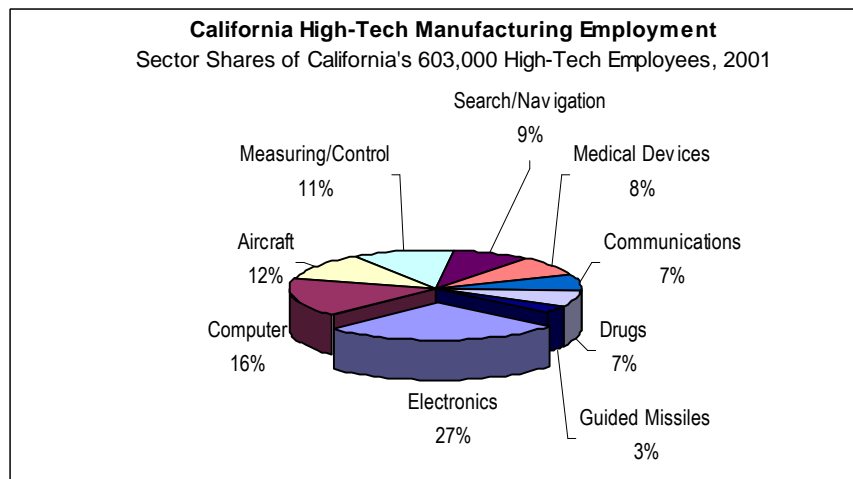
Employment Growth in High-Tech Manufacturing Sectors, 1992 - 2001

Manufacturing Sector	Employment, Thousands						Growth '92-'01
	1992	1995	1998	1999	2000	2001	
Electronics	122.2	128.8	158.8	152.6	163.8	159.3	30.4%
Computer	94.9	85.1	95.4	96.0	96.8	96.7	1.9%
Measuring/Control	62.8	61.2	68.5	62.8	64.4	65.8	4.8%
Medical Devices	40.4	39.2	44.8	46.4	48.8	51.0	26.2%
Communications	30.1	34.8	39.2	40.0	41.8	42.8	42.2%
Drugs	25.8	26.6	33.0	37.4	39.7	41.5	60.9%
Aerospace	273.8	168.7	171.4	161.1	152.4	145.6	-46.8%
Total excluding Aerospace	376.2	375.7	439.7	435.2	455.3	457.1	21.5%
Total Employment	650.0	544.4	611.1	596.3	607.7	602.7	-7.3%

Source: Economy.com



The leading exceptions to the trend of “increasing GSP, declining employment” are the sectors of drugs, communications equipment, and medical instruments, which respectively posted employment growth rates of 60.9 percent, 42.2 percent, and 26.2 percent over the same time horizon. Yet none of these sectors independently employ as many – or even half as many – workers as the computer and office equipment manufacturing sector did at the start of the decade in 1991. These sectors are also benefiting from the early stages of product life cycles that are driving their industries. As these components of California's high-tech economy mature, the intensity of local cost pressures are certain to grow more acute.



Regional Purchase Coefficient

The Regional Purchase Coefficient (RPC) measures the percent of local demand supplied by local production. California's RPC in high-tech manufacturing ranges from 50 to 80 percent (60 percent on average), compared to a national average of 25 percent. The state's high RPC for high-tech is indicative of California's strengths in the electronics and computer and machinery industries. It is in these industries where capital equipment investments are largely filled by local firms. The high-tech RPC is yet another measure of California's leadership in and dependence on localized high-technology manufacturing.

Current Conditions

Total manufacturing employment declined by approximately 5 percent over the past year (May 2001-May 2002). Since May 2000, 115,000 manufacturing jobs in the state have disappeared. The major decliners are electronics (24,000 jobs lost), industrial machinery and equipment (19,000 jobs lost), apparel (19,000 jobs lost), and transportation equipment (15,000 jobs lost). The only sectors to have seen job growth are Food and Kindred Products (2,600 jobs gained), Chemicals (1,100 jobs



gained), and Instruments (900 jobs gained). These increases are vastly overwhelmed by the more than 100,000 jobs lost. Gains in Instruments and related products are probably benefiting from the temporary positive effect of an increase in defense spending.

Current Employment Conditions			
By Manufacturing Industry			
	2001	2002	May 2000- May 2002
Manufacturing Industry	% Change Year Ago	% Change Year Ago	Net Change in Jobs (Ths.)
Lumber and Wood Products	-1.9%	-5.7%	-4.7
Furniture and Fixtures	-4.3%	-5.0%	-5.5
Stone, Clay, and Glass Products	1.6%	-1.6%	0.0
Primary Metal Industries	0.0%	-2.8%	-1.0
Fabricated Metal Products	-0.3%	-5.3%	-7.4
Industrial Machinery and Equipment	0.1%	-8.5%	-18.9
Electronic & Other Electric Equipment	1.7%	-10.5%	-24.0
Transportation Equipment	-5.6%	-4.6%	-15.4
Instruments and Related Products	3.2%	-2.6%	0.9
Miscellaneous Manufacturing Industries	-3.9%	-2.1%	-2.9
Food and Kindred Products	2.2%	-0.8%	2.6
Textile Mill Products	-1.5%	-2.2%	-1.0
Apparel and Other Textile Products	-10.2%	-2.8%	-18.7
Paper and Allied Products	-1.8%	-4.0%	-2.2
Printing and Publishing	-4.1%	-3.1%	-10.7
Chemicals and Allied Products	1.1%	0.2%	1.1
Petroleum and Coal Products	-0.6%	-1.2%	-0.3
Rubber and Misc. Plastics Products	-4.0%	-4.2%	-6.0
Leather and Leather Products	-11.8%	1.7%	-0.7
Total Manufacturing	-1.3%	-4.7%	-114.8

Sources: Bureau of Labor Statistics, WEFA, Milken Institute.

The Relationship between Manufacturing and High-Tech Innovation

The Role of Manufacturing in the Genesis of Silicon Valley

Manufacturing is, and has long been, central to California's leading edge capabilities in high-tech.

Advanced technology first emerged in the state when San Francisco machine shops started producing sophisticated equipment for California mining operations. In the mid 19th century, established East Coast and European equipment manufacturers lacked the technology that would allow miners to access the deep ores lying in the Sierra Nevada. The innovations in hydraulic technology that the San Francisco equipment



manufacturers produced were of such quality that they not only broke open California's rich gold deposits but were soon implemented elsewhere in the nation and eventually around the world.

This initial base in "high-tech" hydraulic equipment manufacturing gave California a distinct comparative advantage at the dawning of the electronics age. By the early 20th century, electricity generation and transmission had emerged as the hot areas for technology research. Local Bay Area engineers and scholars at institutions like the UC Berkeley and Stanford were better positioned to innovate in these promising fields because the hydraulic technologies manufactured in San Francisco were easily converted to the functions of hydroelectric power generation. Stanford's electrical engineering faculty in particular built upon early successes in hydroelectric generation and transmission research. In the process they made their department one of the best endowed in the nation. More importantly for the state, later generations of Stanford faculty entrepreneurs used the university's engineering and science research capabilities to spin off high-tech operations into the region that became known as Silicon Valley.

It was thus the Bay Area's embryonic manufacturing capabilities that provided a springboard for its high-tech economic evolution. Leading edge technologies have migrated: from production of sophisticated mining equipment to electricity generation to the manufacturing of electrical equipment and finally to the creation of electronic-based information technologies (IT) that are the hallmarks of today's Silicon Valley.

The Ongoing Importance of Manufacturing to California's High-tech Capabilities

A common misconception about high-tech enclaves like Silicon Valley is that they have become completely "weightless" entities: i.e., their output is limited to that of ideas, designs, and codes; that physical product manufacturing has become irrelevant to the modern (presumably entirely intellectual) production activities of these regions.

Yet the manufacturing of tangible product remains central to the way Silicon Valley and other high-tech regions work. The single greatest technical innovation to come out of Silicon Valley, the microprocessor (the core computing technology that makes everything from PCs to cell phones possible), was created through manufacturing process improvements. Although mass production has moved beyond the walls of most high-tech product companies, locations like Silicon Valley retain sizable and strategically vital manufacturing infrastructures. For example, the fifth largest firm in Silicon Valley is a dedicated manufacturing services provider: Solectron.⁸

Solectron is not well known to the public at large because it does not make products under its own brand name, but rather builds and ships finished goods under contract from such big-name tech firms as Cisco. Yet despite its relative invisibility, Solectron is

⁸ Solectron's ranking is according to the "Silicon Valley 150" list of companies compiled by the San Jose *Mercury News*, April 15, 2002.



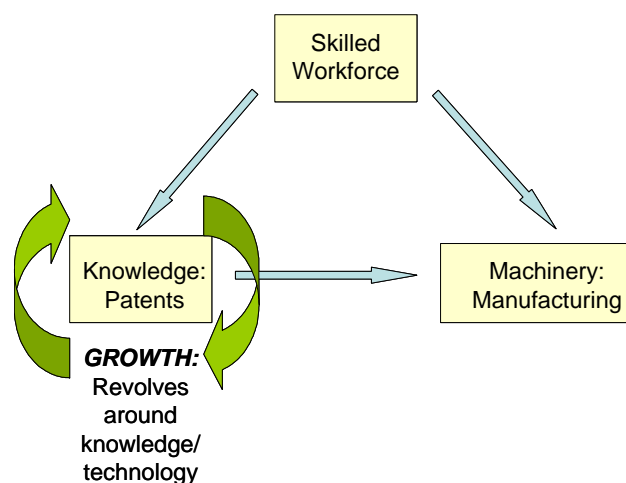
a larger revenue-earner than the famous Silicon Valley icons of Apple Computer, Oracle, JDS Uniphase, and 3Com. While Solectron stands out for its size, it is but one of hundreds of contract manufacturers in the state that, though frequently unrecognized, are critical to the competitiveness of California's high-tech industries.

The contribution of contract manufacturers to the California economy cannot be measured in terms of number of employees and revenues generated alone. Such companies add unique value by using their in-depth knowledge of production processes and front-line exposure to the marketplace to aid with the conceptualization and positioning of branded goods. Solectron, for example, does not simply build product, but works with brand-name high-tech firms in everything from new product designs to the intricacies of global logistics. Because these manufacturers are also responsible for holding component and product stock on consignment for a wide array of client firms, these dedicated manufacturers frequently know in advance how demand and supply curves are changing. Around the peak of the dotcom bubble, Solectron was able to warn other Silicon Valley companies about an imminent downturn in demand, many months ahead of any cautionary information their own state-of-the-art IT-based planning systems were able to provide.⁹

It is exactly these sorts of manufacturing businesses that not only keep California's high-technology product output flowing, but provide the state's tech sectors with heightened flexibility and strategic insight. California's competitiveness in high-tech needs to be recognized as a function of its competitiveness in manufacturing.

Why Manufacturing is an Integral Part of the Capacity to Innovate

The integral nature of manufacturing to economic growth and workforce development has long been a pillar of economic thought. As industries have become more sophisticated with time, however, manufacturing has correspondingly come to play increasingly important roles.



⁹ Scott Thurm, "Even as Rivals Began to Stumble, Cisco Believed Itself to Be Immune," *Wall Street Journal*, 18 April 2001.



In the traditional model, manufacturing was perceived rather simply as a vehicle to output. Skilled minds created the innovations which, along with assistance from skilled hands, were the basis for the ever advancing tools and machinery that produced the goods all people could then consume. In this classical model describing knowledge, innovation and manufacturing, production capabilities are central to economic activity but they are not seen as a driver, that is, a source of innovation and knowledge. The role of manufacturing was deemed essentially passive.

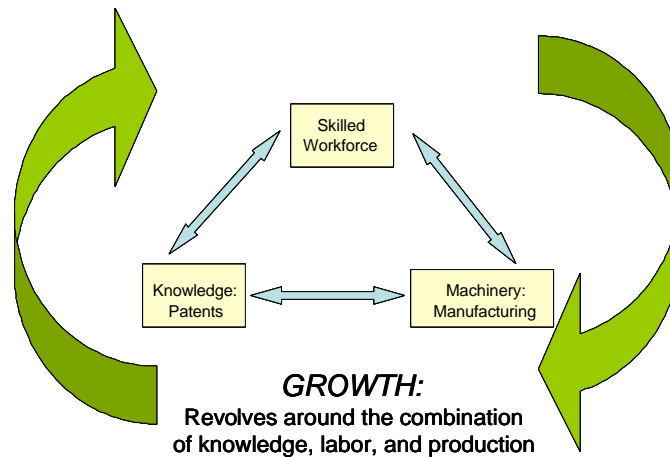
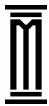
In 1962, a future Nobel laureate in economics, Kenneth Arrow, famously advanced the notion that manufacturing is itself also a source of innovation, or technical change. Arrow specifically declared: "technical change in general can be ascribed to experience, that is the very activity of production ..."¹⁰

In the years since Arrow's reconceptualization, theorists and practitioners alike have come to appreciate that the dynamics described by the traditional model, whereby manufacturing is a passive component of economic activity, no longer hold true, if they ever did at all. In other words, a society cannot simply take manufacturing out of the picture and hope to thrive according to the strengths of accumulated knowledge and a skilled workforce for economic growth does not simply come from "learning," but from "doing." Knowledge, skills and production are mutually supportive. If the goal is to maximize a society's economic potential, then sustainable economic development will not arise from one or two components, but the combination of all three.

Before there was talk of a "New Economy," the regional economist Michael Best proclaimed the dictates of a "New Competition" in a 1989 book by the same name. Best had discovered that the old structures, both in business and society that had been built around top-down hierarchy and rigid segmentation did not work in a world that was driven by globally competitive forces. What people needed, he concluded, were processes of continual innovation and collaboration. The regions that succeeded most were those that creatively interlaced various elements where government and business work together to face challenges to industrial growth.

This line of reasoning demonstrates that combined processes like manufacturing and design will not perform well if designers simply tell factory workers what to make. The New Competition is not one of "one-way streets," but instead interactive learning systems. Front-line factory workers have invaluable knowledge that designers, removed from shop floor activity, cannot acquire on their own, no matter how well educated or intelligent they might be. Economies like California's cannot truly be knowledge-driven if the knowledge its industries possess is only conceptual, and not applied. Without some form of manufacturing base, product innovation will be limited. Those parts of the U.S. and the world that are acquiring the manufacturing capabilities that California keeps relinquishing are thereby strengthening their potential to create the sorts of innovations that once characterized the Golden State.

¹⁰ Kenneth Arrow, "The Economic Implications of Learning by Doing," *The Review of Economic Studies* (29: 3), June 1962, 156.



It is also worth bearing in mind that the interdependence of product design and product manufacturing is one of the reasons why not only finished-product manufacturing (which gravitates towards large-scale operations), but also parts and components manufacturing (which tends towards small-scale, niche producers) is so vital to a vibrantly creative economy. Revolutionary new products often emerge from component innovations. This applies as much to hand tools as it does to advanced technology goods.

The personal computer, which brought about the most recent world-changing product revolution, was sparked by a brilliant but frustrated manufacturing-process scientist at Intel, Federico Faggin. Faggin left behind a promising career at the world's largest manufacturer of semiconductors because he disagreed with senior management's assessment that a semiconductor component known as the microprocessor was only good for cheap calculators. Fortunately for California, in the mid 1970s – unlike Applied Materials experience in 1990 (see page 42) – costs in the state were not driving out new operations (since cost differentials were not as wide in the 70's), and Zilog, the microprocessor manufacturer that Faggin founded, established itself in Silicon Valley. The microprocessor manufacturing that Zilog performed extended a lifeline to Silicon Valley semiconductor manufacturers, who would later find that their existing mainstay product lines had died out by the 1980s. The local availability of microprocessors – the brains of a PC – meant that garage assemblers like Apple Computer were able to establish themselves in the region as well. The birth and impact of companies like Zilog helped make California's knowledge-based economy what it is today. If the next generation of "Zilogs" are compelled to establish themselves somewhere outside California, our knowledge-based economy could be something quite different tomorrow.



Cost of Doing Business

Cost Factors

Until the middle of the 20th century, California was in many regards still a frontier state. As the state was underdeveloped relative to the industrialized East Coast, manufacturers that located to California benefited from a lower cost of doing business. Those days are no more: California today is in the same league as the Eastern states when it comes to fundamental business costs. In categories such as electricity, California now stands out among the crowd as being exceptionally costly. As the accompanying table displays, California is among the highest cost-of-doing-business states in the country and its relative position has deteriorated in recent years.

2001 Cost of Doing Business Survey

	High Cost States				
	Mass.	New York	Connecticut	California	New Jersey
Wage Cost	125.0	128.2	128.5	116.6	123.8
Tax Burden	107.2	101.4	113.7	123.7	91.7
Electricity Cost	146.4	146.8	139.1	193.6	145.8
Industrial Space	224.0	196.8	223.1	140.4	152.3
Office Space	257.7	255.5	161.5	122.2	142.4
Composite Index	141.2	138.8	138.2	132.2	124.5

Source: CB Richard Ellis, Energy Information Administration, Milken Institute.

California's manufacturing sector has higher productivity levels than many other states and can afford to pay wages above the national average. California's wage costs are more than 16 percent above the national average. Productivity is largely tied to the industrial mix and the age of the capital stock. If higher business costs reduce the rate of new investment, the age of the capital stock will rise relative to other states and harm long-term state productivity. New York, New Jersey and Massachusetts are the only states with higher wages than California.

California's tax burden is approaching levels that make it difficult for in-state manufacturers to produce their products at profitable levels given the immense competitive pressures stemming from globalization. Here, we define the tax burden in a broad manner: the ratio of total state and local taxes, personal as well as business-related, to state personal income, relative to the national average of this ratio. We define it broadly because manufacturing firms must examine not only the direct tax burden placed on them, but also on their employees in determining where to allocate their production activities. Why? Because if a state places a high tax burden on labor, manufacturers will need to pay their employees higher wages in the state to offset some of the higher tax burden.



Historical Tax Burden Cost Index
1991-2001

States	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
High Cost States											
California	109.3	111.0	109.5	106.4	107.1	111.1	111.8	113.5	112.9	118.1	123.7
Connecticut	92.0	104.9	109.0	107.9	111.2	111.9	109.3	117.5	115.0	112.9	113.7
Massachusetts	110.9	107.8	106.5	107.2	105.8	108.0	108.5	110.3	105.2	103.8	107.2
New Jersey	97.0	99.8	96.5	96.2	90.5	91.1	86.4	87.4	91.0	89.4	91.7
New York	106.9	107.3	106.7	109.5	105.7	100.5	98.4	95.6	97.8	97.6	101.4
Western States											
Arizona	116.3	111.8	111.6	108.6	108.6	104.6	103.0	96.1	98.3	96.7	96.4
Colorado	76.0	77.3	74.7	76.3	75.6	75.3	76.0	77.8	73.0	77.7	80.1
Nevada	100.3	98.0	106.5	104.5	106.3	104.4	100.3	96.9	95.8	96.1	93.9
New Mexico	139.7	139.9	141.4	145.1	139.1	143.9	139.0	151.5	143.1	144.4	145.6
Oregon	90.0	92.7	93.5	96.2	93.4	90.0	95.9	91.5	93.2	96.6	93.4
Utah	109.4	108.3	109.5	110.0	111.3	112.5	107.6	115.5	115.3	116.7	114.1
Washington	124.4	122.2	119.8	124.3	122.0	118.7	116.5	113.0	110.1	104.9	103.4

Source: Milken Institute, WEFA.

Compared to other high cost states, California's tax burden has noticeably increased over the past decade. New York, New Jersey, and technology-intensive Massachusetts, have all seen their tax burdens decline. Connecticut, whose tax burden has increased, is still 10 index points below California. California's tax burden is nearly 24 percent above the national average. More specifically, California's corporate tax burden is almost 40 percent above the national average. Massachusetts and New Jersey are the only states with a corporate tax burden higher than California – 50 and 42 percent, respectively, in excess of the national average.

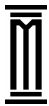
2001 Costs of Doing Business Survey

Western States

	Wage Cost	Tax Burden	Electricity	Industrial (Real Estate)	Office (Real Estate)	Business Cost Index
California	116.6	123.7	193.6	140.4	122.2	132.2
New Mexico	79.5	145.6	98.5	159.1	89.8	104.0
Colorado	105.1	80.1	82.1	147.7	123.2	101.8
Washington	107.7	103.4	69.4	29.4	162.0	96.0
Nevada	94.4	93.9	98.2	17.3	10.8	83.0
Utah	82.9	114.1	71.9	12.1	101.3	81.3
Arizona	93.1	96.4	106.0	22.5	156.0	91.8
Oregon	93.1	93.4	72.3	20.1	110.4	83.6

Sources: CB Richard Ellis, Energy Information Administration, Milken Institute

California has other business-cost disadvantages relative to other states, as well. Electricity costs have been higher than most states for many years, but the recent electricity crisis – and the subsequent disproportionate rate increases on industrial users – increased its cost even more. With the recent rate increases, electricity costs in California are nearly double the national average and the highest in the contiguous United States. While electricity prices have recently declined for most high cost states,



California's prices moved in the opposite direction. On the other hand, Western states only endured moderate changes in their electricity costs.

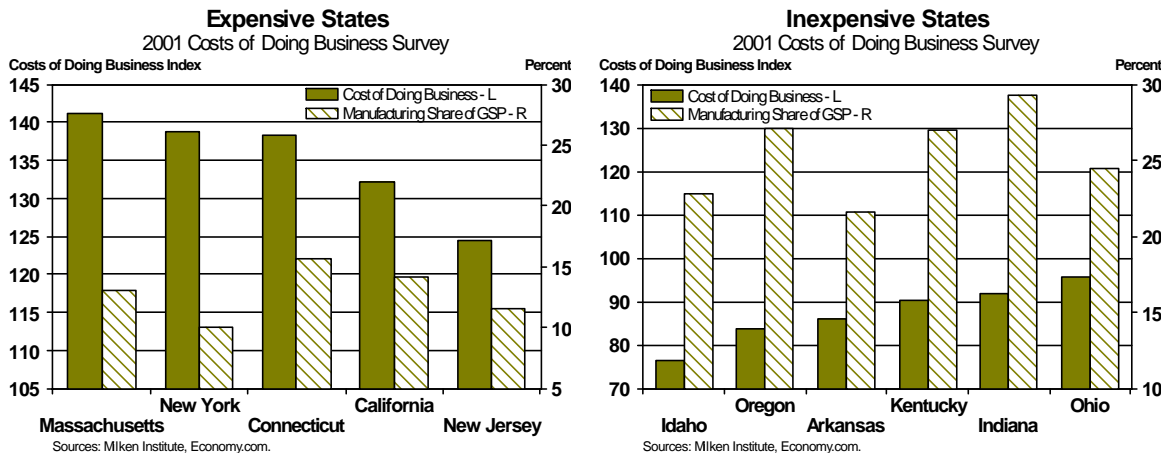
Historical Electricity Cost Index
1991-2001

States	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
High Cost States											
California	134.6	139.6	141.6	139.8	141.5	143.8	138.2	139.3	134.0	140.2	193.6
Connecticut	139.4	142.2	147.2	148.1	147.3	152.4	153.2	153.6	152.8	149.5	139.1
Massachusetts	134.7	141.2	141.6	144.0	144.7	146.9	147.7	153.0	142.3	137.5	146.4
New Jersey	138.2	140.1	139.4	144.2	145.6	151.5	153.1	153.9	150.9	150.0	145.8
New York	142.6	145.0	149.4	154.7	158.0	160.5	162.2	162.5	158.9	156.2	146.8
Western States											
Arizona	118.0	116.3	119.2	118.5	114.8	110.6	109.9	107.7	108.8	108.6	106.0
Colorado	89.6	88.1	88.3	87.3	87.8	88.8	88.2	86.9	88.3	89.3	82.1
Nevada	81.9	83.0	83.4	84.7	92.2	88.5	86.7	81.8	85.5	89.0	98.2
New Mexico	108.1	105.8	104.4	104.3	102.9	98.3	98.5	99.3	100.6	98.8	98.5
Oregon	63.6	63.0	63.2	63.9	66.6	67.8	69.5	67.3	72.7	73.1	72.3
Utah	83.1	80.9	77.7	76.9	77.6	76.9	77.0	75.5	76.6	73.0	71.9
Washington	51.8	49.9	50.3	52.7	58.2	59.5	61.1	59.0	59.8	61.6	69.4

Source: Energy Information Administration, Milken Institute.

Industrial space costs are 40 percent above the national average in California, and, ironically, this is the state's best competitive ranking versus other high-cost states. Office space costs in California are 22 percent above the national average.

A composite cost-of-doing business index was created by applying weights to the above factors. California's composite business costs are 32 percent above the national average. Only Massachusetts, New York, and Connecticut have higher business costs than California at 41 percent, 39 percent, and 38 percent above the national average, respectively. The importance of business costs and taxes to the manufacturing sector is brought into focus when comparing manufacturing's share of gross state product (GSP) in high-cost states to low-cost states clarifies. As the accompanying charts show, manufacturing's share of GSP in low-cost business states averages around 25 percent, while its share is less than 12 percent in high-cost states.



Cost pressures exerted on manufacturers are set to increase even further with proposed legislative changes such as the 2002 worker's compensation benefit increases. The economic and policy consultancy AUS estimates that by 2006, gross output by California manufacturers will have declined \$1.8 billion (fixed 1992\$) because of the expenses brought on by this change in the law. The direct monetary cost to the California economy will be \$4.0 billion with over 14,000 jobs lost as well.

Impacts of High-Cost Factors

Business Flight to Low-Cost Areas

One of the biggest issues regarding California's comparative business cost disadvantages is that the state is encircled by lower cost locations.

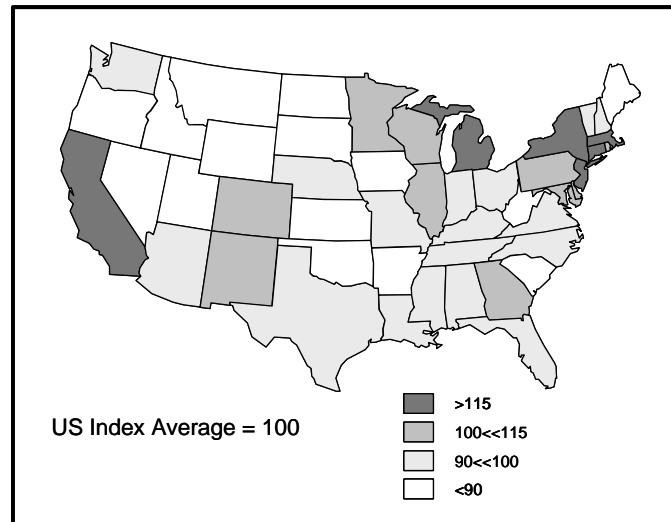
With the reduction of trade barriers brought about by the North American Free Trade Agreement (NAFTA), Mexico is now more tightly integrated with the U.S. economy than ever before. Traditionally, manufacturing functions that set up in the Republic were characterized by being low value-added, the proverbial "sweatshop" brand of manufacturing operation. Mexico's industrial upgrading efforts have resulted in increasingly sophisticated manufacturing and even R&D functions locating to that country, however.

California, which endures a cost of doing business index score of 132.2, is the only state beyond the eastern seaboard to score above 115 in this composite measurement. Apart from making California generally uncompetitive in the U.S., California's cost factors inadvertently confer a distinct competitive advantage to nearby western states with advanced manufacturing capabilities – Arizona, Colorado, Texas, and Washington – in attracting and retaining companies. These locations offer similar capabilities in terms of human resources and increasingly boast the sort of lifestyle advantages that previously seemed unique to California. Moreover, manufacturers specifically interested in accessing California's large business and retail markets can easily do so from these geographically proximate states. Advanced



telecommunications infrastructures and international air transport capabilities, especially enjoyed by states such as Washington and Texas, furthermore mean that California's previous lock-hold as a gateway to the Asia-Pacific and Latin America has also eroded.

Business Cost Levels in the Contiguous U.S.



Source: Milken Institute

Reduced Investment in Manufacturing

The Golden State has been noticeably losing its luster as an attractive location for manufacturing since the early 1990s. An oft-cited cover story from the October 1990 issue of *Forbes* magazine bluntly assessed what was only the beginning of a deteriorating situation:

Fed up with skyrocketing costs, with government interference that can delay projects for years and with costly and in many cases only marginally useful environmental restraints, more and more manufacturers are packing up and leaving California. Those that stay are finding it increasingly difficult to remain competitive.¹¹

The same article also highlighted the poignant case of Santa Clara-based Applied Materials, the largest manufacturer of specialty equipment used by the global semiconductor industry. After deciding to expand by building a new \$100 million, 2,000-employee campus, the company's CEO evaluated half-a-dozen potential sites in California. The location finally chosen, however, was in Texas. California's "excessive" costs combined with lack of cooperation from state and local government were specifically singled out as the negative factors contributing to the decision to

¹¹ Richard Stern and John Taylor, "Is The Golden State Losing It?," *Forbes*, 29 October 1990/



locate the facility out of state. The location decision had particularly bitter ironies, not the least of which was that the CEO who made the decision, James Morgan, was the husband of then state senator Becky Morgan. The obvious political interests in having Applied Materials expand within California were greater than those that would apply to most manufacturers, but even such emotive pull was not enough to outweigh larger bottom-line issues.

Incidents like those regarding Applied Material's expansion decision would not be a particular cause for concern if the state's cost climate had significantly improved since California's economic woes of the early 1990s. Unfortunately, costs have not improved and in many categories, such as electricity already mentioned, the state's lack of competitiveness has only grown more acute. Other Western states, cognizant of how growing cost pressures translate into greater opportunities to lure business away from California, have not been complacent.

In the decade 1990-2000, key nearby states (Arizona, Colorado, Nevada, Oregon, Texas, Washington, Wyoming), have lowered their tax burden an average of 7.8 percent. California, conversely, has seen nearly a 4 percent *increase* in its tax burden. Arizona, Colorado, and Texas – states that actively compete to attract California industrial mainstays like high-tech – have actually implemented tax decreases larger than the average, incentivizing companies by lowering taxes 10.7 percent, 8.6 percent, and 8.5 percent respectively.

Change in Tax Burden Index Western States, 1990-2000

State	Percent
Arizona	-10.7
Wyoming	-10.5
Colorado	-8.6
Texas	-8.5
Oregon	-6
Washington	-5.4
Nevada	-4.8
California	3.8

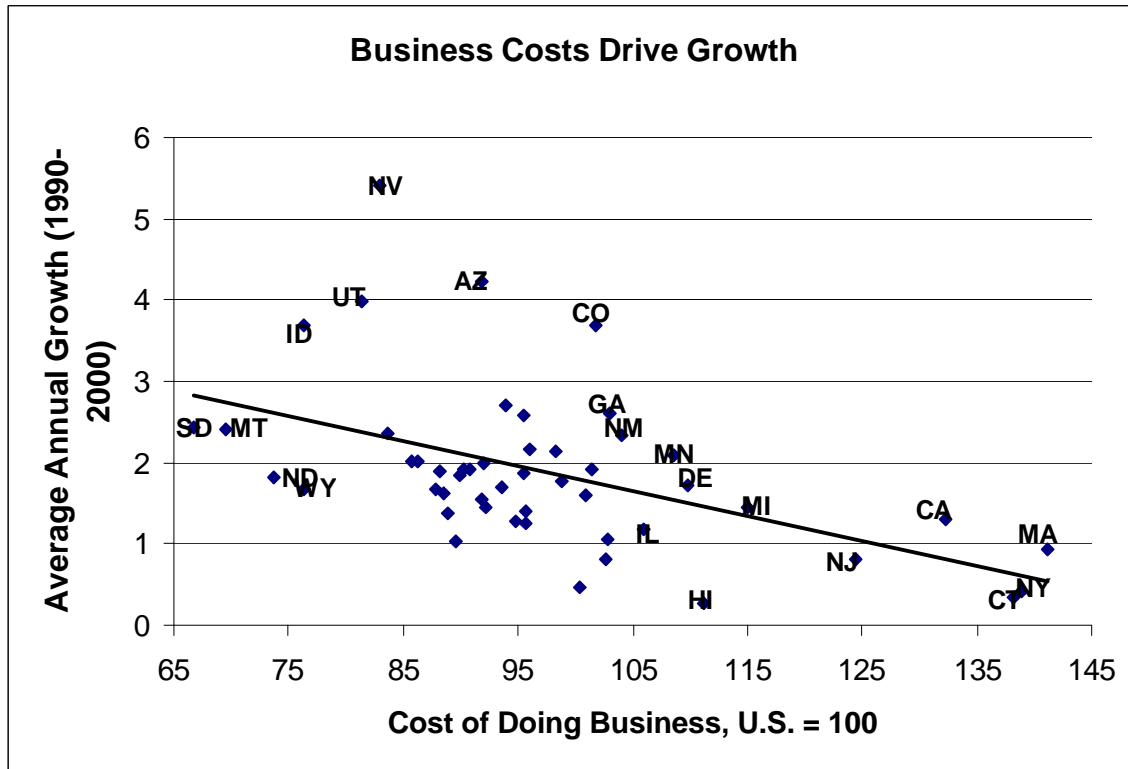
Source: Economy.com

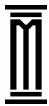
Declining Job Growth

There are limits to California's ability to attract or even retain manufacturing production facilities in the state. California has many comparative disadvantages in tax and business-cost areas. California's composite cost of doing business index is 32 percent above the national average, slightly behind the three most expensive states, Massachusetts, New York, and Connecticut. The scatter diagram below displays the close historical relationship between relative business costs and job growth for states over the past 10 years. The vertical axis shows the differential in job growth for states.



The horizontal axis shows the relative cost of doing business measure by state in 2001. If the index value is 120, then that state's cost-of-doing business was 20 percent higher than the national average. The graph displays that those states with a low cost of doing business, on average, had greater job growth.





Public Policy Impacts on Manufacturing

Introduction

Manufacturing firms throughout the country – and the climate in which they operate – are directly impacted by state legislation, regulation, and policy. Policies that restrict manufacturing operations have indirect cost impacts as damaging as the direct costs outlined in this report. As the nation's largest companies outsource more and more of their production,¹² policies that promote manufacturing are vital to the economy. Policy makers should adopt new legislation and regulations to reduce costs and provide incentives for manufacturers.

Policymakers should attend to three primary factors affecting California's ability to attract and retain manufacturers in the state:

- the perception that California is not a business friendly state;
- the impact of overly restrictive regulations and high costs on manufacturers;
- the value of incentives to overcome negative impacts of restrictive regulations and high costs

Business Climate Perception

California's ability to attract and maintain manufacturing is hampered by a negative perception of our business climate. Findings by the Beacon Hill Institute, reported in its *State Competitiveness Report 2001*, underscore the generally negative perception that business leaders have of California state policies and regulations. Compared to other states, California business leaders more firmly believe that California regulations place our state at a competitive disadvantage. As the Institute summarized the findings of its opinion survey:

California achieves ... an unusual spread of good and bad performances in the sub-indexes. It performs well in the infrastructure and finance as respondents feel that the state has good rail, air and port transportation facilities and that venture capital and credit are readily obtainable. However, California simultaneously performs poorly in government and fiscal policy ... and in institutions and security, openness and domestic competition ... Most notably, government regulations are seen as hindering competitiveness.¹³

¹² Bailey, Jeff. "Cuts Set in Consulting Funds for Small Manufacturers," *The Wall Street Journal*, March 26, 2002.

¹³ Beacon Hill Institute, *State Competitiveness Report 2001*, p. 21.



Opinion Index
California, 2001

Sub-Index	Index Out of 10
Government and fiscal policy	4.02
Institutions and security	3.98
Infrastructure	6.44
Human resources	4.64
Technology	5.65
Finance	6.45
Openness to trade	3.93
In-state competition	3.87
Environmental policy	4.34

Source: Beacon Hill Institute

In general, the opinion survey measures the perceived unfriendliness of the state to businesses. In that the survey tabulates responses from decision-makers in business and society, its negative indicators are cause to worry. Only in the areas of infrastructure, technology, and finance does California score above the median. With government and fiscal policy scoring at the bottom, it is clear that action is needed to change the perception that California lacks a business-friendly regulatory environment.

Specific Public Policy Impacts

Environmental

California has a well-deserved reputation for a strong regulatory regime that seeks to promote the welfare of state residents, especially in the area of environmental protection. Not surprisingly, the Beacon Hill Institute's latest State Competitiveness Report indicates that California opinion leaders lead the nation in believing that pollution regulations in our state are among the most stringent in the U.S.¹⁴ Yet, however well intentioned some legislation might be, it often comes about that protective policies adversely impact, if not unduly burden, California manufacturers.

California's environmental laws are frequently cited by manufacturers as an additional burden that ultimately drives up the overall cost of production. One firm, Chino-based Bandaq, Inc. is closing after nearly 30 years of operation for this very reason.

Plant owner Nate Derby stated:

It costs a lot of money to do business here, and there are a lot of environmental laws. I'm not saying they're all bad, but the laws are more stringent here than they are in other parts of the country.¹⁵

¹⁴ Beacon Hill Institute, "State Competitiveness Report 2001," p. 103

¹⁵ Ascenzi, Joseph. "Tire Retreading Plant to Close Due to High Cost of Business," *The Business Press* (Ontario, California), March 25, 2002.



California environmental legislation is vast and complicated. Understanding how it directly impacts manufacturing is difficult to ascertain, yet, the financial burden imposed upon manufacturers in the form of taxes and penalties directly impacts manufacturers' ability to do business within the state. California legislators and stakeholders should revisit the issue of environmental regulation as it affects the high-cost of manufacturing, and work toward a common understanding to prevent firms such as Bandaq from shutting down operations.

Burdens of Compliance

New legislation continues to add costs to key manufacturing sectors. A recent case in point comes from two bills, SB 1619 and SB 1523, which aim "to address the growing crisis of discarded and often toxic electronic waste."¹⁶ The intent of the bills – to eliminate hazardous discharge from improperly disposed electronic equipment – is laudable. But legislating that electronics manufacturers carry the burden for disposing of already sold goods not only misappropriates responsibility for personal property, it further increases the cost of doing business for California's largest manufacturing export sector. With the cost of "e-waste" disposal estimated to exceed \$500 million, the financial burden to California's electronics manufacturers, who must compete in exceptionally price-sensitive markets, will not be slight. The more such layers of cost are imposed upon manufacturing sectors, the greater the impetus for these engines of the state economy to leave California behind.

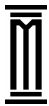
Costs and confusion over legislation can be especially hard-felt among emerging new enterprises which, like foreign manufacturers, lack familiarity with state regulations. In particular, as small manufacturers they are sharply limited in their ability to allocate the resources necessary to ensure compliance. Groups such as the American Electronics Association fault California's environmental protection statutes for "inconsistencies with federal law" that unnecessarily add to "the administrative costs of compliance."¹⁷ The issue, yet again, are not so much with the goals of legislation, but the way regulations are designed and implemented. To keep California's manufacturing base replenished with new-growth enterprises, some means to offset the myriad cost factors that are impacting small manufacturers is in order.

Regulations and Globalization

California's regulations, moreover, can be found to adversely impact a wide variety of manufacturers, irrespective of industry or stage of growth. They make it particularly difficult for less developed regions of the state to attract new business investment, an issue that will only be exacerbated as trade deregulation, such as that encapsulated in the WTO, exposes more and more sectors and regions of California's economy to global competition. As a representative of the Sacramento Area Commerce and

¹⁶ Californians Against Waste News Release, "California Legislation to Require Recycling for Hazardous Electronics Waste: Manufacturers Asked to Accept Responsibility for Products," February 26, 2002.

¹⁷ Business Wire, "American Electronics Association Issues Annual Report Card On the State's Business Climate," March 29, 2000.



Trade Organization remarks: "It's pretty [unusual] to get a company that's outside the U.S. to relocate to Sacramento ... It's a huge commitment by them and a huge project because they have to learn (our) human resources, environmental and tax laws."¹⁸ What foreign manufacturers see as overly prohibitive laws are also scaring away even those with an established presence in the state.

Electricity Deregulation

Finally, the impact of California's new electricity regime deserves consideration. As noted in the previous chapter, electricity prices constitute one of the greatest cost factors for doing business in the state. Milken Institute research indicates that electricity costs in California are nearly double (93 percent above) the national average and are the highest in the contiguous U.S. According to the California Manufacturers & Technology Association, industrial customers in the state have endured rate increases of 80 to 100 percent.¹⁹ This rate of increase is genuinely detrimental to California manufacturers and the economy they support.

AUS Consultants estimate that when costs rise at the 100 percent level, important California manufacturing sectors such as electrical equipment and machinery and computers lose upwards of \$1.3 - \$1.4 billion in total output over four years. In the same time period, the state's durable and non-durable goods manufacturers are predicted each to lose \$4.5 and \$3.2 billion worth of gross output respectively.²⁰ For the overall economy, this will equate to nearly 34,000 cumulative jobs lost and almost \$18 billion in lost revenues and output.

Impact of 100% Increase in Electricity Prices

California, 2001-2004

Variable	2001	2002	2003	2004	Total
Employment, Cumulative (Ths.)	-7.33	-17.09	-27.76	-34.14	
GSP (Bil. 92\$)	-\$0.47	-\$1.14	-\$1.92	-\$2.46	-\$5.99
Real Disp Pers Inc (Bil 92\$)	-\$0.24	-\$0.56	-\$0.92	-\$1.13	-\$2.85
Output (Bil 92\$)	-\$0.98	-\$2.43	-\$4.14	-\$5.34	-\$12.90

Sources: AUS Consultants.

Public Policy Solutions

R&D Incentives

Although California offers incentives such as R&D tax credits and manufacturers enhancement areas, they pale compared to the number of incentives that some other states have to offer. One would think that the fifth largest economy in the world would offer the most incentives in the nation. States such as Washington and Arizona offer a

¹⁸ Cathleen Ferraro, "Capital Plant for Taiwan Company," Sacramento Bee, April 13, 2002: D2.

¹⁹ California Manufacturers & Technology Association, "Turning California Around," http://www.cmta.net/turningcalifornia_around/electricitycosts.php.

²⁰ AUS Consultants, "California Electricity Prices: An Economic Impact Analysis," April 2002, pp 23-4.



machinery and equipment sales-tax exemption, while California does not. Although California and Arizona both offer R&D tax credits, Arizona also offers a R&D equipment sales and use tax exemption. In addition to offering similar incentives like industrial revenue bonds, R&D tax credits, and enterprise zones, nearby New Mexico has far more attractive perks than California. New Mexico offers a wide variety of tax credits, such as one for rural and technology related jobs, as well as an industrial development training package. For a full list of all business incentives by state, refer to Appendix II.

Tax Credits

Tax credits are the types of incentives needed and that should be promoted state-wide. The California sales and use tax credit is already in force to attract and retain firms. The credit is worth as much as 8 percent of the value of certain equipment, which includes everything from manufacturing machinery to computers and software. Another incentive, relating to California's enterprise zones, offers a tax credit for hiring workers who live in enterprise zones or meet other eligibility requirements. The credit is worth almost \$9,000 per employee in the first year and about \$30,000 over five years.

Targeting At-risk Businesses

California legislators should examine plans implemented by other states such as New York, Texas, and Washington in targeting at-risk businesses.

New York: New York implemented policies several years ago to keep manufacturing firms from leaving the state for lack of government support. The state has seen steady improvement as a result of the changes promoted by those policies.

Don Schjeldahl, consultant with the Austin Company, observed:

A decade ago, when companies were leaving the region left and right, the governments did not seem to care. Now, state and local authorities are bending over backwards to help local companies grow, and to recruit new industry. Look at 2000's \$2.5 billion IBM project in East Fishkill, New York, as an example of government's aggressively trying to persuade a company not to leave the state.²¹

In the case of IBM's move to East Fishkill, all stakeholders – legislators, regulators, policy makers, and manufacturers – adopted a unified position and voiced their concerns as one, something that had not occurred until that time. IBM's long history in the area gave it great influence in the state government and ultimately, this cooperation resulted in a \$2.5 billion investment that would have gone elsewhere.

Texas: Similarly, another state that implemented policies and incentives for manufacturing firms is Texas, which ranks second only to California with respect to

²¹ Talley-Seijn, Margaret. "Image Overhaul in Mid-Atlantic," *Cahners Business Information*, December 1, 2001.



the total number of manufacturing jobs. From 1990 to 1998, Texas led the nation in manufacturing jobs created, with electronics and computer-related manufacturing (including construction manufacturing that is related to high-tech) leading the charge, adding 72,000 jobs from 1992 to 1998.²²

The tech-bubble's burst and September 11, negatively affected the Texas economy, yet despite this, metros such as Dallas weathered well as compared to other tech-centered cities.

Bernard Weinstein, director of the Center for Economic Development and Research, notes that Dallas is as attractive as ever.

You've got the big players (Fortune 500 companies), the human capital, the networks needed by high-tech manufacturing, and the transportation infrastructure. And compared with other high-tech areas like Northern Virginia, Silicon Valley, and Silicon Alley, the cost of doing business in Texas is very competitive.²³

Cost of Doing Business Index

California vs. Texas, 2001

	California	Texas
Wage Cost	116.6	98.9
Industrial	140.4	92.6
Electricity	193.6	94.7
Tax Burden	123.7	74.7
Business Cost	132.2	94.0

Source: Milken Institute

Indeed, a low cost of doing business has helped Texas prosper through the high-tech slump. It is vital for California to learn from this experience. A positive, working relationship between the stakeholders, legislators, and regulators is key.

Washington: California can draw from Washington State for lessons learned. Washington's manufacturing firms now benefit from manufacturing and equipment (M&E) sales-tax exemptions. First implemented in 1995, it is estimated that the tax resulted in \$1.8 billion in new investments by manufacturers during the first three years it was in effect. During that same period, manufacturing companies statewide created some 58,000 new jobs.

²² Talley-Seijn, Margaret. "Texas: Diversity Keeps Economy Strong," *Cahners Business Information*, October 1, 2001.

²³ *Ibid.*



Don Brunell, president of the Olympia-based Association of Washington Businesses remarked:

We know for certain that in 1995, when the M&E sales tax exemption was delayed, at least one high-tech manufacturing company in Vancouver (Washington) nearly moved an investment of more than \$1 billion to Oregon. We can't assume that just because Boeing has large facilities in Everett, Kent, Renton, or Seattle that additions or new investments will be made automatically in those locations. If we assume that, we will lose companies.²⁴

With California searching for ways to help retain and attract manufacturing firms and increase the associated number of jobs, an M&E sales tax exemption makes sense. Despite its relative strengths, California has many comparative disadvantages, the primary ones being its high cost of doing business and high tax rates. As highlighted in this section, these two disadvantages, if left unchecked, will continue to drive business and jobs away from the state.

Sales Tax Exemption on M&E

In February 2001, Assembly Bill 278 was introduced to help California create an M&E sales tax exemption that would especially benefit manufacturing firms in the high-tech sector, such as telecom equipment. According to the Legislative Analyst's Office (LAO), supporters of the bill indicate that most other states provide more generous tax initiatives for manufacturing equipment purchases. As a result California businesses are at a competitive disadvantage. The bill calls for increasing the manufacturing tax credit from 6 percent to 7 percent, which would partially offset these disadvantages.²⁵

Broad-based Support for Manufacturers

Critically, all fields of business – even those deemed “low-tech” – are increasingly dependent on technology. Today most machine shops, and even garment firms, use computer technology to retain their competitive advantage. As economist David Friedman pointed out in his “New Economy” report in 1992, traditional industries rely heavily on the use of technology to grow and compete. Similarly “high-tech” industries, such as environmental controls and computer applications, depend heavily on traditional manufacturing as customers and places to test new technologies.

Further, all manufacturing sectors in California require strong linkages to global economies. Whether they are food processors, surfwear manufacturers or developers of the latest digital or biotechnology products, California firms need a powerful outreach to foreign markets. Exports, for example, accounted for 27.6 percent of California's value in manufacturing shipments in 1997 compared to less than 20 percent nationally.²⁶

²⁴ “In 2002 Legislature... Shortfall Looms Over Session,” *Journal of Business*, December 19, 2001.

²⁵ “AB 278 Bill Analysis,” California Senate Revenue & Taxation Committee, June 14, 2001.

²⁶ Rhode, Paul. “The Evolution of California Manufacturing,” Public Policy Institute of California, 2001, p.59

*Small Business Report*

There is also a critical need for the state to foster a good climate for small, entrepreneurial firms, which increasingly dominate the state's industrial base. Even through the recession of the early 1990s, the number of small establishments remained remarkably stable.²⁷ The average number of workers per establishment is 24.1, down from 32.7 thirty years ago. California manufacturing has, if anything, become increasingly small-firm dominated, indeed far more than the national average.²⁸

One benefit from such relationships is the stimulus for investment in capital equipment, which in turn benefits smaller manufacturing companies, especially those that are capital-intensive.

Fred Crowley, an economist with the University of Colorado at Colorado Springs says:

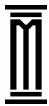
If you put all the small businesses together, they're potentially saving an enormous amount on taxes for the next few years. That should increase profitability and add tremendously to productivity.²⁹

It is also important to bear in mind that by supporting small manufacturers, large manufacturers as well as other sectors all benefit. The state's small- and large- scale manufacturing operations are tightly connected in a highly integrated supply chain, one that extends well into the service-side of California's diverse economy.

²⁷ Ibid., p.12

²⁸ Ibid., p.71

²⁹ Walsh, Chris. "High-Tech, Small Firms in Colorado to Benefit from Economic Stimulus Law," *The Gazette* (Colorado Springs, Colorado), March 18, 2002.



Appendix I: Metropolitan Area Assessments

Manufacturing in California's Six Major Metropolitan Areas

California's major metropolitan areas – San Diego, Orange County, Los Angeles, San Jose, San Francisco, Oakland – depend upon manufacturing in a variety of ways. The vital role played by manufacturing makes the unusually high-costs that are compelling manufacturers to abandon California's major metros all the more worrisome.

Manufacturers sustain the urban core of large cities like Los Angeles, San Francisco, and Oakland. They keep a broad spectrum of jobs available to residents of the inner cities and ensure that people are also drawn into urban industrial areas from outside, preventing a hollowing out of these cityscapes. Manufacturing also preserves the unique economic character of the cities. From aerospace to fashion design, high-end industrial activity is supported by multiple layers of primary, secondary, and tertiary production activities. Aircraft engineering is supported by aircraft assembly; aircraft assembly in turn is supported by specialized parts production. Parts production is supported by component production and so on. Fashion design flourishes where new ideas can be tested by turning textiles into garments. In short, manufacturing and knowledge-intensive economic activity thrive in a symbiotic relationship.

The importance of manufacturing is further underscored by the high-technology activity that distinguishes metros like San Diego, Orange County, and San Jose. Manufacturing keeps technology firms in tune with the realities of product design and market demand. Production activity is not only a means to an end but actually a vital component of the industrial growth dynamic. Manufacturing helps drive technological progress, it is part of the knowledge-generation process that underpins innovation. High-tech districts such as Silicon Valley moreover, are interconnected by contract manufacturing and prototype production operations that offer aggregate output capacity and product development work. Such contracted manufacturing activities free up the resources of technology firms to specialize upon core competencies in areas such as design and marketing. They also offer valuable product insights and market intelligence. Revolutionary technologies frequently spring from manufacturing processes. Other states in the U.S. and throughout the world that court California high-tech manufacturing operations are hoping to pave the way to eventually acquire the R&D activities that are linked to manufacturing.

San Diego

Having emerged from an economy once dependent upon military spending and aerospace contracts, San Diego transformed into a region where a broad array of technological industries have taken root and flourished. Manufacturing in

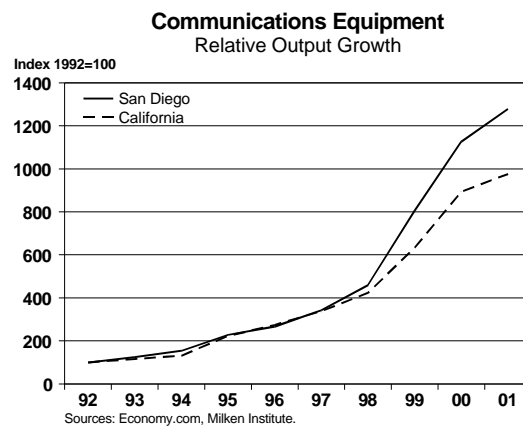
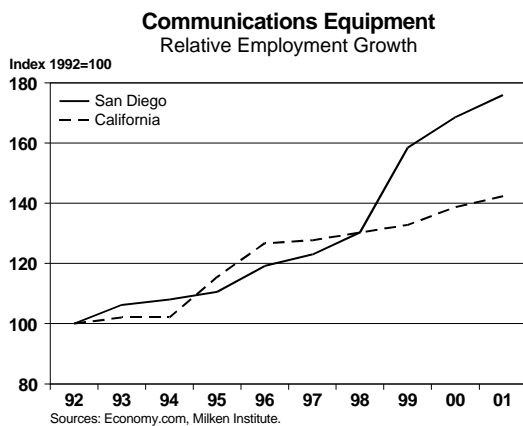


communications equipment, pharmaceuticals (drugs), and household audio and video equipment are three industries that have expanded their employment bases since 1992.

San Diego's research and development, high-technology and bioscience companies have allowed for the city of 2.8 million people to become a hotbed of entrepreneurial activity. One such example is the growth in biotechnology. From the creation of the first company in 1978, the biotech industry has grown dramatically. With more than 400 biotech companies, employing over 23,000 people, San Diego is one of the fastest growing biotech regions and has more biotech companies than any other city in the country. Indeed, within this industry, pharmaceutical (drugs) manufacturing employment has grown 49 percent since 1992, employing some 2,830 in 2001.

All of this activity has attracted investment capital from venture capitalists and commercial opportunities with large pharmaceutical companies. World renowned research institutions including The Scripps Research Institute, Salk Institute, and the University of California, San Diego, are some of the primary catalysts responsible for moving the region to the number one position in the U.S. in the biotechnology sector.

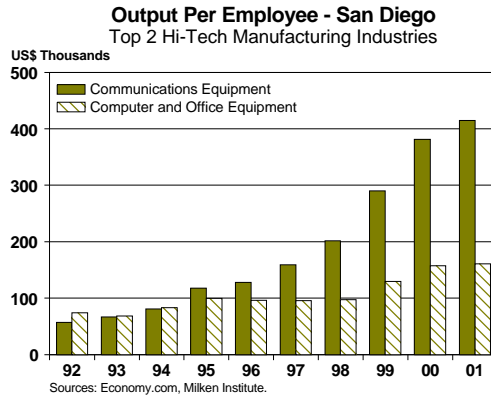
A rich history in telecommunications technology in San Diego has spawned the country's largest concentration of communications companies. Between 1996 and 2001 alone, manufacturing employment in communications equipment grew 47.5 percent, employing a total of 6,150 in 2001. The addition of these new jobs showed relative output growth (compared with California) increase at an impressive level.



Between 1992 and 2001, output per employee in communications equipment increased from about \$80,000 to a little over \$400,000. This success is largely attributed to such companies as Qualcomm and Nokia, which are responsible for



technological breakthroughs such as the Code Division Multiple Access (CDMA), setting the wireless standard for the world.



However, Qualcomm, despite being headquartered in San Diego, has all but abandoned its manufacturing presence, choosing to move it out of the country altogether. This decision is attributed to the region's high cost of doing business, particularly the costs of energy and rent, coupled with high state and local tax rates. In 2001, economy.com's annual Cost of Doing Business Index scored San Diego 106.7, 6.7 percent above the national average. Energy costs, states and local taxes, and office rent were ranked 3.4 percent, 3.2 percent, and 4.5 percent, respectively, above the national average.

The more than 32,500 persons employed in San Diego's electronics sector are responsible for the developing and manufacturing of a variety of products ranging from televisions to semiconductors. One sector, household audio and video equipment manufacturing employment, grew an impressive 49.4 percent between 1996 and 2001. Currently, this industry employs some 5,140. One reason for this growth is that firms such as Sony, General Instruments and Integrated Systems are now operating on the concept of "convergence," which links computing, communications and consumer electronics to create a new class of products.

Despite the reduction in defense contracts since the 1990s, the San Diego region has stabilized and repositioned itself. The defense sector employs nearly 19,000 persons, and its outlook appears good as evidenced by the recent relocation of the Space and Naval Warfare Systems Command (SPAWAR) from Washington, D.C. Since its arrival, SPAWAR has awarded \$944 million in contracts to over 100 contractors headquartered, or with field offices, in San Diego.

The San Diego region's ability to seize upon new opportunities in technology has led to its remarkable recovery from severe recession in the early 1990s. During the current state-wide recession begun in 2001, San Diego's repositioned economy has meant it has suffered less than many other metros. Throughout 2002 unemployment



in San Diego County has averaged below four percent whereas the state overall has been averaging around six percent. Yet such positive news should not distract from appreciation of and concern over underlying indicators that are far less encouraging. As the San Diego *Union-Tribune* reported in May 2002:

*Since April 2001, San Diego has lost 2,400 manufacturing jobs, 1,300 transportation or utility jobs and 600 jobs in wholesale operations. The job losses were countered by major increases at restaurants and bars, which added 1,800 workers, and construction, which added 2,200. But those jobs often pay lower than the jobs that have been lost.*³⁰

Note how the greatest job losses for the area have occurred in manufacturing, the highest paying and most economically enriching of the sectors mentioned. San Diego is especially vulnerable to further deterioration of its manufacturing infrastructure because of the area's immediate proximity to low-cost Mexico. The growing number of *maquiladora* production facilities located just across the California-Mexico border is a vivid testament to the extent that costs are deflecting manufacturing operations away from the San Diego metropolitan area.

San Diego Summary
Basic Economic Indicators

INDUSTRY	SIC	1992 EMP (In Thous.)	1996 EMP (In Thous.)	2001 EMP (In Thous.)	2001 GDP (In Millions)	2001 LQ	Emp Growth (92 - 01)	Emp Growth (96 - 01)
1 Electronic Components & Accessories	367	8.6	9.1	8.5	2071.7	0.7	-0.5%	-6.2%
2 Aircraft & Parts	372	11.7	8.9	7.3	655.1	1.2	-37.7%	-17.8%
3 Toys & Sporting Goods	394	2.4	5.5	6.4	553.2	4.9	171.6%	17.1%
4 Communications Equipment	366	3.5	4.2	6.2	2551.3	1.7	76.0%	47.7%
5 Ship & Boat Building & Repairing	373	8.0	5.5	6.1	284.0	7.1	-23.7%	11.2%
6 Computer & Office Equipment	357	5.4	6.1	5.6	1406.9	0.7	3.0%	-9.5%
7 Household Audio & Video Equipment	365	2.7	3.4	5.1	1160.5	3.9	91.1%	49.3%
8 Medical Instruments & Supplies	384	5.2	4.9	4.7	234.4	1.1	-10.1%	-3.9%
9 Engines & Turbines	351	2.2	3.5	4.1	791.7	10.0	85.2%	17.8%
10 Miscellaneous Publishing	274	3.2	3.0	4.1	198.5	5.9	27.1%	35.8%
11 Hats,Caps, & Millinery	235	0.0	0.6	4.0	154.7	43.7	13334.9%	611.8%
12 Measuring & Controlling Devices	382	5.4	3.8	3.7	223.1	0.7	-31.6%	-3.7%
13 Miscellaneous Plastics Products	308	2.7	3.4	3.4	193.0	0.7	28.1%	0.5%
14 Industrial Machinery	359	2.2	2.9	3.3	485.4	0.9	47.2%	13.0%
15 Commercial Printing	275	3.7	3.6	3.3	212.9	0.7	-12.7%	-10.2%
16 Household Furniture	251	0.7	1.7	2.8	57.3	1.0	289.7%	68.4%
17 Drugs	283	1.9	2.5	2.8	393.2	0.8	48.6%	13.8%
18 Search & Navigation Equipment	381	4.2	2.5	2.8	173.1	0.7	-32.2%	13.0%
19 Preserved Fruits & Vegetables	203	1.6	1.5	2.6	131.4	0.8	60.5%	69.8%
20 Electric Lighting & Wiring Equipment	364	0.6	1.1	2.0	378.9	1.0	230.8%	91.3%

Sources: BLS, Economy.com, Milken Institute

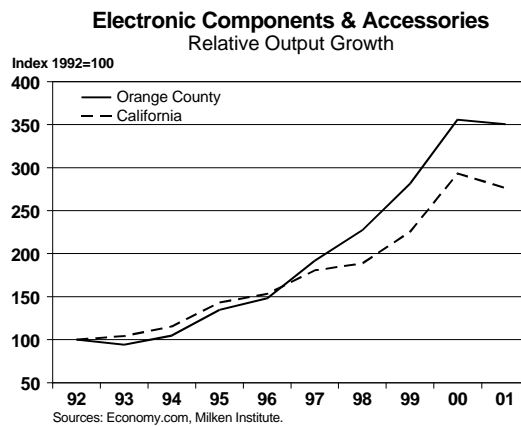
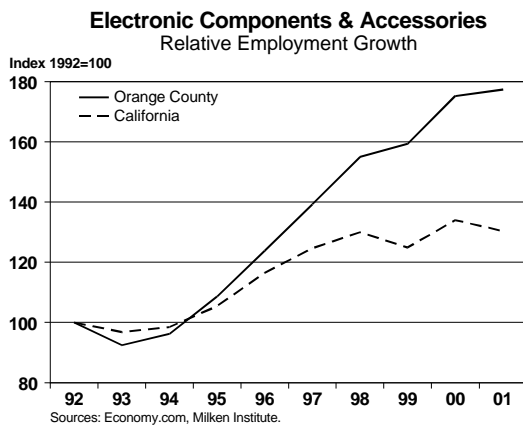
³⁰ Dean Calbreath, "Local Economic Indicators Show Soft Spots Linger," San Diego *Union-Tribune*, May 24, 2002: C-1.



Orange County

A wealth of intelligence, entrepreneurial activity, and business diversity are some of the strengths making Orange County into a national leader in manufacturing. Aviation and aerospace, its foundation industries, led by industry giants Rockwell, Hughes and Boeing, have been central to its business activity. These corporations have served to stimulate the development of numerous independent companies and have attracted others which, in turn, fostered the success seen today in industrial infrastructure. Progress is seen in Lincoln-Mercury's recent relocation of its headquarters to the region from Michigan, a move attributable to its strong business-friendly climate.

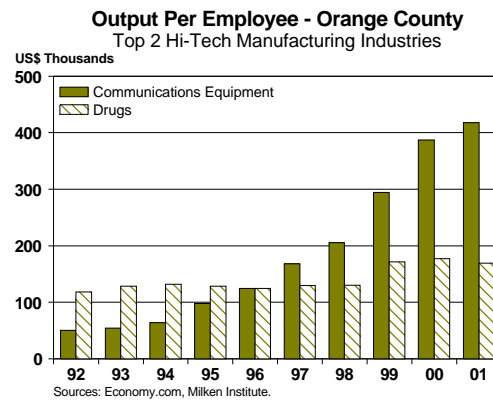
Indeed, these value-added industries help make up the heart of Southern California's Technology Coast and are part of the largest manufacturing area in the United States. The region's high-tech industry alone accounts for approximately 24 percent of its total employment, totaling 7,765 firms and 262,329 jobs.³¹



The electronics and computers industries have made Orange County into the computer memory capital of the world. Additionally, 25 percent of all multimedia firms in the United States are within a 30-mile radius.³² Electronic components and accessories led the way in the high-tech sector's manufacturing employment in the region. That sector grew by 12,250 jobs, from a total of 15,830 in 1992, to 28,080 in 2001. Relative output also showed high growth, as output per employee, like that of San Diego, climbed up over \$400,000 in 2001.

³¹ "Orange County Statistical Abstract," California Technology Trade & Commerce Agency, Fall 2001.

³² *Ibid.*



Aircraft and parts manufacturing employment grew by a respectable 1,190 jobs, from a total of 6,720 in 1992, to 7,910 in 2001.

Orange County is the birthplace of the medical device industry, making medical instruments and supplies manufacturing employment very stable. In 2001, there were 8,660 persons employed in this area, up 2.6 percent since 1996.

Besides value-added industry growth, the region supports a healthy mix of low-skilled manufacturing sectors, including textile finishing (except wool), motor vehicles and equipment, household furniture, and public building and related furniture. Since 1992, these industries have prospered, partly due to the region's well-developed supporting infrastructure. There are over 200 million square feet of industrial and research and development space and 56 million square feet of office space within the region.

From 1992 to 2001, two of the largest "gainers" with regard to low-skilled manufacturing employment were textile finishing (except wool) and public building & related furniture. Textile finishing grew an impressive 3,070 jobs during this period, from a total of 680 in 1992, to 3,750 in 2001. Likewise, public building & related furniture grew by 2,760 jobs over the same period, from a total of just 180 in 1992, to 2,940 by 2001.

However, despite the overall manufacturing growth in Orange County, the region continues to be a high cost location to do business. The 2002 North American Business Cost Review by economy.com ranked Orange County 29th on the Cost of Doing Business Index; 58th on the Unit Labor Cost Index; 22nd on the Energy Index; 105th on the State & Local Tax Index; and 35th on the Office Rent Index.

Lingering weakness in the county's production capabilities is conveyed through the latest data on Orange County's manufacturing sectors compiled by Chapman University. The university's biannual report released in July 2002 was headlined: "County's Manufacturing at a Standstill." Commenting on the report, the Los Angeles *Times* noted that such stagnation is "in contrast to figures showing factory activity



continuing to pick up steam nationwide.” In fact, manufacturing in Orange County “has shed more than 12,000 factory jobs from its pre-recession peak.”³³

The loss of manufacturing jobs in a major metropolitan area like Orange County is especially troubling. The county has traditionally thrived as a magnet for both upper and lower classes and native- and foreign-born Americans to enjoy the sort of suburban lifestyle not available in California's urban centers. Jobs in defense and commercial high-tech manufacturing sectors were once plentiful and made life in Orange County accessible to a wide spectrum of Californians. This aspect of the regional economy was poignantly illustrated during the years that Indochinese refugees poured into Orange County from the mid 1970s to the early 1980s. Many experts predicted that racial strife and a hobbling of the area's economy was inevitable. Instead, the County's defense and technology manufacturing sectors served as shock absorbers that accommodated the influx with employment opportunities, allowing the refugee community to assimilate first economically and then socially within the area.

As manufacturing continues to decline, however, Orange County's accessibility for all Californians diminishes in tandem. The sort of social problems once feared twenty years ago may eventually start to emerge. Despite the county's popularly held image as a haven for upper-class suburbanites, there are poorer county cities with large immigrant populations such as Garden Grove and Santa Ana. In the past these parts of the county have been able to use manufacturing to shepherd the economically disadvantaged into the ranks of the middle class. With manufacturing becoming an ever scarcer economic asset for the region, effective avenues for integration are being cut off.

Orange County Summary
Basic Economic Indicators

INDUSTRY	SIC	1992 EMP (In Thous.)	1996 EMP (In Thous.)	2001 EMP (In Thous.)	2001 GDP (In Millions)	2001 LQ	Emp Growth (92 - 01)	Emp Growth (96 - 01)
1 Electronic Components & Accessories	367	15.8	19.6	28.1	6299.4	1.8	77.4%	43.3%
2 Women's & Misses' Outerwear	233	4.0	7.8	15.0	320.8	1.8	277.6%	92.2%
3 Medical Instruments & Supplies	384	8.5	8.4	8.7	358.8	1.8	1.5%	2.6%
4 Miscellaneous Plastics Products	308	10.8	10.6	8.5	531.5	1.5	-21.7%	-20.2%
5 Search & Navigation Equipment	381	14.6	7.8	7.9	533.8	1.6	-45.7%	1.3%
6 Aircraft & Parts	372	6.7	6.1	7.9	753.8	1.1	17.7%	30.7%
7 Measuring & Controlling Devices	382	8.0	8.5	7.9	472.5	1.3	-1.4%	-7.0%
8 Industrial Machinery	359	6.8	6.8	7.4	1142.2	1.7	8.4%	8.4%
9 Commercial Printing	275	8.4	7.8	7.1	395.3	1.3	-15.5%	-9.1%
10 Computer & Office Equipment	357	13.5	8.6	6.4	1362.5	0.7	-52.7%	-25.3%
11 Guided Missiles, Space Vehicles, Parts	376	11.8	6.6	6.2	432.3	3.3	-47.7%	-7.4%
12 Newspapers	271	4.7	4.6	4.1	267.6	1.0	-11.5%	-9.0%
13 Metal Services	347	3.4	3.6	3.9	172.8	2.0	14.9%	11.0%
14 Drugs	283	5.7	4.8	3.9	662.7	1.0	-31.5%	-18.7%
15 Motor Vehicles & Equipment	371	2.8	3.7	3.9	358.3	1.3	39.5%	6.5%
16 Household Furniture	251	2.6	3.6	3.8	113.1	1.2	49.4%	7.9%
17 Textile Finishing, Except Wool	226	0.7	1.9	3.8	137.6	5.7	451.5%	95.3%
18 Preserved Fruits & Vegetables	203	4.4	4.1	3.6	227.6	0.9	-18.3%	-13.2%
19 Public Building & Related Furniture	253	0.2	1.0	2.9	173.9	10.0	1533.3%	209.5%
20 Metal Forgings & Stampings	346	1.9	2.8	2.9	164.6	2.3	55.0%	5.4%

Sources: BLS, Economy.com, Milken Institute

³³ Marla Dickerson, "Factory Growth in O.C. at a Standstill," Los Angeles Times, July 10, 2002: Part 3, 2.



Los Angeles

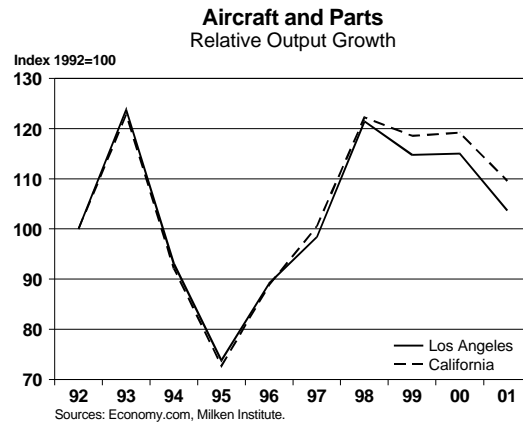
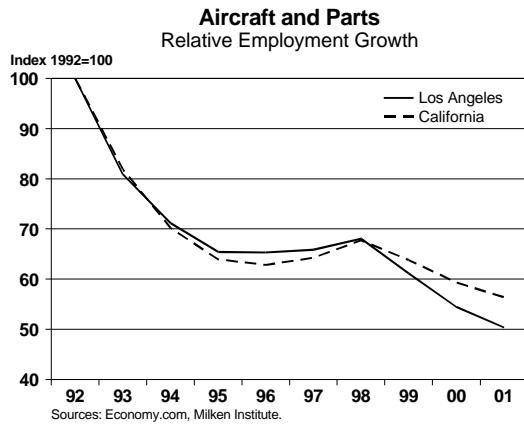
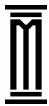
The last five years have seen a major economic restructuring within the Los Angeles region. L.A.'s three-pronged, traditional economy (aerospace, entertainment, and tourism) has evolved into a well-balanced, multifaceted economy with unparalleled access to world markets. The greater Los Angeles area is a diverse region with a population 16 million-strong and 88 unique cities. The region's new business base, comprising 14 key "export" industries, is creative, entrepreneurial and dynamic. Greater Los Angeles is the largest manufacturing center in the United States, has the largest international port complex in North America, is the largest retail market in the country, and has more small businesses than any other region in the U.S.

Metropolitan Los Angeles is comprised of several "sub-regions," all of which contribute and specialize in various manufacturing industries. The Gateway Cities, which include the Ports of Long Beach and Los Angeles, rely heavily upon its manufacturing and distribution components. Leading industries include textiles, and home and lifestyle products. Specifically, both miscellaneous fabricated textile products and the knitting mills industries show positive changes in manufacturing employment since 1992. Miscellaneous fabricated textile products gained 2,270 jobs between 1992 and 2001, while knitting mills increased by 4,780 jobs over the same period.

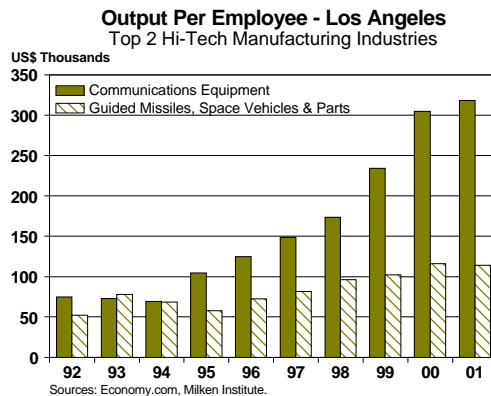
Downtown Los Angeles has also done well in these two industries, since it has traditionally been the center of the region's garment industry. Another related leader is women's and misses' outerwear, responsible for some 65,340 manufacturing jobs in 2001.

Throughout the different sub-regions of Los Angeles, other manufacturing industries, including household furniture, industrial machinery, and electric lighting and wiring equipment thrive with respect to the growth in the number of jobs over the last decade. The leader of the three is household furniture, responsible for creating 4,780 manufacturing jobs since 1992. Industrial machinery, and electric lighting and wiring equipment have created 3,040 and 1,110 manufacturing jobs, respectively.

Some of the value-added manufacturing industries of Los Angeles include aircraft and parts, search and navigation equipment, and electronic components and accessories. Value-added manufacturing is not nearly as large as in other major California MSAs, partially due to the defense cut-backs of the 1990s. This is especially evident in the aircraft and parts industry, which lost 47,340 manufacturing jobs between 1992 and 2001 and continues to see a decline in relative output growth.



However, communications equipment, despite manufacturing job loss, has seen output per employee increase significantly over the past decade, from about \$80,000 in 1992, to almost \$820,000 in 2001. This trend can be attributed to gains in efficiency and productivity, even as cutbacks in jobs were made over the same period.



Although Los Angeles does possess the attributes of a successful urban economy, there have been several shortfalls cited that could impede further growth, especially in manufacturing. The Los Angeles Economic Development Corporation (LAEDC) recently cited several in its annual study, "Manufacturing in the Los Angeles Five-County Area." A shortage of industrial space in the urban core of Los Angeles is becoming quite severe. Older cites, the report notes, can be recycled but environmental issues and the push by cities to put in retail to generate sales tax revenue, interfere.³⁴

According to Jack Kyser, chief economist for the LAEDC:

³⁴ "Manufacturing Still a Key Part of the Los Angeles Five-County Area Economy," Los Angeles Economic Development Corporation, August 9, 2000.



Manufacturing still does matter. Research reveals that people with few skills can readily get jobs in small, local manufacturing firms, and with on-the-job training can move up the income ladder, which speeds up assimilation into the overall economy.³⁵

Los Angeles Summary
Basic Economic Indicators

INDUSTRY	SIC	1992 EMP (In Thous.)	1996 EMP (In Thous.)	2001 EMP (In Thous.)	2001 GDP (In Millions)	2001 LQ	Emp Growth (92 - 01)	Emp Growth (96 - 01)
1 Women's & Misses' Outerwear	233	72.0	78.6	65.3	1870.4	2.8	-9.3%	-16.9%
2 Aircraft & Parts	372	95.4	62.3	48.0	4406.1	2.3	-49.7%	-23.0%
3 Search & Navigation Equipment	381	49.7	34.4	31.8	2685.2	2.2	-36.0%	-7.6%
4 Commercial Printing	275	21.2	19.8	20.8	1219.9	1.3	-1.9%	5.1%
5 Miscellaneous Plastics Products	308	24.1	22.6	20.3	1071.6	1.2	-15.8%	-10.2%
6 Household Furniture	251	14.1	15.6	17.8	530.0	2.0	26.2%	14.1%
7 Industrial Machinery	359	12.6	14.0	15.6	2291.8	1.2	23.8%	11.4%
8 Electronic Components & Accessories	367	17.5	16.9	14.3	2610.9	0.3	-18.3%	-15.4%
9 Misc. Fabricated Textile Products	239	12.0	16.0	14.2	416.9	2.1	18.3%	-11.3%
10 Motor Vehicles & Equipment	371	14.2	13.4	12.0	959.7	1.4	-15.5%	-10.4%
11 Newspapers	271	15.1	12.6	11.2	750.1	0.9	-25.8%	-11.1%
12 Fabricated Structural Metal Products	344	11.9	9.5	10.7	551.8	0.9	-10.1%	12.6%
13 Metal Services	347	9.7	9.4	9.6	356.8	1.7	-1.0%	2.1%
14 Electric Lighting & Wiring Equipment	364	8.4	7.9	9.5	1456.3	1.5	13.1%	20.3%
15 Medical Instruments & Supplies	384	8.7	8.6	9.4	480.7	0.7	8.0%	9.3%
16 Bakery Products	205	9.1	7.9	9.1	621.1	1.4	0.0%	15.2%
17 Misc. Food & Kindred Products	209	11.1	10.1	8.8	491.1	1.5	-20.7%	-12.9%
18 Knitting Mills	225	3.1	6.0	7.9	268.1	2.4	154.8%	31.7%
19 Periodicals	272	5.9	6.3	7.8	689.4	1.8	32.2%	23.8%
20 Scw Machine Products, Bolts, Etc.,	345	6.4	5.7	7.6	469.5	2.2	18.8%	33.3%

Sources: BLS, Economy.com, Milken Institute

³⁵ Ibid.



San Jose

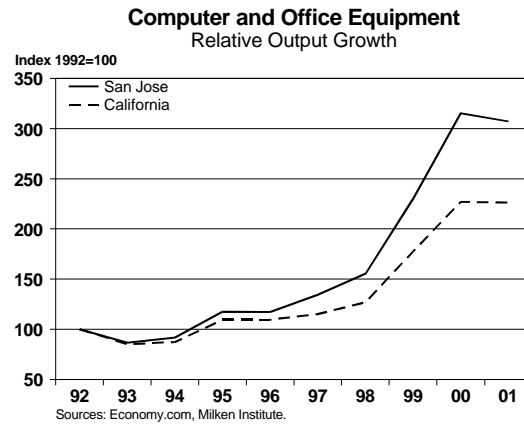
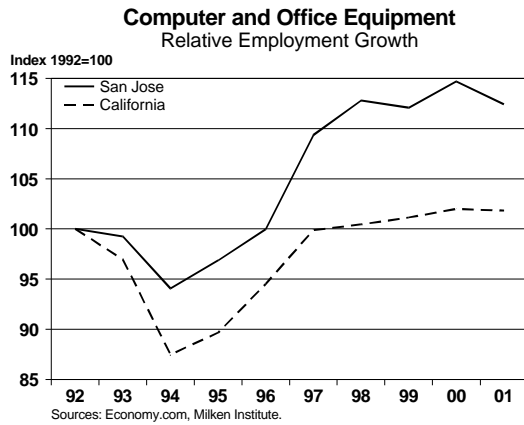
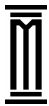
A hotbed of innovation, the San Jose metro area has the highest concentration of technology-oriented firms and professionals in the world, making it the undisputed leader of value-added pioneering technologies. San Jose has a national competitive advantage in productivity and employment concentration in such industries as computers and electronics, telecommunications, multimedia and bioscience, among others. Although largely associated with high-tech, the city also boasts a diverse business profile, including commercial, retail, industrial and professional services.

Vital to the success of the region is its invaluable connection with Stanford University, one of the world class research institutions found near San Jose. The close relationship between the University and the surrounding environs, enhanced by the entrepreneurial vitality of the area, has spawned a number of new firms launched by Stanford students.

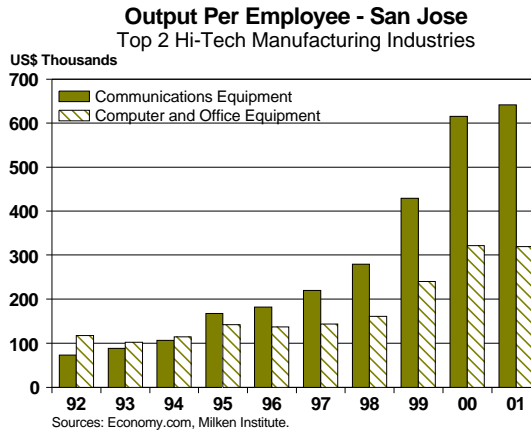
Perhaps the most well-known and relevant are William Hewlett and David Packard. In 1938, with only \$538 in capital, the two Stanford graduates, working in Hewlett's garage, developed the resistance capacity audio oscillator. This revolutionary device led to the establishment of what is now one of the world's largest producers of computers and electronic measuring devices and equipment.

Another strength of the region is found in its export wealth, primarily of information age products. Looking at the export market itself, it is readily apparent that those on the receiving end of such technologies are fast becoming some of the most developed economies in the world. The fastest growing markets for merchandise are Indonesia, Korea, and India, reflecting the surging demand for technological know-how in the growth countries ringing Asia. For many emerging societies, the San Jose-Silicon Valley region is one of the world's most important areas because that is where whole new industries have been created in less than a generation – especially computers, wireless communication, and the Internet.

Value-added manufacturing in the region is dominated by computer and office equipment, electronic components and accessories, and measuring and controlling devices. Firms, such as Hewlett Packard (mentioned in detail above) Sun Microsystems, and Applied Materials have led the way in employment growth since 1992.



Between 1992 and 2001, computer and office equipment grew by 5,920 jobs, from 47,650 to 53,570. Both relative employment growth and relative output growth remained well above the California average during most of the same period.



Both computer and office equipment, and communications equipment saw an increase in output per employee, indicative of an increase in productivity levels. Two other of the region's value-added industries, electronic components and accessories, and measuring and controlling devices, also showed positive gains in manufacturing jobs. Electronic components and accessories grew by 9,070 jobs, from 57,220 in 1992 to 66,629 in 2001. And measuring and controlling manufacturing employment increased by 3,570 jobs, from 24,420 to 27,990.



San Jose Summary
Basic Economic Indicators

INDUSTRY	SIC	1992	1996	2001	2001	2001	Emp	Emp
		EMP	EMP	EMP	GDP			
		(In Thous.)	(In Thous.)	(In Thous.)	(In Millions)		(92 - 01)	(96 - 01)
1 Electronic Components & Accessories	367	57.2	65.0	66.3	23879.6	6.1	15.9%	2.0%
2 Computer & Office Equipment	357	47.7	47.6	53.6	26898.8	8.1	12.4%	12.4%
3 Measuring & Controlling Devices	382	24.4	26.6	28.0	3358.9	6.2	14.6%	5.1%
4 Communications Equipment	366	10.7	17.4	23.9	15344.8	8.2	124.8%	37.7%
5 Special Industry Machinery	355	3.6	8.2	10.0	3947.3	8.1	178.2%	22.2%
6 Medical Instruments & Supplies	384	6.5	7.7	9.7	944.2	2.8	50.7%	26.9%
7 Guided Missiles, Space Vehicles, Part	376	11.2	12.5	9.1	1008.0	6.9	-18.2%	-27.1%
8 Search & Navigation Equipment	381	9.2	7.2	6.3	744.2	1.8	-31.7%	-13.1%
9 Industrial Machinery	359	3.7	5.6	5.1	1346.6	1.6	38.0%	-9.0%
10 Drugs	283	5.9	4.1	4.6	898.9	1.6	-22.3%	12.2%
11 Commercial Printing	275	3.3	4.3	4.2	248.2	1.1	28.0%	-2.8%
12 Fabricated Structural Metal Products	344	2.3	3.2	3.7	195.3	1.2	60.4%	15.0%
13 Metal Services	347	1.8	2.7	3.2	159.8	2.3	82.4%	17.2%
14 Miscellaneous Plastics Products	308	2.4	3.2	2.0	157.2	0.5	-16.9%	-37.0%
15 Misc. Electrical Equipment & Supplies	369	5.0	3.7	1.9	526.0	2.2	-62.1%	-48.9%
16 Preserved Fruits & Vegetables	203	2.4	2.5	1.7	116.8	0.6	-28.2%	-31.1%
17 Newspapers	271	2.6	2.1	1.5	120.6	0.5	-40.4%	-28.0%
18 Paperboard Containers & Boxes	265	1.0	1.1	0.9	73.6	0.7	-9.7%	-12.3%
19 Electric Distribution Equipment	361	1.1	1.0	0.9	251.1	2.5	-13.1%	-4.1%
20 Products Of Purchased Glass	323	0.2	0.7	0.9	55.9	2.0	368.4%	36.9%

Sources: BLS, Economy.com, Milken Institute



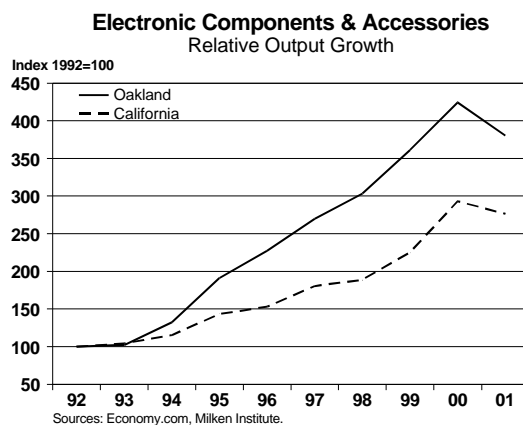
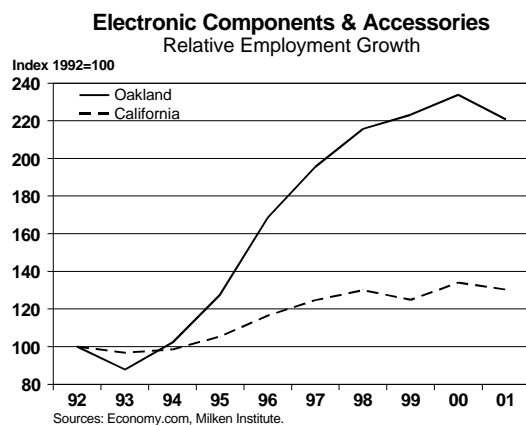
Oakland

Located within the shadow of San Francisco and Silicon Valley is one of the fastest-growing metros in terms of high-technology. Looking for ways to re-establish itself in the 1990s, the city is now home to over 300 high-tech firms.

Such growth is partially attributable to location. Surrounded by the densest concentration of high-technology in the world, the region has become an ideal location for Silicon Valley-headquartered firms to set up satellite operations. The city also supports a high-technology incubator that is home to over 30 growing firms, all under one roof.³⁶

With Oakland quickly expanding, one of the primary issues is space for both firms and their employees. With more high-tech firms moving into the area, vacancy rates have fallen sharply since 1996. Per Geoff Hunt, COO of CloudSource:

The difficulty is not so much space; it's planning for the future. If I could take 20,000 square feet now, I'd be happy now, but my growth projections say I need 60,000 in a year. If the landlord is nice, I only need to sign a five-year lease. That means I have to get out of a four-year lease, or break up my company into two places.³⁷



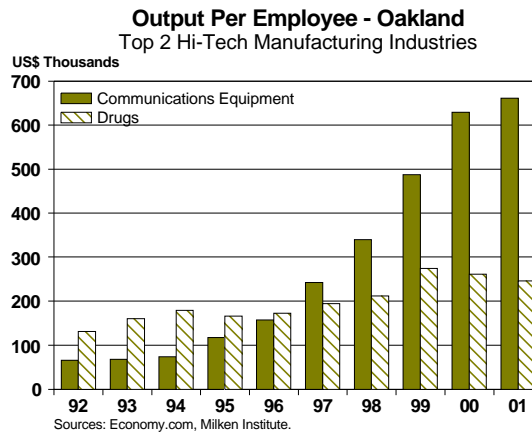
High-technology expansion in Oakland is bolstered by the presence of three national research laboratories, U.C. Berkeley – a world class research university – and the United States' fourth largest port. As a result, several manufacturing industry leaders

³⁶ Kotkin, Joel and DeVol, Ross. "Knowledge-Value Cities in the Digital Age," Milken Institute Research Report, February 13, 2001, p.88.

³⁷ Ibid.



have emerged, including electronic components and accessories, and computer and office equipment. Electronic components and accessories gained some 6,210 manufacturing jobs between 1992 and 2001, as both relative employment growth and relative output stayed above the California average. Computer and office equipment gained 2,130 over the same period.



Oakland's communications equipment and drug manufacturing industries also show signs of strength. Both industries have improved their output per employee, especially since 1997. Most notably, communications equipment has increased from about \$250,000 per employee in 1997, to almost \$650,000 per employee in 2001.

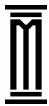
Driven to the region by attractive business-friendly incentives, these value-added industries include companies such as Zhone Technologies, Forte Software, and DoubleTwist, Inc. All have seen their employment only increase over the past several years. However, with the success of these high-tech industries, others upon which Oakland traditionally relied have steadily declined. This is especially the case for petroleum refining, which has experienced an employment growth rate of -26.1 percent since 1992.



Oakland Summary
Basic Economic Indicators

INDUSTRY	SIC	1992 EMP (In Thous.)	1996 EMP (In Thous.)	2001 EMP (In Thous.)	2001 GDP (In Millions)	2001 LQ	Emp Growth (92 - 01)	Emp Growth (96 - 01)
1 Electronic Components & Accessories	367	5.1	8.7	11.4	2441.0	1.0	120.8%	30.9%
2 Computer & Office Equipment	357	5.6	4.3	7.7	2063.4	1.1	38.4%	79.9%
3 Petroleum Refining	291	9.1	6.9	6.7	3083.0	7.0	-26.1%	-2.3%
4 Commercial Printing	275	3.9	4.8	4.9	306.8	1.2	25.3%	0.8%
5 Bakery Products	205	3.3	3.9	4.4	359.8	2.5	32.1%	13.1%
6 Industrial Machinery	359	2.5	4.0	4.3	825.7	1.3	73.2%	7.8%
7 Drugs	283	3.1	3.4	3.9	955.6	1.3	23.6%	14.5%
8 Motor Vehicles & Equipment	371	5.7	5.6	3.8	723.3	1.7	-33.7%	-33.3%
9 Measuring & Controlling Devices	382	3.4	4.2	3.7	221.4	0.8	8.2%	-11.0%
10 Special Industry Machinery	355	1.3	2.7	3.5	589.2	2.8	172.3%	31.1%
11 Medical Instruments & Supplies	384	2.6	2.1	3.3	297.4	0.9	28.2%	57.3%
12 Miscellaneous Plastics Products	308	2.4	2.9	3.2	219.7	0.8	36.7%	12.9%
13 Communications Equipment	366	1.1	2.1	3.2	2087.3	1.0	179.6%	50.5%
14 Motorcycles, Bicycles, & Parts	375	0.0	0.5	2.9	88.4	7.2	14550.0%	523.4%
15 Misc. Food & Kindred Products	209	2.1	2.5	2.4	167.7	1.6	17.4%	-3.2%
16 Electric Lighting & Wiring Equipment	364	1.4	2.1	2.4	401.5	1.4	67.6%	12.3%
17 Agricultural Chemicals	287	0.5	1.7	2.1	310.9	10.3	305.9%	25.5%
18 Sugar & Confectionery Products	206	2.2	2.0	2.0	229.7	2.0	-7.8%	-2.0%
19 Fabricated Structural Metal Products,	344	2.7	2.6	1.8	129.4	0.6	-32.5%	-30.4%
20 Misc. Electrical Equipment & Supplies	369	1.9	2.2	1.8	510.7	2.0	-3.2%	-20.1%

Sources: BLS, Economy.com, Milken Institute



San Francisco

Perhaps no city has been transformed more by the digital revolution than San Francisco. The metro has been characterized as the “urban playground” for Silicon Valley and boasts an ambiance that many believe is unparalleled in North America. Economist Lynn Sedway, who works in San Francisco’s financial district observes:

Ever since the 1980s, the real growth in the Bay Area has been San Jose and the other peripheral areas. Everyone realized that San Francisco has to become a subsidiary of Silicon Valley. There’s really no choice if we want to grow.³⁸

Since 1999, the high-tech economy in the metro area has become a powerful force in the city, employing an estimated 40,000 workers and bringing an estimated \$5.7 billion into the local economy, five times the amount estimated in 1995. The typical company was relatively small, with an average of \$4 million in revenue, but the total payroll was estimated at \$2 billion.³⁹

San Francisco’s rise as a high-tech leader is helped by such projects as the biotech park, Mission Bay. Over the next decade, it is expected to house 6,000 apartments, 850,000 square feet of retail shops, 49 acres of parks, open space, and a 500-room conference hotel. The jewel of the center is a 43-acre University of California, San Francisco satellite campus to serve as the magnet that will attract corporate tenants to 5 million square feet of general office and biotech lab space.

Catellus Development Corporation’s Michael Monroe stated:

We believe companies will gravitate here to be close to the university that started the biotech revolution.⁴⁰

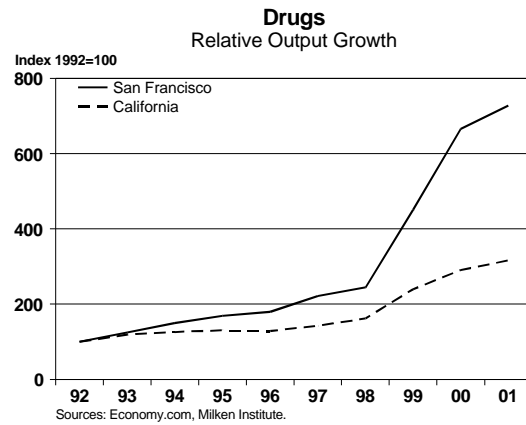
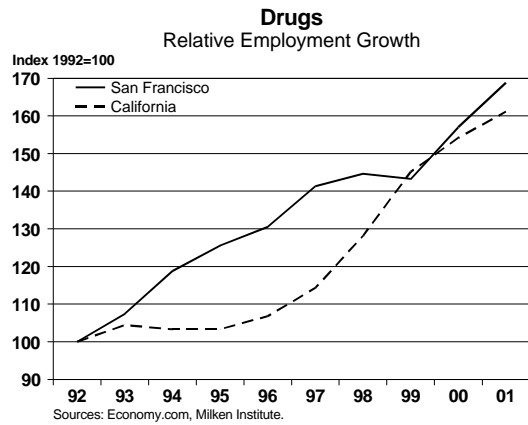
In South San Francisco, biotech firms, such as Genentech, are expanding and demand for lab and manufacturing space is increasing. With some 79 biotech firms in the area, officials have issued permits or received proposals to build about 1.5 million square feet of lab space – in addition to the estimated 2.7 million square feet already in the city’s inventory.⁴¹

³⁸ Ibid, p.40.

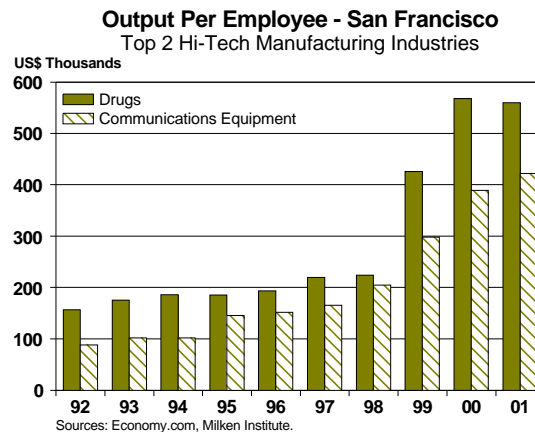
³⁹ Ibid., p.41.

⁴⁰ Abate, Tom. “Mission Bay Rising,” *San Francisco Chronicle*, March 19, 2001.

⁴¹ Ibid.



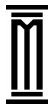
The San Francisco metro area figures show respectable gains in several industries. Drugs saw a gain of 170 jobs, from 220 in 1992, to 420 in 2001. The output per employee has grown considerably, especially since 1998, indicative of efficiency.



Communications equipment, although experiencing a loss of manufacturing jobs over the same period, saw output per employee increase.

Other leaders in the region include manufacturing jobs for computer and office equipment, which rose from 150 in 1992, to 480 in 2001; and measuring and controlling devices, which added 190 jobs, from 220 to 410. Like Oakland, traditional industries, especially women's and misses' outerwear, have declined 56.1 percent over the past ten years.

Perhaps no greater symbol of this decline came in April 2002, when Levi Strauss & Co. announced that it was finally shutting down its hallowed San Francisco



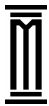
headquarters' manufacturing facility, an iconographic yellow, wood-framed building located along Valencia Street in the Mission District.

Levi's manufacturing presence in the Bay Area stretches back to the days of the Gold Rush. In synch with the Bay Area's dynamic, entrepreneurial economy, the company has endured for a century-and-a-half despite radically changing times. Beginning life by producing simple, utilitarian work pants, by the early 20th century "Levi's" had become as much an image as a product. Today the company's expansive clothing lines define a look that is multinational, trans-generational, multifunctional, and while ubiquitous, distinctively American. In closing its San Francisco and other U.S.-based production facilities, company management specifically cited costs and issues of affordability as driving their decision to shift manufacturing offshore. The situation underscores that no matter how creatively resourceful a manufacturer might be in adjusting to changing market conditions – and, moreover, no matter how much a part of or loyal to the community it calls home – high business costs ultimately will drive manufacturing activities away. Notably the only two U.S.-based Levi's production sites to avoid closure are located in San Antonio, Texas – a metro area that has managed to develop thriving modern industries while maintaining traditional manufacturing sectors by controlling costs.

San Francisco Summary
Basic Economic Indicators

INDUSTRY	SIC	1992 EMP (In Thous.)	1996 EMP (In Thous.)	2001 EMP (In Thous.)	2001 GDP (In Millions)	2001 LQ	Emp Growth (92 - 01)	Emp Growth (96 - 01)
1 Women's & Misses' Outerwear	233	11.4	10.7	5.0	244.2	0.8	-56.1%	-53.3%
2 Computer & Office Equipment	357	1.5	2.1	4.8	1863.1	0.7	220.0%	128.6%
3 Drugs	283	2.4	3.2	4.1	2313.6	1.4	70.8%	28.1%
4 Measuring & Controlling Devices	382	2.2	2.9	4.1	346.6	0.9	86.4%	41.4%
5 Commercial Printing	275	5.7	5.1	3.8	229.5	0.9	-33.3%	-25.5%
6 Misc. Electrical Equipment & Supplies	369	0.1	1.3	3.2	430.1	3.5	3100.0%	146.2%
7 Newspapers	271	5.0	4.5	3.1	250.9	1.0	-38.0%	-31.1%
8 Periodicals	272	1.6	2.5	2.8	306.9	2.5	75.0%	12.0%
9 Books	273	1.6	2.0	1.6	124.5	2.9	0.0%	-20.0%
10 Miscellaneous Publishing	274	1.3	1.8	1.6	142.5	2.6	23.1%	-11.1%
11 Bakery Products	205	2.9	2.0	1.5	116.0	0.8	-48.3%	-25.0%
12 Sugar & Confectionery Products	206	0.8	1.1	1.3	101.8	1.3	62.5%	18.2%
13 Industrial Machinery	359	1.0	1.1	1.3	273.9	0.4	30.0%	18.2%
14 Miscellaneous Apparel & Accessories	238	0.7	1.2	1.2	70.6	4.4	71.4%	0.0%
15 Partitions & Fixtures	254	0.3	0.4	1.1	17.6	2.1	266.7%	175.0%
16 Miscellaneous Primary Metal Products	339	1.1	1.3	1.1	310.4	5.6	0.0%	-15.4%
17 Communications Equipment	366	2.6	2.8	1.1	463.5	0.4	-57.7%	-60.7%
18 Misc. Food & Kindred Products	209	1.0	1.0	1.0	38.6	0.7	0.0%	0.0%
19 Fabricated Rubber Products	306	0.2	0.4	1.0	18.6	2.1	400.0%	150.0%
20 Men's & Boys' Furnishings	232	1.4	1.3	0.9	47.9	1.1	-35.7%	-30.8%

Sources: BLS, Economy.com, Milken Institute



High-tech Manufacturing in California's Major Metropolitan Areas

The decline of high-tech employment in the state takes on particular hues when viewed from the perspective of California's six key metropolitan areas: San Francisco, Oakland, San Jose, Los Angeles, Orange County, and San Diego.

At face value, statistics indicate that the three Northern California metros have fared well enough. The Bay Area has garnered a net gain of approximately 34,000 high-tech manufacturing jobs since 1992, with San Francisco gaining 1,600, Oakland 12,300, and San Jose 19,800 positions. This data needs to be considered in the context of how much of this growth has come from sectors like drugs, medical instruments, and communications, which are still in the early phases of expansion. After maturing, these industries will surely face cost pressures, just as San Jose's aircraft and parts sector did. As recently as 1992, this sector directly provided 9,000 jobs in the area. Since 2001, however, it has vanished completely from San Jose's economic landscape.

Furthermore, Northern California's comparative gain is starkly overshadowed by net losses in employment suffered by Southern California's key metros. These areas have endured a net loss of over 100,000 high-tech manufacturing jobs since 1992. Declines extend beyond defense-related sectors to include job losses in the still robust industry of computer and office equipment and in the high-growth sectors of drugs, medical instruments, and communications equipment. For example, San Diego, which has strong competencies in bio-technology, has seen employment growth in the drugs sector (almost 1,000 jobs added) but employment decline in medical instruments and supplies (500 jobs lost) – indicating that even in a highly promising field like biotech, the San Diego metro is not as firmly positioned as would be hoped. Gains in such sectors, moreover, have yet to make up for the more than 14,000 manufacturing jobs in aerospace sectors that were lost to San Diego since the early 1990s.

San Jose

Employment Levels of High-Tech Manufacturing Sectors, 1992 - 2001

Manufacturing Sector	Employment, Thousands						Growth Rate '92-'01
	1992	1995	1998	1999	2000	2001	
Drugs	5.9	4.4	4.2	4.6	4.7	4.6	-22.3%
Computer and Office Equipment	47.7	46.2	53.8	53.4	54.7	53.6	12.4%
Communications Equipment	10.7	15.5	20.7	20.7	22.5	23.9	124.8%
Electronic Components	57.2	58.8	68.4	65.0	69.5	66.3	15.9%
Aircraft and Parts	9.0	0.0	0.0	0.0	0.0	0.0	-100.0%
Guided Missiles, Space Vehicles	11.2	12.9	11.8	10.7	9.8	9.1	-18.2%
Search and Navigation Equipment	9.2	7.0	7.3	6.5	6.6	6.3	-31.7%
Measuring and Controlling Devices	24.4	24.8	28.8	27.0	28.6	28.0	14.6%
Medical Instruments and Supplies	6.5	7.1	8.7	8.5	9.6	9.7	50.7%
Total Employment	181.7	176.6	203.6	196.5	205.9	201.5	10.9%

Source: Economy.com



San Francisco

Employment Levels of High-Tech Manufacturing Sectors, 1992 - 2001

Manufacturing Sector	Employment, Thousands						Growth Rate '92-'01
	1992	1995	1998	1999	2000	2001	
Drugs	2.4	3.1	3.5	3.5	3.8	4.1	70.8%
Computer and Office Equipment	1.5	1.5	3.2	4.4	4.6	4.8	220.0%
Communications Equipment	2.6	2.9	2.3	1.7	1.4	1.1	-57.7%
Electronic Components	3.7	2.3	1.6	1.1	0.9	0.6	-83.8%
Aircraft and Parts	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Guided Missiles, Space Vehicles	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Search and Navigation Equipment	0.2	0.1	0.1	0.1	0.1	0.0	-100.0%
Measuring and Controlling Devices	2.2	2.5	3.7	3.6	3.7	4.1	86.4%
Medical Instruments and Supplies	1.3	1.0	0.9	0.8	0.8	0.8	-38.5%
Total Employment	13.9	13.4	15.3	15.2	15.3	15.5	11.5%

Source: Economy.com

Oakland

Employment Levels of High-Tech Manufacturing Sectors, 1992 - 2001

Manufacturing Sector	Employment, Thousands						Growth Rate '92-'01
	1992	1995	1998	1999	2000	2001	
Drugs	3.1	3.3	3.2	3.2	3.5	3.9	24%
Computer and Office Equipment	5.6	3.9	5.5	6.1	7.2	7.7	38%
Communications Equipment	1.1	1.6	2.8	3.0	3.2	3.2	180%
Electronic Components	5.1	6.6	11.1	11.5	12.0	11.4	121%
Aircraft and Parts	0.7	0.7	0.7	0.7	0.6	0.6	-21%
Guided Missiles, Space Vehicles	0.1	0.1	0.1	0.1	0.1	0.1	-36%
Search and Navigation Equipment	0.4	0.3	0.5	0.5	0.7	0.8	88%
Measuring and Controlling Devices	3.4	3.5	4.0	3.2	3.6	3.7	8%
Medical Instruments and Supplies	2.6	1.9	2.7	2.6	3.1	3.3	28%
Total Employment	22.3	21.9	30.7	30.9	33.9	34.6	55%

Source: Economy.com

Los Angeles

Employment Levels of High-Tech Manufacturing Sectors, 1992 - 2001

Manufacturing Sector	Employment, Thousands						Growth Rate '92-'01
	1992	1995	1998	1999	2000	2001	
Drugs	6.3	5.6	6.6	7.0	7.2	7.4	17.2%
Computer and Office Equipment	11.6	9.8	6.8	6.8	6.4	6.2	-46.4%
Communications Equipment	4.0	4.3	4.5	4.4	4.2	4.2	4.5%
Electronic Components	17.5	16.1	17.9	16.0	15.1	14.3	-18.4%
Aircraft and Parts	95.4	62.4	64.9	58.3	52.0	48.0	-49.6%
Guided Missiles, Space Vehicles	9.7	4.6	2.8	1.8	1.5	1.2	-87.6%
Search and Navigation Equipment	49.7	33.1	35.8	33.2	31.3	31.8	-36.0%
Measuring and Controlling Devices	10.9	7.5	8.3	7.2	6.8	6.7	-38.2%
Medical Instruments and Supplies	8.8	8.4	8.8	9.1	9.0	9.4	7.7%
Total Employment	213.9	151.7	156.3	143.8	133.3	129.3	-39.5%

Source: Economy.com



Orange County

Employment Levels of High-Tech Manufacturing Sectors, 1992 - 2001

Manufacturing Sector	Employment, Thousands						Growth Rate '92-'01
	1992	1995	1998	1999	2000	2001	
Drugs	5.7	5.0	4.7	4.5	4.2	3.9	-31.5%
Computer and Office Equipment	13.5	8.5	9.0	8.2	7.5	6.4	-52.7%
Communications Equipment	2.4	2.3	2.6	2.5	2.4	2.4	0.9%
Electronic Components	15.8	17.2	24.5	25.2	27.7	28.1	77.4%
Aircraft and Parts	6.7	5.9	8.3	8.0	7.9	7.9	17.7%
Guided Missiles, Space Vehicles	11.8	7.2	7.3	6.9	6.6	6.2	-47.7%
Search and Navigation Equipment	14.6	8.9	8.1	8.4	8.0	7.9	-45.7%
Measuring and Controlling Devices	8.0	8.5	8.5	8.2	8.0	7.9	-1.4%
Medical Instruments and Supplies	8.5	8.1	8.8	8.5	8.3	8.7	1.5%
Total Employment	87.0	71.6	81.9	80.4	80.6	79.3	-8.9%

Source: Economy.com

San Diego

Employment Levels of High-Tech Manufacturing Sectors, 1992 - 2001

Manufacturing Sector	Employment, Thousands						Growth Rate '92-'01
	1992	1995	1998	1999	2000	2001	
Drugs	1.9	2.4	3.0	3.1	3.1	2.8	48.9%
Computer and Office Equipment	5.4	4.9	5.9	5.9	5.7	5.6	3.0%
Communications Equipment	3.5	3.9	4.6	5.5	5.9	6.2	75.7%
Electronic Components	8.6	8.3	9.8	8.8	9.1	8.6	-0.5%
Aircraft and Parts	11.7	9.8	8.1	8.0	7.2	7.3	-37.7%
Guided Missiles, Space Vehicles	9.4	0.0	0.0	0.0	0.0	0.0	-100.0%
Search and Navigation Equipment	4.2	2.2	2.6	2.9	2.7	2.8	-32.0%
Measuring and Controlling Devices	5.4	4.2	4.3	4.0	3.6	3.7	-31.7%
Medical Instruments and Supplies	5.2	4.9	4.5	4.7	4.4	4.7	-10.2%
Total Employment	55.2	40.7	42.6	42.9	41.7	41.6	-24.7%

Source: Economy.com



Manufacturing in Other Californian Metropolitan Areas

Throughout California's 19 smaller metropolitan areas, manufacturing, though smaller in scale than that found in the states major urban centers, is still important to these areas' economic well being.

Although agriculture remains the dominant economic activity of many of the smaller metros, manufacturing in fact bolsters agricultural sectors. Manufacturing occupies an important stage of value-add in the agriculture supply chain. When agricultural products are sold as is, their perishability limits their geographic reach. Because of falling trade barriers brought about by initiatives such as NAFTA and institutions such as the WTO, California agriculture is now under greater competitive threat than at any time in its history. At the same time, lower trade barriers also represent tremendous opportunity for California farmers to reach far-flung markets. Processing and manufacturing activities will be key to helping them counteract increasing competition and access overseas consumers.

Manufacturing also offers an important degree of economic diversity in the smaller metro areas. They provide workers employed in services or natural resource-based sectors additional employment opportunities. They give regions as a whole a buffer against the marketplace gyrations of their more dominant economic activities. Research further indicates that particularly high value-added manufacturing activities like electronics and industrial machinery production has been making inroads in these areas over the last ten years. This not only represents important new opportunities for economic development in these areas, but offers a way for the state as a whole to retain manufacturing operations that more often flee to other parts of the U.S. or the world.

Merced

More than 10,000 people work in manufacturing within Merced's statistical area. The two largest manufacturing sectors, meat products and preserved fruits and vegetables, together provide almost 40 percent of total manufacturing employment. In addition to these top two sectors, another four – commercial printing, metal cans, beverages, dairy products – have employment levels that exceed 500.

The most recent data available indicate that over the last ten years (1992-2001) the leading manufacturing sectors of meat products and preserved fruits and vegetables have enjoyed an average growth rate of 8.3 percent. Since peaking in 1998, however, employment in the latter industry has been declining. Despite this, aggregate employment in all 38 manufacturing sectors has grown 12.2 percent, perhaps a reflection of the area's own efforts at economic development and its ability to attract



manufacturing activities that have been pushed out by the high-costs of operating in the nearby greater Bay Area.

Merced Summary
Basic Economic Indicators

INDUSTRY	SIC	1992 EMP (In Thous.)	1996 EMP (In Thous.)	2001 EMP (In Thous.)	2001 GDP (In Millions)	2001 LQ	Emp Growth (92 - 01)	Emp Growth (96 - 01)
1 Meat Products	201	2.4	2.2	2.5	107.6	33.5	1.4%	9.3%
2 Preserved Fruits & Vegetables	203	1.7	2.4	1.9	129.0	11.7	15.1%	-18.4%
3 Commercial Printing	275	0.7	1.0	1.1	45.1	4.9	48.7%	10.8%
4 Metal Cans & Shipping Containers	341	0.1	0.4	0.6	12.3	33.9	319.3%	57.4%
5 Beverages	208	0.3	0.5	0.5	34.7	3.5	98.7%	7.3%
6 Dairy Products	202	0.9	0.7	0.5	38.2	8.4	-45.4%	-28.5%
7 Drugs	283	0.3	0.3	0.4	50.5	2.7	61.6%	36.1%
8 Screw Machine Products, Bolts, Etc.	345	0.1	0.2	0.3	2.8	5.1	282.6%	54.3%
9 Newspapers	271	0.2	0.2	0.2	8.5	1.2	6.2%	-4.8%
10 Soap, Cleaners, & Toilet Goods	284	0.2	0.2	0.2	15.6	4.2	8.2%	12.8%
11 Paperboard Containers & Boxes	265	0.1	0.2	0.2	7.0	2.7	117.0%	9.2%
12 Ship & Boat Building & Repairing	373	0.2	0.2	0.2	12.3	4.5	21.4%	4.6%
13 Motor Vehicles & Equipment	371	0.2	0.2	0.2	13.8	1.3	-11.0%	-17.7%
14 Plastics Materials & Synthetics	282	0.1	0.1	0.2	12.6	7.0	116.7%	74.1%
15 Industrial Inorganic Chemicals	281	0.1	0.1	0.1	11.4	7.0	5.8%	2.6%
16 Wood Containers	244	0.0	0.1	0.1	9.8	6.9	201.8%	57.3%
17 Misc. Electrical Equipment & Supplies	369	0.1	0.1	0.1	14.4	2.5	71.9%	8.3%
18 Misc. Fabricated Metal Products	349	0.1	0.2	0.1	1.1	1.6	-8.5%	-30.0%
19 Farm & Garden Machinery	352	0.1	0.1	0.1	9.3	8.5	6.0%	-21.0%
20 Millwork, Plywood & Structural Member	243	0.1	0.1	0.1	7.5	0.7	-36.9%	-22.1%

Sources: BLS, Economy.com, Milken Institute



Chico

The northern Sacramento Valley metropolitan area of Chico has more than 5,000 people working in 52 manufacturing sectors. Nearly 4,700 people are employed in the twenty largest manufacturing sectors. The area's top five sectors of motor vehicles and equipment, preserved fruits and vegetables, fabricated textile products, medical instruments and supplies, and industrial machinery employ some 2,000 people.

Since 1992, what was once the area's largest manufacturing sector employer, preserved fruits and vegetables, has seen a steady drop in employment, declining by 53.8 percent. Though starting out with only about 100 people employed, the medical instruments and supplies sector has conversely tripled its workforce size.

Chico Summary
Basic Economic Indicators

INDUSTRY	SIC	1992 EMP (In Thous.)	1996 EMP (In Thous.)	2001 EMP (In Thous.)	2001 GDP (In Millions)	2001 LQ	Emp Growth (92 - 01)	Emp Growth (96 - 01)
1 Motor Vehicles & Equipment	371	0.4	0.6	0.5	30.3	3.4	21.9%	-9.0%
2 Preserved Fruits & Vegetables	203	1.0	0.6	0.4	39.4	2.2	-53.8%	-25.5%
3 Misc. Fabricated Textile Products	239	0.5	0.4	0.4	5.7	3.5	-18.7%	14.2%
4 Medical Instruments & Supplies	384	0.1	0.3	0.3	11.7	1.4	200.9%	21.6%
5 Industrial Machinery	359	0.0	0.2	0.3	18.1	1.4	1035.7%	109.2%
6 Misc Wood Products	249	0.2	0.3	0.3	19.6	6.6	53.3%	3.3%
7 Bakery Products	205	0.2	0.3	0.3	10.4	2.4	59.4%	9.4%
8 Electronic Components & Accessories	367	0.3	0.2	0.3	31.9	0.3	-7.0%	8.1%
9 Fabricated Structural Metal Products,	344	0.2	0.2	0.2	18.8	1.1	58.0%	17.0%
10 Newspapers	271	0.4	0.3	0.2	6.9	1.1	-40.7%	-28.6%
11 Partitions & Fixtures	254	0.0	0.1	0.2	10.0	6.4	1661.5%	90.8%
12 Periodicals	272	0.0	0.1	0.2	6.4	2.9	386.7%	116.8%
13 Beverages	208	0.1	0.1	0.1	9.1	0.8	58.1%	36.1%
14 Special Industry Machinery	355	0.1	0.1	0.1	9.4	1.4	119.6%	-12.1%
15 General Industrial Machinery	356	0.0	0.1	0.1	8.9	1.6	268.8%	15.7%
16 Motorcycles, Bicycles, & Parts	375	0.0	0.0	0.1	5.9	4.1	1325.0%	338.5%
17 Farm & Garden Machinery	352	0.1	0.2	0.1	6.5	6.9	10.6%	-35.8%
18 Toys & Sporting Goods	394	0.1	0.1	0.1	5.4	1.2	50.8%	-8.7%
19 Concrete, Gypsum, & Plaster Product	327	0.1	0.1	0.1	1.2	0.8	-40.6%	-11.5%
20 Millwork, Plywood & Structural Member	243	0.3	0.1	0.1	3.0	0.4	-76.4%	-51.6%

Sources: BLS, Economy.com, Milken Institute



Bakersfield

Employment in Bakersfield's 61 manufacturing sectors has risen more than 17 percent since 1992. Today the area's manufacturers directly provide 12,000 jobs.

Bakersfield's manufacturing base is diverse with only one sector, preserved fruits and vegetables, employing more than 1,000. This industry has grown almost 60 percent during the last ten years, replacing aircraft and parts (which has conversely shrunk some 40 percent) as the leading manufacturing employer. In addition to the top two sectors of preserved fruits and vegetables and aircraft and parts, another six manufacturing sectors – concrete, gypsum, and plaster products, bakery products, miscellaneous food and kindred products, newspapers, miscellaneous plastics products, and industrial machinery – employ more than 500 people each.

Previously an industrial mainstay of Bakersfield, petroleum refining has declined over 60 percent since 1992. Once the second-largest manufacturing sector, petroleum now ranks 17th.

Bakersfield Summary
Basic Economic Indicators

INDUSTRY	SIC	1992 EMP (In Thous.)	1996 EMP (In Thous.)	2001 EMP (In Thous.)	2001 GDP (In Millions)	2001 LQ	Emp Growth (92 - 01)	Emp Growth (96 - 01)
1 Preserved Fruits & Vegetables	203	0.7	0.8	1.1	42.4	1.8	58.2%	35.1%
2 Aircraft & Parts	372	1.5	0.9	0.9	97.2	0.8	-41.0%	-1.8%
3 Concrete, Gypsum, & Plaster Product	327	0.6	0.6	0.8	35.7	2.4	33.1%	29.6%
4 Bakery Products	205	0.0	0.2	0.7	51.6	1.9	1485.7%	236.4%
5 Misc. Food & Kindred Products	209	0.2	0.3	0.6	48.7	1.9	160.3%	131.0%
6 Newspapers	271	0.7	0.6	0.5	25.7	0.8	-25.2%	-15.6%
7 Miscellaneous Plastics Products	308	0.4	0.6	0.5	33.1	0.6	29.1%	-7.5%
8 Industrial Machinery	359	0.3	0.5	0.5	71.9	0.7	87.7%	7.9%
9 Motor Vehicles & Equipment	371	0.3	0.3	0.5	43.5	1.1	62.8%	46.1%
10 Dairy Products	202	0.3	0.2	0.5	59.1	2.1	39.6%	118.6%
11 Sugar & Confectionery Products	206	0.3	0.2	0.4	41.9	2.0	22.9%	111.0%
12 Beverages	208	0.2	0.3	0.4	23.0	0.6	134.2%	44.6%
13 Medical Instruments & Supplies	384	0.3	0.3	0.3	17.8	0.4	27.0%	22.8%
14 Cement, Hydraulic	324	0.4	0.3	0.3	28.0	11.1	-7.4%	-4.7%
15 Farm & Garden Machinery	352	0.1	0.2	0.3	49.9	6.6	270.7%	50.5%
16 Structural Clay Products	325	0.1	0.2	0.3	11.2	8.1	280.6%	57.5%
17 Petroleum Refining	291	0.7	0.4	0.3	112.8	1.4	-61.7%	-39.1%
18 Misc. Fabricated Metal Products	349	0.1	0.2	0.3	15.8	1.1	114.3%	61.7%
19 Fabricated Structural Metal Products	344	0.2	0.3	0.3	12.6	0.4	5.8%	-14.1%
20 Paperboard Containers & Boxes	265	0.1	0.2	0.2	10.9	0.9	69.0%	7.6%

Sources: BLS, Economy.com, Milken Institute



Modesto

The Modesto area is home to 26,000 manufacturing jobs across 70 industrial sectors. As a group, the twenty largest manufacturing employers account for more than 22,000 of these positions.

Agriculture-rated manufacturing clearly dominates the industrial mix. The top five manufacturing sectors are preserved fruits and vegetables, beverages, meat products, sugar and confectionary products, and dairy products. Each of the top five sectors employs more than 1,000 people. As a group, they represent 55.9 percent of all manufacturing employment. The largest sector, preserved fruits and vegetables, on its own employs more than 5,000 people, constituting almost 19.4 percent of all manufacturing employment.

Employment in electronic components and accessories has grown 161.9 percent, from having a 134-employee workforce in 1992 to having 351 as of 2001. Such employment growth is offsetting the hundreds of jobs that have been lost in the top sector of preserved fruits and vegetables.

Modesto Summary
Basic Economic Indicators

INDUSTRY	SIC	1992 EMP (In Thous.)	1996 EMP (In Thous.)	2001 EMP (In Thous.)	2001 GDP (In Millions)	2001 LQ	Emp Growth (92 - 01)	Emp Growth (96 - 01)
1 Preserved Fruits & Vegetables	203	5.8	5.8	5.1	438.6	11.6	-12.3%	-11.9%
2 Beverages	208	3.8	3.4	3.5	272.2	8.4	-8.3%	3.1%
3 Meat Products	201	2.3	3.2	3.1	124.1	16.3	37.3%	-0.6%
4 Sugar & Confectionery Products	206	0.9	1.3	1.7	124.4	11.8	94.7%	32.7%
5 Dairy Products	202	0.9	0.9	1.2	105.0	7.5	36.5%	33.8%
6 Metal Cans & Shipping Containers	341	0.6	0.8	0.9	62.9	18.6	32.7%	12.1%
7 Glass & Glassware, Pressed or Blown	322	1.0	0.9	0.7	54.3	13.7	-26.7%	-14.2%
8 Paperboard Containers & Boxes	265	0.9	0.9	0.7	80.7	3.8	-22.6%	-18.5%
9 Miscellaneous Plastics Products	308	0.3	0.5	0.7	21.1	1.1	161.0%	50.0%
10 Millwork, Plywood & Structural Member	243	0.2	0.5	0.6	18.7	2.0	182.9%	31.5%
11 Fabricated Structural Metal Products	344	0.7	0.7	0.6	34.9	1.2	-21.2%	-13.0%
12 Fabricated Rubber Products	306	0.1	0.3	0.5	10.3	7.6	238.5%	89.1%
13 Commercial Printing	275	0.3	0.4	0.5	23.6	0.8	41.9%	8.8%
14 Newspapers	271	0.6	0.5	0.5	15.1	1.0	-26.3%	-15.3%
15 Concrete, Gypsum, & Plaster Product	327	0.2	0.3	0.5	23.6	1.9	102.2%	37.0%
16 Industrial Machinery	359	0.5	0.5	0.4	66.8	0.9	-13.0%	-17.9%
17 Blast Furnace & Basic Steel Product	331	0.2	0.3	0.4	18.9	4.8	73.8%	14.3%
18 Electronic Components & Accessories	367	0.1	0.2	0.4	31.2	0.2	161.9%	53.9%
19 Wood Buildings & Mobile Homes	245	0.2	0.3	0.3	11.0	9.1	89.9%	16.7%
20 Wood Containers	244	0.2	0.3	0.3	7.9	5.6	19.3%	-7.6%

Sources: BLS, Economy.com, Milken Institute



Fresno

The Fresno area's 99 manufacturing sectors provide almost 32,000 jobs. Reflecting the area's agrarian roots, agriculture-related manufacturing – preserved fruits and vegetables, meat products, beverages, dairy products, and miscellaneous food and kindred products – represents seven of the ten biggest manufacturing employment sectors. The other major manufacturing group in the top ten is publishing, with miscellaneous publishing and newspapers representing the fourth and fifth largest employers and providing for slightly more than 1,000 each.

Unlike other metropolitan areas located in or around the California's Central Valley, the preserved fruits and vegetables sector has, after bottoming out in the middle of the 1990s, seen stable growth, with the sector expanding 4.3 percent in the years 1992-2001. Even higher growth has been enjoyed by the meat product (12.8 percent), beverages (11.8 percent), and dairy products (41.2 percent) sectors. The area's standout sector for employment growth is miscellaneous publishing, which has added more than 1,000 positions since 1992.

Fresno Summary
Basic Economic Indicators

INDUSTRY	SIC	1992 EMP (In Thous.)	1996 EMP (In Thous.)	2001 EMP (In Thous.)	2001 GDP (In Millions)	2001 LQ	Emp Growth (92 - 01)	Emp Growth (96 - 01)
1 Preserved Fruits & Vegetables	203	4.2	4.3	4.4	251.8	4.9	4.3%	2.6%
2 Meat Products	201	2.6	2.8	3.0	109.0	7.4	12.8%	6.9%
3 Beverages	208	1.8	1.9	2.0	109.9	2.3	11.8%	5.0%
4 Miscellaneous Publishing	274	0.1	0.3	1.1	66.3	6.0	1276.7%	327.8%
5 Newspapers	271	1.1	1.2	1.1	19.2	1.1	-2.8%	-8.4%
6 Dairy Products	202	0.7	0.8	0.9	79.3	2.8	41.2%	20.7%
7 Misc. Food & Kindred Products	209	0.6	1.1	0.9	49.5	2.0	44.7%	-12.4%
8 Paperboard Containers & Boxes	265	0.9	0.9	0.9	32.5	2.3	6.2%	6.3%
9 Flat Glass	321	0.5	0.9	0.8	56.0	18.0	54.0%	-9.4%
10 General Industrial Machinery	356	1.0	0.9	0.8	100.5	2.3	-22.6%	-13.4%
11 Communications Equipment	366	0.2	0.4	0.8	145.5	0.8	251.8%	85.5%
12 Commercial Printing	275	1.3	1.1	0.8	16.1	0.6	-41.7%	-26.5%
13 Bakery Products	205	0.5	0.7	0.8	55.3	1.4	49.5%	14.9%
14 Construction & Related Machinery	353	0.3	0.6	0.7	79.5	4.6	132.8%	15.1%
15 Fabricated Structural Metal Products	344	0.8	0.8	0.7	54.3	0.7	-18.0%	-15.0%
16 Misc. Fabricated Metal Products	349	0.5	0.6	0.6	48.0	1.7	38.1%	4.1%
17 Sugar & Confectionery Products	206	0.4	0.5	0.6	34.8	2.1	72.2%	33.6%
18 Refrigeration & Service Machinery	358	0.7	0.8	0.6	46.4	2.4	-12.8%	-20.1%
19 Industrial Inorganic Chemicals	281	0.0	0.5	0.6	29.7	5.5	2453.9%	11.8%
20 Farm & Garden Machinery	352	0.5	0.5	0.6	55.8	8.4	11.2%	7.9%

Sources: BLS, Economy.com, Milken Institute



Sacramento

Sacramento's 95 manufacturing sectors provide jobs for more than 51,000 people. Total manufacturing employment has grown 39 percent since 1992.

Nearly 80 percent of Sacramento's total manufacturing employment is attributable to its twenty largest manufacturing sector employers. The largest employment levels come from electronics and other high-end product manufacturing operations: computer and office equipment employs 6,505, electronic components and accessories 5,019, ophthalmic goods 3,057, electrical industrial apparatus 2,814, measuring and controlling devices 2,504, and household audio and visual equipment 2,410.

These sectors dominate the area's top ten manufacturing sectors in terms of employment and have enjoyed impressive growth. Starting from already high employment levels of 3,401 and 2,492 employees in 1992, computers and office equipment, and electronic components and accessories, have approximately doubled in size since then. From less than a handful of employees, ophthalmic goods now engages more than 3,000; from less than 200 employees, household audio and visual equipment has exploded by 1,609 percent to more than 2,000. Accompanying such technology-led growth has been an expansion in more basic industries such as millwork and household furniture.

The notable outlier to these otherwise encouraging trends is the employment in the guided missiles and space vehicles sector. Formerly the number two employer in the area, this sector now ranks 12th and has seen more than half of its total payroll reduced.

Sacramento Summary
Basic Economic Indicators

INDUSTRY	SIC	1992 EMP (In Thous.)	1996 EMP (In Thous.)	2001 EMP (In Thous.)	2001 GDP (In Millions)	2001 LQ	Emp Growth (92 - 01)	Emp Growth (96 - 01)
1 Computer & Office Equipment	357	3.4	7.5	6.5	1384.3	1.4	91.3%	-13.8%
2 Electronic Components & Accessories	367	2.5	4.4	5.0	2393.7	0.6	101.4%	12.9%
3 Ophthalmic Goods	385	0.0	0.4	3.1	149.1	7.0	10090.0%	670.0%
4 Millwork, Plywood & Structural Member	243	1.6	1.7	2.9	110.3	2.0	80.2%	69.2%
5 Electrical Industrial Apparatus	362	0.3	1.3	2.8	1141.2	8.3	740.0%	123.5%
6 Measuring & Controlling Devices	382	0.7	1.3	2.5	68.5	0.8	280.5%	98.6%
7 Household Audio & Video Equipment	365	0.1	0.9	2.4	932.0	3.1	1609.2%	177.6%
8 Newspapers	271	2.8	2.7	2.2	91.3	1.0	-21.7%	-18.8%
9 Household Furniture	251	0.3	0.9	2.0	47.2	1.2	484.7%	110.4%
10 Bakery Products	205	1.1	1.4	1.8	152.8	1.5	58.0%	23.7%
11 Commercial Printing	275	1.9	1.8	1.5	81.3	0.5	-17.7%	-16.8%
12 Guided Missiles, Space Vehicles, Part	376	3.2	1.9	1.4	128.6	1.4	-57.4%	-29.6%
13 Miscellaneous Plastics Products	308	0.7	1.2	1.3	61.8	0.4	71.1%	4.0%
14 Preserved Fruits & Vegetables	203	1.6	1.4	1.0	64.9	0.5	-34.7%	-25.5%
15 Beverages	208	0.6	0.9	0.9	33.8	0.5	63.1%	6.5%
16 General Industrial Machinery	356	0.2	0.7	0.9	161.8	1.1	259.9%	20.5%
17 Misc. Nonmetallic Mineral Products	329	0.1	0.1	0.7	34.8	2.6	918.1%	398.6%
18 Sawmills & Planing Mills	242	1.2	0.7	0.7	43.6	1.3	-38.5%	7.7%
19 Concrete, Gypsum, & Plaster Product	327	0.9	0.8	0.7	42.1	0.6	-27.1%	-17.2%
20 Misc Manufacturing Industries	399	0.3	0.3	0.6	96.7	1.0	157.8%	97.9%

Sources: BLS, Economy.com, Milken Institute



Riverside

Manufacturing employs almost 125,000 across 107 sectors in the Riverside area. The 20 largest sectors account for approximately 75,000 (60 percent) of these jobs.

The top twenty sectors are mainly characterized by fundamental industries. The top three – miscellaneous plastics products, household furniture, and fabricated structural metal products – each employ over 5,000 and combined, employ nearly 20,000. Other leading employment sectors include millwork, concrete, gypsum and plaster products, and metal forgings and stampings. These sectors have generally enjoyed consistent growth over the past ten years, even those with already high employment levels like plastic products and fabricated structural metal products have since growth rates of about 50 percent since 1992.

Previously, the top manufacturing employer, the aircraft and parts sector has retracted some 20 percent and now ranks fourth. Other advanced sectors have been expanding their workforce levels, however, with special industry machinery, medical instruments, and drugs all enjoying impressive growth. The drugs sector in particular stands out for increasing its workforce by almost a factor of ten, from 235 employed in 1992 to 2,328 employed in 2001. The electronics components and accessories sector has also grown in overall size since 1992, but has been declining since its employment peak reached in 1998.

Riverside Summary
Basic Economic Indicators

INDUSTRY	SIC	1992 EMP (In Thous.)	1996 EMP (In Thous.)	2001 EMP (In Thous.)	2001 GDP (In Millions)	2001 LQ	Emp Growth (92 - 01)	Emp Growth (96 - 01)
1 Miscellaneous Plastics Products	308	5.5	7.3	8.2	448.8	1.9	48.6%	12.8%
2 Household Furniture	251	3.4	4.1	6.3	184.2	2.7	84.4%	51.2%
3 Fabricated Structural Metal Products	344	3.5	4.5	5.2	236.5	1.7	51.1%	16.5%
4 Aircraft & Parts	372	6.3	5.4	4.9	356.3	1.0	-21.0%	-8.5%
5 Millwork, Plywood & Structural Member	243	2.9	3.5	4.7	181.8	2.3	61.2%	35.3%
6 Concrete, Gypsum, & Plaster Product	327	2.9	3.4	3.9	224.1	2.5	32.4%	15.9%
7 Metal Forgings & Stampings	346	0.9	1.5	3.7	213.0	4.0	324.8%	143.5%
8 Special Industry Machinery	355	0.2	0.8	3.6	355.3	2.9	1767.0%	351.4%
9 Electronic Components & Accessories	367	2.2	3.7	3.3	469.7	0.3	52.6%	-9.5%
10 Commercial Printing	275	2.5	2.9	3.3	163.0	0.8	33.5%	14.3%
11 Blast Furnace & Basic Steel Product	331	1.8	2.3	3.2	392.7	6.6	81.9%	38.6%
12 Hose & Belting & Gaskets & Packing	305	0.5	0.6	3.0	149.1	21.6	506.0%	403.8%
13 Motor Vehicles & Equipment	371	2.8	3.4	3.0	181.8	1.4	8.6%	-10.3%
14 Medical Instruments & Supplies	384	2.2	2.6	2.9	148.9	0.8	32.2%	9.6%
15 Misc. Nonmetallic Mineral Products	329	0.9	1.1	2.7	119.5	6.6	204.9%	140.0%
16 Ship & Boat Building & Repairing	373	0.1	0.3	2.7	129.4	3.7	2100.8%	694.4%
17 Preserved Fruits & Vegetables	203	2.5	2.4	2.5	159.8	0.9	2.7%	6.1%
18 Drugs	283	0.2	0.9	2.3	232.7	0.8	890.6%	158.7%
19 Newspapers	271	3.1	2.8	2.3	99.9	0.7	-27.5%	-17.5%
20 Sawmills & Planing Mills	242	0.1	0.6	2.2	116.2	2.8	2102.0%	270.1%

Sources: BLS, Economy.com, Milken Institute



San Luis Obispo

Despite San Luis Obispo's bucolic setting, the area has 64 manufacturing sectors that contribute more than 7,000 jobs. For the past ten years on record, overall manufacturing employment has increased 31.7 percent.

No manufacturing sector employs more than 1,000 persons. The top four sectors – women's and misses outerwear, computer and office equipment, musical instruments and commercial printing – each employ in excess of 500. Women's and misses outerwear has posted the highest growth of any top 20 sector, swelling its employment ranks from 58 in 1992 to 816 by 2001. The top four sectors also reflect the eclectic nature of the area's manufacturing mix, which, at least in terms of employment figures, does not indicate dominance by any one group or groups of manufacturers.

San Luis Obispo Summary
Basic Economic Indicators

INDUSTRY	SIC	1992	1996	2001	2001	2001 LQ	Emp	Emp
		EMP (In Thous.)	EMP (In Thous.)	EMP (In Thous.)	GDP (In Millions)		Growth (92 - 01)	Growth (96 - 01)
1 Women's & Misses' Outerwear	233	0.1	0.3	0.8	22.6	1.4	1306.9%	136.5%
2 Computer & Office Equipment	357	0.7	0.6	0.8	88.7	1.2	6.7%	36.4%
3 Musical Instruments	393	0.2	0.5	0.7	32.0	23.1	187.1%	35.4%
4 Commercial Printing	275	0.3	0.5	0.7	39.1	1.7	98.8%	41.3%
5 Electronic Components & Accessories	367	0.6	0.6	0.5	62.2	0.5	-25.2%	-20.5%
6 Special Industry Machinery	355	0.1	0.2	0.3	57.1	2.5	227.8%	35.3%
7 Beverages	208	0.2	0.2	0.3	30.1	1.0	11.9%	11.9%
8 Manifold Business Forms	276	0.3	0.3	0.3	17.0	12.6	-18.4%	-9.0%
9 Ordnance & Accessories	348	0.0	0.0	0.2	12.6	52.9	1065.0%	406.5%
10 Measuring & Controlling Devices	382	0.1	0.2	0.2	3.2	0.5	218.3%	32.2%
11 Millwork, Plywood & Structural Member	243	0.1	0.2	0.2	6.5	1.1	84.1%	22.4%
12 Motorcycles, Bicycles, & Parts	375	0.0	0.1	0.2	6.5	5.1	335.6%	106.3%
13 Electric Lighting & Wiring Equipment	364	0.0	0.1	0.2	20.9	1.1	356.8%	89.9%
14 Newspapers	271	0.4	0.3	0.2	7.4	0.6	-60.7%	-46.0%
15 Men's & Boys' Furnishings	232	0.4	0.3	0.2	1.1	2.1	-57.8%	-48.2%
16 Concrete, Gypsum, & Plaster Product	327	0.1	0.1	0.1	5.8	1.0	24.2%	14.6%
17 Fabricated Structural Metal Products	344	0.1	0.2	0.1	8.2	0.5	71.1%	-20.7%
18 Drugs	283	0.1	0.1	0.1	21.8	0.5	113.6%	-0.8%
19 Partitions & Fixtures	254	0.1	0.1	0.1	4.7	2.2	63.6%	11.3%
20 Nonferrous Rolling & Drawing	335	0.1	0.1	0.1	5.7	1.3	-12.5%	-7.1%

Sources: BLS, Economy.com, Milken Institute



Salinas

More than 10,000 people work in Salinas' 53 manufacturing sectors. This represents a 18.4 percent increase over aggregate employment levels in 1992.

Production that is tied to the area's agricultural resources dominates the manufacturing employment landscape. Among the top five major employers include miscellaneous food (2,189 employed), preserved fruits and vegetables (1,635), beverages (813), and sugar and confectionary products (497).

The area is not without its high-end manufacturers. Both electronics components and accessories and communications equipment rank within the top 20 manufacturing employment sectors. They are also in decline, however, experiencing falling employment at the rates of about 50 percent and 40 percent over the past ten years.

Salinas Summary
Basic Economic Indicators

INDUSTRY	SIC	1992 EMP (In Thous.)	1996 EMP (In Thous.)	2001 EMP (In Thous.)	2001 GDP (In Millions)	2001 LQ	Emp Growth (92 - 01)	Emp Growth (96 - 01)
1 Misc. Food & Kindred Products	209	0.9	1.2	2.2	89.9	11.0	144.0%	79.6%
2 Preserved Fruits & Vegetables	203	1.0	1.6	1.6	80.9	4.2	65.8%	3.9%
3 Beverages	208	0.6	0.5	0.8	44.9	2.2	28.8%	60.4%
4 Commercial Printing	275	0.4	0.5	0.6	41.0	1.2	72.9%	34.9%
5 Sugar & Confectionery Products	206	0.2	0.3	0.5	22.9	3.8	103.7%	82.7%
6 Newspapers	271	0.5	0.5	0.5	28.3	1.2	-11.4%	-4.8%
7 Motor Vehicles & Equipment	371	0.2	0.3	0.4	28.9	1.4	163.4%	47.6%
8 Measuring & Controlling Devices	382	0.2	0.3	0.4	13.7	0.6	93.3%	23.9%
9 Books	273	0.7	0.6	0.4	38.2	4.9	-51.4%	-36.6%
10 Electronic Components & Accessories	367	0.7	0.7	0.4	99.1	0.2	-52.2%	-48.3%
11 Wood Containers	244	0.1	0.1	0.3	7.9	7.2	522.2%	143.5%
12 Industrial Machinery	359	0.2	0.2	0.3	28.8	0.6	71.9%	41.4%
13 Paperboard Containers & Boxes	265	0.4	0.4	0.2	27.9	1.5	-33.6%	-29.7%
14 Fats & Oils	207	0.1	0.1	0.2	12.9	10.0	183.5%	244.6%
15 Communications Equipment	366	0.3	0.3	0.2	41.7	0.5	-37.5%	-38.8%
16 Men's & Boys' Furnishings	232	0.2	0.2	0.2	10.2	1.6	-9.8%	-18.3%
17 Construction & Related Machinery	353	0.2	0.2	0.2	26.5	2.4	-36.5%	-7.8%
18 Millwork, Plywood & Structural Member	243	0.1	0.2	0.1	2.5	0.5	141.2%	-23.6%
19 Electric Distribution Equipment	361	0.2	0.3	0.1	25.4	2.3	-27.5%	-58.6%
20 Concrete, Gypsum, & Plaster Product	327	0.2	0.2	0.1	15.6	0.5	-37.7%	-32.7%

Sources: BLS, Economy.com, Milken Institute



Santa Cruz

Santa Cruz is one of the few metropolitan areas where manufacturing has declined over the past ten years. The nearly 10,000 people working in the area's 64 manufacturing sectors constitute a workforce that is more than 20 percent smaller than it was in 1992.

Santa Cruz's twenty largest manufacturing sectors account for 85.9 percent of manufacturing employment. The top two sectors, electronic components and accessories and preserved fruits and vegetables, employ more than 1,000 people and illustrates the area's mix of high-end and agriculture-related manufacturing. Major high-end employers include electronic components, general industrial machinery, and miscellaneous electrical equipment and supplies. Major agriculture-related employers include preserved fruits and vegetables, sugar and confectionary products, and miscellaneous food and kindred products. Since 1992, the agriculture-related sectors have been in decline. The largest – preserved fruits and vegetables – has seen its workforce reduced by more than half. Growth in the high-tech sectors is mixed, with electronic components and accessories, and miscellaneous electrical equipment and supplies, generally expanding while communications equipment, and computer and office equipment, have been scaling back.

Santa Cruz Summary
Basic Economic Indicators

INDUSTRY	SIC	1992 EMP (In Thous.)	1996 EMP (In Thous.)	2001 EMP (In Thous.)	2001 GDP (In Millions)	2001 LQ	Emp Growth (92 - 01)	Emp Growth (96 - 01)
1 Electronic Components & Accessories	367	1.5	2.0	1.7	378.4	1.5	12.2%	-15.9%
2 Preserved Fruits & Vegetables	203	2.9	2.1	1.0	53.6	3.4	-64.4%	-49.8%
3 General Industrial Machinery	356	1.1	1.1	0.9	165.2	7.8	-22.3%	-22.0%
4 Refrigeration & Service Machinery	358	0.2	0.4	0.5	62.5	6.1	156.1%	22.6%
5 Misc. Electrical Equipment & Supplies	369	0.0	0.3	0.5	136.9	4.9	1250.0%	66.9%
6 Sugar & Confectionery Products	206	1.1	0.5	0.4	22.9	4.0	-62.4%	-24.7%
7 Misc. Food & Kindred Products	209	0.6	0.6	0.4	22.1	2.6	-26.6%	-26.4%
8 Industrial Machinery	359	0.2	0.3	0.4	49.8	1.2	93.7%	26.8%
9 Commercial Printing	275	0.3	0.4	0.3	15.7	0.8	2.3%	-10.3%
10 Beverages	208	0.1	0.2	0.3	13.3	1.2	151.8%	59.0%
11 Measuring & Controlling Devices	382	0.2	0.3	0.3	27.9	0.6	26.9%	-13.7%
12 Leather Tanning & Finishing	311	0.1	0.4	0.3	12.5	141.1	114.7%	-21.3%
13 Communications Equipment	366	0.4	0.5	0.3	92.9	0.9	-32.1%	-42.2%
14 Millwork, Plywood & Structural Member	243	0.1	0.2	0.2	11.9	1.0	103.7%	38.4%
15 Bakery Products	205	0.1	0.1	0.2	6.5	1.1	56.2%	27.7%
16 Nonferrous Rolling & Drawing	335	0.0	0.3	0.2	10.6	2.1	1988.9%	-28.8%
17 Motorcycles, Bicycles, & Parts	375	0.3	0.2	0.2	15.0	3.9	-47.5%	-28.3%
18 Soap, Cleaners, & Toilet Goods	284	0.1	0.1	0.2	21.2	1.8	201.9%	59.8%
19 Computer & Office Equipment	357	0.6	0.5	0.1	27.5	0.2	-78.1%	-70.8%
20 Products Of Purchased Glass	323	0.0	0.1	0.1	8.6	2.5	1222.2%	101.7%

Sources: BLS, Economy.com, Milken Institute



Santa Barbara

Santa Barbara's 64 manufacturing sectors employ almost 17,000 people. As in the case of Santa Cruz, this represents an overall drop in manufacturing employment, in this case, of 12.3 percent.

This general decline is somewhat tempered by the same rate of positive growth (12.3 percent) in the area's top twenty manufacturing employment sectors, which in total provide direct jobs for nearly 14,000 people. This upper bracket of manufacturers is characterized by advanced technology and otherwise information-related sectors. Seven out of the top 20 are modern technology sectors: measuring and controlling devices, electronic components and accessories, computer and office equipment, drugs, communications equipment, search and navigation equipment, and medical instruments and supplies. Employment in measuring and controlling devices, computer and office equipment, drugs has grown – measuring and controlling devices alone has added more than 3,000 jobs since 1992 – while jobs in the other technology sectors, notably electronics components and accessories and medical instruments and supplies, have shrunk. Another four top 20 employment sectors are representative of more basic information technologies and as a group they too have been experiencing both expansion and decline. Books and periodicals have gained 242 jobs over the past ten years while newspapers and commercial printing lost 142.

Santa Barbara Summary
Basic Economic Indicators

INDUSTRY	SIC	1992 EMP (In Thous.)	1996 EMP (In Thous.)	2001 EMP (In Thous.)	2001 GDP (In Millions)	2001 LQ	Emp Growth (92 - 01)	Emp Growth (96 - 01)
1 Measuring & Controlling Devices	382	0.6	2.4	3.7	193.4	4.7	556.7%	53.9%
2 Ship & Boat Building & Repairing	373	0.1	0.5	1.3	64.8	10.9	2566.0%	187.3%
3 Electronic Components & Accessories	367	2.9	2.3	1.3	242.5	0.7	-54.7%	-43.9%
4 Motor Vehicles & Equipment	371	0.2	0.8	1.2	167.7	3.4	656.2%	62.7%
5 Miscellaneous Plastics Products	308	0.4	0.7	1.0	15.3	1.4	140.0%	35.8%
6 Preserved Fruits & Vegetables	203	0.5	0.6	0.5	24.6	1.1	-2.4%	-13.2%
7 Newspapers	271	0.5	0.5	0.5	20.7	0.9	-5.9%	-10.1%
8 Beverages	208	0.2	0.3	0.4	22.0	0.9	148.2%	68.8%
9 Misc. Fabricated Textile Products	239	0.1	0.2	0.4	6.7	1.5	279.8%	94.4%
10 Computer & Office Equipment	357	0.3	0.5	0.4	79.8	0.4	58.3%	-22.2%
11 Drugs	283	0.1	0.2	0.4	19.8	0.8	515.6%	79.1%
12 Commercial Printing	275	0.5	0.4	0.4	16.1	0.6	-22.3%	-9.2%
13 Communications Equipment	366	0.4	0.5	0.3	108.2	0.7	-15.5%	-29.7%
14 Search & Navigation Equipment	381	2.7	0.8	0.3	27.0	0.6	-87.6%	-56.2%
15 Industrial Machinery	359	1.0	0.5	0.3	37.0	0.6	-67.8%	-31.1%
16 Metal Forgings & Stampings	346	0.1	0.2	0.3	16.4	2.0	130.1%	43.7%
17 Nonferrous Rolling & Drawing	335	0.2	0.2	0.3	37.3	2.0	46.9%	17.6%
18 Books	273	0.1	0.2	0.3	19.6	3.1	98.6%	58.2%
19 Medical Instruments & Supplies	384	1.4	0.7	0.3	14.4	0.4	-82.4%	-64.6%
20 Periodicals	272	0.1	0.2	0.2	16.0	1.3	72.0%	30.9%

Sources: BLS, Economy.com, Milken Institute



Visalia

Jobs in Visalia's 54 manufacturing sectors have declined by 3.4 percent over the past ten years. The area has nearly 12,000 people employed by manufacturing operations; about 10,000 of these jobs are attributable to the 20 largest manufacturing employment sectors.

Five out of the ten largest manufacturing employment sectors are agriculture related. The each employ above 500 people and the top two, dairy products and preserved fruits and vegetables, individually employ in excess of 1,000. Employment levels in the top two sectors have dropped since 1992, with combined job losses of more than 1,000. Yet the number three sector, miscellaneous food and kindred products, has seen its employment leap from around only 80 jobs in 1992 to well over 800 as of 2001. Other major manufacturing employment sectors posting strong growth include special industrial machinery, up from 45 jobs to 812, and pens, pencils, office, and art supplies, up from just 13 jobs to 445. Such employment increases mean that the twenty largest sectors have grown some 11 percent despite an overall decline in Visalia's manufacturing employment.

Visalia Summary
Basic Economic Indicators

INDUSTRY	SIC	1992 EMP (In Thous.)	1996 EMP (In Thous.)	2001 EMP (In Thous.)	2001 GDP (In Millions)	2001 LQ	Emp Growth (92 - 01)	Emp Growth (96 - 01)
1 Dairy Products	202	1.6	1.5	1.1	100.6	10.0	-27.6%	-22.8%
2 Preserved Fruits & Vegetables	203	1.9	1.5	1.0	36.6	3.2	-48.3%	-30.8%
3 Misc. Food & Kindred Products	209	0.1	0.5	0.9	53.8	5.5	1020.5%	91.2%
4 Special Industry Machinery	355	0.0	0.3	0.8	70.3	6.1	1704.4%	212.3%
5 Meat Products	201	1.2	0.5	0.8	22.3	5.7	-34.0%	45.3%
6 Blast Furnace & Basic Steel Product	331	0.8	0.6	0.6	33.3	11.6	-27.0%	-6.6%
7 Sugar & Confectionery Products	206	0.1	0.2	0.6	36.0	5.7	575.9%	186.8%
8 Commercial Printing	275	0.9	0.6	0.6	20.3	1.4	-33.8%	-8.8%
9 Miscellaneous Plastics Products	308	0.5	0.6	0.5	20.9	1.2	-4.7%	-5.3%
10 Pens, Pencils, Office, & Art Supplies	395	0.0	0.4	0.4	11.6	13.5	3323.1%	26.1%
11 Men'S & Boys' Furnishings	232	0.1	0.3	0.4	8.8	4.7	172.6%	28.0%
12 Farm & Garden Machinery	352	0.2	0.4	0.3	18.5	14.7	106.1%	-4.8%
13 Electrical Industrial Apparatus	362	0.0	0.1	0.3	38.2	5.6	1706.3%	120.6%
14 Misc. Converted Paper Products	267	0.1	0.2	0.3	20.5	2.4	317.9%	25.0%
15 Books	273	0.4	0.4	0.3	22.8	4.5	-42.5%	-27.4%
16 Manifold Business Forms	276	0.3	0.3	0.3	18.8	11.4	-3.1%	-11.5%
17 Concrete, Gypsum, & Plaster Product	327	0.2	0.2	0.2	12.6	1.3	-4.9%	-0.5%
18 Paperboard Containers & Boxes	265	0.3	0.3	0.2	19.6	1.5	-27.5%	-23.8%
19 Millwork, Plywood & Structural Member	243	0.2	0.2	0.2	7.8	0.9	7.8%	-12.6%
20 Misc. Fabricated Metal Products	349	0.0	0.1	0.2	19.4	1.5	1618.2%	52.4%

Sources: BLS, Economy.com, Milken Institute



Yolo

The Yolo metropolitan area's 54 manufacturing sectors provide approximately 5,600 jobs. This represents a decrease of some 6 percent since 1992. The area's 20 largest manufacturing employment sectors have likewise declined, albeit at a smaller rate of about 1 percent.

Yolo's two largest manufacturing employment sectors, the wood buildings and mobile homes, and drugs sectors each employ more than 500 people. Both have grown significantly over the past ten years. Employment in pharmaceutical manufacturing has increased some 4.4 times to its current level of about 560. After the top two employment groups, five of the next eight are related to agriculture. Of these, only two – beverages and miscellaneous food and kindred products – enjoy higher employment levels than they did in 1992. Although ranked as only the 14th largest manufacturing employment sector, computer and office equipment, has demonstrated consistent and impressive growth, rising 183.0 percent over its 1992 level and 111.3 percent over its 1996 level.

Yolo Summary
Basic Economic Indicators

INDUSTRY	SIC	1992 EMP (In Thous.)	1996 EMP (In Thous.)	2001 EMP (In Thous.)	2001 GDP (In Millions)	2001 LQ	Emp Growth (92 - 01)	Emp Growth (96 - 01)
1 Wood Buildings & Mobile Homes	245	0.6	0.9	0.9	43.0	45.9	50.9%	-4.2%
2 Drugs	283	0.1	0.6	0.6	74.7	2.2	335.9%	0.7%
3 Sugar & Confectionery Products	206	0.6	0.6	0.5	37.5	5.3	-26.7%	-17.6%
4 Grain Mill Products	204	0.4	0.4	0.3	23.9	4.8	-29.4%	-31.9%
5 Commercial Printing	275	0.4	0.3	0.3	26.4	0.8	-29.4%	4.9%
6 Beverages	208	0.2	0.3	0.3	32.3	1.1	20.1%	3.1%
7 Fabricated Structural Metal Products	344	0.2	0.3	0.3	17.6	0.9	29.1%	1.2%
8 Misc. Converted Paper Products	267	0.3	0.3	0.3	6.3	2.7	-26.6%	-16.2%
9 Preserved Fruits & Vegetables	203	0.6	0.4	0.2	23.9	0.9	-63.3%	-38.1%
10 Misc. Food & Kindred Products	209	0.2	0.2	0.2	8.1	1.3	3.6%	-6.5%
11 Misc. Fabricated Metal Products	349	0.1	0.1	0.2	9.2	1.5	78.7%	15.2%
12 Misc Transportation Equipment	379	0.0	0.1	0.2	10.9	5.8	327.0%	26.4%
13 Miscellaneous Plastics Products	308	0.1	0.1	0.2	1.2	0.4	69.2%	3.4%
14 Computer & Office Equipment	357	0.1	0.1	0.2	10.3	0.3	183.0%	111.3%
15 Plumbing & Heating, Except Electric	343	0.2	0.1	0.1	10.8	3.3	-2.6%	40.0%
16 Farm & Garden Machinery	352	0.1	0.2	0.1	4.4	6.7	-13.0%	-24.9%
17 Partitions & Fixtures	254	0.1	0.1	0.1	0.9	2.5	88.1%	16.8%
18 Concrete, Gypsum, & Plaster Product	327	0.2	0.2	0.1	19.5	0.8	-34.7%	-31.9%
19 Misc Chemical Products	289	0.4	0.1	0.1	8.8	2.1	-75.7%	-2.0%
20 General Industrial Machinery	356	0.1	0.1	0.1	13.5	1.0	-3.2%	4.6%

Sources: BLS, Economy.com, Milken Institute



Ventura

Manufacturers in Ventura directly provide more than 40,000 jobs. Approximately three-quarters of these positions are generated by the 20 largest manufacturing employment sectors. Both total employment and employment in the top twenty have grown since 1992, but employment in the sectors that now constitute the 20 largest have nearly doubled (from around 16,000 to almost 30,000) while aggregate employment has increased at a still impressive but smaller 31.2 percent.

The top 20 sectors are characterized mainly by modern industrial manufacturing operations and high-tech production, and each employ more than 1,000 people. The number one sector, electronics components and accessories, employs more than 6,000, and the number two sector, miscellaneous plastic products, employs nearly 5,000. The top five sectors have all racked up impressive 1992-2001 growth rates in the triple digits. Employment in the number three drug manufacturing sector has shot up almost seven times, from 423 employees to 2,875. There are noticeable rates of decline, however. Measuring and controlling devices, search and navigation equipment, and computer and office equipment individually employed more than 1,000 people in 1992; they are now under those levels, having relinquished jobs at the rates of 11.7 percent, 28.47 percent, and 36.77 percent, respectively.

Ventura Summary
Basic Economic Indicators

INDUSTRY	SIC	1992	1996	2001	2001	2001	Emp	Emp
		EMP	EMP	EMP	GDP			
		(In Thous.)	(In Thous.)	(In Thous.)	(In Millions)		(92 - 01)	(96 - 01)
1 Electronic Components & Accessories	367	3.1	3.7	6.4	1673.9	2.1	105.6%	70.9%
2 Miscellaneous Plastics Products	308	1.5	2.1	4.6	145.3	3.9	216.3%	116.1%
3 Drugs	283	0.4	0.7	2.9	2143.1	3.6	579.7%	299.9%
4 Special Industry Machinery	355	0.5	1.1	2.0	295.8	5.7	280.0%	82.0%
5 Motor Vehicles & Equipment	371	0.4	1.4	1.5	133.2	2.5	248.8%	9.6%
6 Industrial Machinery	359	1.3	1.2	1.2	182.2	1.4	-3.6%	5.7%
7 Household Audio & Video Equipment	365	0.6	0.7	1.1	199.1	3.4	65.7%	56.1%
8 Measuring & Controlling Devices	382	1.1	1.4	1.0	68.0	0.8	-11.7%	-29.5%
9 Toys & Sporting Goods	394	0.6	0.6	0.9	32.0	3.1	68.2%	63.4%
10 Newspapers	271	0.9	0.7	0.9	52.3	1.0	-2.3%	18.8%
11 Metal Forgings & Stampings	346	0.1	0.4	0.8	47.6	3.3	526.9%	118.8%
12 Search & Navigation Equipment	381	1.2	1.2	0.8	49.2	0.8	-28.4%	-29.8%
13 General Industrial Machinery	356	0.8	0.8	0.8	125.5	2.7	2.8%	-4.9%
14 Paperboard Containers & Boxes	265	0.4	0.4	0.8	38.0	2.2	111.5%	75.4%
15 Computer & Office Equipment	357	1.2	0.7	0.7	156.0	0.4	-36.7%	3.2%
16 Electrical Industrial Apparatus	362	0.3	0.4	0.7	194.1	5.5	179.0%	101.4%
17 Fabricated Structural Metal Products	344	0.5	0.5	0.7	29.6	0.8	45.7%	39.5%
18 Iron & Steel Foundries	332	0.4	0.4	0.7	38.9	6.3	72.0%	59.1%
19 Communications Equipment	366	0.6	0.5	0.7	182.5	0.8	2.4%	21.4%
20 Pens, Pencils, Office, & Art Supplies	395	0.3	0.3	0.6	20.8	7.5	121.7%	113.6%

Sources: BLS, Economy.com, Milken Institute



Vallejo

Vallejo has seen its manufacturing workforce expand by more than 60 percent over the last ten years. The top 20 manufacturing sectors employ 87.3 percent of the areas 21,589 manufacturing jobs.

The top employment sector – beverages – at 7,650 jobs, leads the next largest sector – special industry machinery – by more than 6,000 positions. Growth in both sectors, along that for most of the top ten, has been strong. Special industry machinery in particular has seen a robust expansion of jobs, from under 300 in 1992 to over 1,500 in 2001. All of the top ten sectors employ 500 or more people. The other sectors of this grouping speak to the general diversity of the area's industrial base and include concrete, gypsum, and plaster products, soap, cleaners, and toilet goods, metal services, fabricated structural metal products, motor vehicles and equipment, bakery products, newspapers, and miscellaneous plastics products. Metal services stands out for having grown from only four people working in the sector in 1992 to having more than 800 employed now.

However, some among the top 20 have posted decline as well. Sectors that have reduced their employment levels since 1996 include newspapers, preserved fruits and vegetables, petroleum refining, sugar and confectionary products, commercial printing, women's and misses outerwear, and metal cans and shipping containers.

Vallejo Summary
Basic Economic Indicators

INDUSTRY	SIC	1992 EMP (In Thous.)	1996 EMP (In Thous.)	2001 EMP (In Thous.)	2001 GDP (In Millions)	2001 LQ	Emp Growth (92 - 01)	Emp Growth (96 - 01)
1 Beverages	208	5.0	6.3	7.7	681.6	15.9	52.2%	22.4%
2 Special Industry Machinery	355	0.3	0.5	1.5	132.0	7.1	477.2%	223.0%
3 Concrete Gypsum & Plaster Product	327	0.4	0.7	1.2	121.8	4.2	179.1%	71.0%
4 Soap Cleaners & Toilet Goods	284	0.4	0.7	1.0	107.2	6.5	160.6%	44.4%
5 Metal Services Nec	347	0.0	0.1	0.8	41.6	3.4	21000.0%	529.9%
6 Fabricated Structural Metal Products	344	0.2	0.6	0.7	41.9	1.3	189.7%	27.1%
7 Motor Vehicles & Equipment	371	0.1	0.5	0.7	56.2	1.8	396.3%	26.2%
8 Bakery Products	205	0.0	0.1	0.6	37.0	2.1	1300.0%	452.6%
9 Newspapers	271	0.5	0.6	0.5	20.7	1.0	3.7%	-6.3%
10 Miscellaneous Plastics Products	308	0.6	0.5	0.5	27.6	0.7	-20.4%	0.4%
11 Preserved Fruits & Vegetables	203	0.4	0.7	0.5	30.4	1.0	12.2%	-28.9%
12 Petroleum Refining	291	0.5	0.6	0.5	160.8	3.0	2.7%	-13.8%
13 Industrial Machinery	359	0.2	0.3	0.4	32.0	0.8	89.2%	45.5%
14 Misc Chemical Products	289	0.2	0.4	0.4	52.9	4.4	80.9%	1.5%
15 Sugar & Confectionery Products	206	0.3	0.4	0.4	27.8	2.2	24.8%	-11.4%
16 Commercial Printing	275	0.4	0.3	0.3	30.3	0.5	-9.3%	-0.6%
17 Plastics Materials & Synthetics	282	0.1	0.1	0.3	40.6	4.3	448.1%	185.0%
18 Refrigeration & Service Machinery	358	0.1	0.3	0.3	4.8	1.9	127.6%	-1.4%
19 Women's & Misses' Outerwear	233	0.4	0.3	0.3	9.8	0.3	-23.6%	-14.2%
20 Metal Cans & Shipping Containers	341	0.2	0.3	0.3	21.1	5.1	27.4%	-14.3%

Sources: BLS, Economy.com, Milken Institute



Stockton

Stockton's 77 manufacturing sectors have increased employment a modest 4 percent since 1992 to the current level of about 24,000 positions. Of these, some 75 percent are generated by the 20 largest manufacturing employment sectors.

Manufacturing tied to natural resources or agriculture dominates the top 20 employment rankings. The number one and three employment sectors are preserved fruits and vegetables and grain mill products. A relative outlier, the high-tech sector of electronic components and accessories, represents the second largest employment category. These top three sectors and the following four – paperboard containers and boxes, motor vehicles and equipment, beverages, and miscellaneous plastic products – each employ more than 1,000 people. Over the past ten years, employment level reductions from sectors such as preserved fruits and vegetables, grain mill products, and sugar and confectionary products have been counterbalanced by employment gains in areas such as electronics, paperboard containers, and motor vehicles equipment manufacturing. Job additions in the growth sectors account for the 20.3 percent positive growth rate experienced by the 20 largest sectors as a group.

Stockton Summary
Basic Economic Indicators

INDUSTRY	SIC	1992 EMP (In Thous.)	1996 EMP (In Thous.)	2001 EMP (In Thous.)	2001 GDP (In Millions)	2001 LQ	Emp Growth (92 - 01)	Emp Growth (96 - 01)
1 Preserved Fruits & Vegetables	203	3.3	3.6	2.7	178.2	4.9	-17.8%	-24.8%
2 Electronic Components & Accessories	367	1.4	1.6	1.7	88.0	0.8	24.1%	8.4%
3 Grain Mill Products	204	1.3	1.2	1.3	119.2	9.8	-2.2%	4.8%
4 Paperboard Containers & Boxes	265	0.6	0.9	1.1	62.9	4.6	84.8%	31.1%
5 Motor Vehicles & Equipment	371	0.5	0.9	1.1	93.6	2.7	147.3%	26.8%
6 Beverages	208	0.9	0.9	1.1	88.6	2.0	23.4%	16.3%
7 Miscellaneous Plastics Products	308	0.8	1.0	1.0	60.8	1.2	18.3%	1.0%
8 Concrete Gypsum & Plaster Product	327	0.7	0.7	0.8	40.9	2.8	22.2%	20.1%
9 Misc. Fabricated Textile Products	239	0.3	0.6	0.8	31.1	2.4	152.1%	34.3%
10 Household Furniture	251	0.3	0.4	0.7	12.4	1.6	115.5%	54.9%
11 Glass & Glassware Pressed or Blown	322	0.5	0.6	0.7	39.2	10.0	30.0%	23.3%
12 Fabricated Structural Metal Products	344	1.0	0.9	0.7	46.0	1.1	-29.8%	-21.9%
13 Metal Services	347	0.2	0.3	0.7	39.0	2.5	252.1%	104.2%
14 Bakery Products	205	0.4	0.4	0.6	34.2	1.9	56.9%	61.8%
15 Misc. Fabricated Metal Products	349	0.1	0.3	0.6	39.3	2.5	283.8%	65.6%
16 Sugar & Confectionery Products	206	0.7	0.6	0.5	37.1	2.9	-24.6%	-13.4%
17 Misc Wood Products	249	0.5	0.6	0.5	43.7	4.6	0.0%	-3.6%
18 Partitions & Fixtures	254	0.4	0.5	0.5	10.9	4.7	30.4%	-12.5%
19 Dairy Products	202	0.4	0.4	0.4	33.7	2.1	14.8%	17.0%
20 Flat Glass	321	0.6	0.5	0.4	26.7	15.7	-31.9%	-15.3%

Sources: BLS, Economy.com, Milken Institute



Santa Rosa

The 77 manufacturing sectors based in the Santa Rosa MSA directly provide for more than 32,000 jobs, an increase of 60 percent over 1992 employment levels. Although this growth is substantial, the 20 largest manufacturing employment sectors (which account for more than 80 percent of all manufacturing positions) have nearly doubled their aggregate labor pool, from around 14,000 to 27,000.

The area's manufacturing activities are predominantly based on agriculture and advanced technologies. Four of the ten largest manufacturing sector employers are beverages, preserved fruits and vegetables, dairy products, and meat products. Another four are ophthalmic goods, measuring and controlling devices, communications equipment, and computer and office equipment. The top three sectors – beverages, ophthalmic goods, and measuring and controlling devices – individually employ 5,000 or more people. They, along with all but one of the top ten sectors, have grown since 1992. The exception to this trend is newspapers, the tenth largest employment sector, whose workforce has shrunk by about 30 percent. Perhaps illustrative of manufacturing's multiplier effects, strong growth in ophthalmic goods (1,310 employed in 1992; 5,332 employed in 2001) has been accompanied by a surge in employment for products of purchased glass, a sector which employed only seven people in 1992 but now directly provides jobs for more than 2,000. Robust, triple-digit percentage growth has also been posted in the sectors of household audio and video and electronics components and accessories.

Santa Rosa Summary
Basic Economic Indicators

INDUSTRY	SIC	1992	1996	2001	2001	Emp Growth (92 - 01)	Emp Growth (96 - 01)
		EMP (In Thous.)	EMP (In Thous.)	EMP (In Thous.)	GDP (In Millions) LQ		
1 Beverages	208	2.4	3.5	5.8	389.5	11.1	137.3%
2 Ophthalmic Goods	385	1.3	2.5	5.3	290.1	46.1	307.0%
3 Measuring & Controlling Devices	382	4.7	4.2	5.0	417.7	5.8	5.8%
4 Products Of Purchased Glass	323	0.0	0.3	2.0	31.7	23.6	28600.0%
5 Communications Equipment	366	0.7	1.1	1.7	594.1	3.1	167.7%
6 Preserved Fruits & Vegetables	203	0.9	0.9	1.1	46.9	2.0	20.4%
7 Computer & Office Equipment	357	0.0	0.2	0.9	101.0	0.7	3487.5%
8 Dairy Products	202	0.4	0.5	0.6	30.6	2.8	27.0%
9 Meat Products	201	0.3	0.4	0.5	19.5	1.9	41.4%
10 Newspapers	271	0.6	0.6	0.5	39.3	0.8	-29.0%
11 Household Audio & Video Equipment	365	0.1	0.2	0.4	30.0	2.1	336.6%
12 Structural Clay Products	325	0.0	0.3	0.4	5.8	14.5	1616.0%
13 Metal Forgings & Stampings	346	0.2	0.3	0.4	35.8	2.5	99.5%
14 Concrete Gypsum & Plaster Product	327	0.2	0.5	0.4	11.4	1.4	142.0%
15 Industrial Machinery	359	0.4	0.6	0.4	44.2	0.7	-2.1%
16 Electronic Components & Accessories	367	0.2	0.2	0.4	36.1	0.2	104.2%
17 Misc. Food & Kindred Products	209	0.5	0.4	0.4	20.5	1.3	-27.6%
18 Bakery Products	205	0.2	0.3	0.4	14.6	1.1	59.4%
19 Motor Vehicles & Equipment	371	0.3	0.4	0.4	31.3	0.9	30.0%
20 Millwork Plywood & Structural Member	243	0.5	0.4	0.3	20.4	0.9	-35.2%

Sources: BLS, Economy.com, Milken Institute



Yuba

The Yuba area has 3,500 people employed in 51 manufacturing sectors. Almost 96 percent of that employment comes from the 20 largest manufacturing employment sectors.

Manufacturing in Yuba is dominated by logging and agriculture related production activities. Seven of these sectors – millwork, logging, and miscellaneous wood products, followed by preserved fruits and vegetables, beverages, farm and garden machinery, and meat products – rank in the bracket of top ten manufacturing employment sectors. Only the number one sector, millwork, employs more than 500, the next eight top sectors individually employ more than 100. Sectors that have enjoyed particularly strong growth include logging (up from a labor force of four in 1992 to nearly 500 in 2001), wood products, and beverages. Sectors that have scaled back employment include preserved fruits and vegetables, down by more than 600 employees, and farm and garden machinery. The 20 largest manufacturing employment sectors have seen their aggregate labor force rise by 12.8 percent since 1992.

Yuba Summary
Basic Economic Indicators

INDUSTRY	SIC	1992 EMP (In Thous.)	1996 EMP (In Thous.)	2001 EMP (In Thous.)	2001 GDP (In Millions)	2001 LQ	Emp Growth (92 - 01)	Emp Growth (96 - 01)
1 Millwork Plywood & Structural Member	243	0.7	0.9	0.8	16.3	10.2	11.0%	-8.7%
2 Logging	241	0.0	0.2	0.5	80.2	51.9	12175.0%	218.8%
3 Misc Wood Products	249	0.1	0.2	0.3	9.7	13.8	259.1%	51.8%
4 Newspapers	271	0.1	0.2	0.3	5.7	2.5	110.3%	27.9%
5 Fabricated Structural Metal Products	344	0.1	0.2	0.3	5.5	2.2	165.0%	30.0%
6 Preserved Fruits & Vegetables	203	0.9	0.4	0.2	35.9	2.1	-72.6%	-36.6%
7 Beverages	208	0.1	0.1	0.2	30.7	1.7	213.1%	165.3%
8 Farm & Garden Machinery	352	0.2	0.2	0.2	12.0	17.9	-29.2%	-15.8%
9 Meat Products	201	0.1	0.1	0.1	8.8	2.7	117.7%	8.9%
10 Industrial Machinery	359	0.1	0.1	0.1	5.5	0.6	17.1%	22.4%
11 Medical Instruments & Supplies	384	0.0	0.0	0.1	2.2	0.4	29.5%	18.8%
12 Construction & Related Machinery	353	0.0	0.0	0.1	1.5	2.8	112.0%	23.3%
13 Sawmills & Planing Mills	242	0.4	0.1	0.0	2.1	1.6	-87.7%	-46.2%
14 Motor Vehicles & Equipment	371	0.0	0.0	0.0	3.5	0.5	110.0%	31.3%
15 Misc. Food & Kindred Products	209	0.0	0.0	0.0	1.8	0.6	1033.3%	36.0%
16 Miscellaneous Plastics Products	308	0.0	0.0	0.0	0.6	0.2	52.6%	-3.3%
17 Partitions & Fixtures	254	0.0	0.0	0.0	0.8	1.3	-25.7%	-3.7%
18 Commercial Printing	275	0.0	0.0	0.0	0.4	0.1	-56.3%	-41.7%
19 Metal Services Nec	347	0.0	0.0	0.0	0.6	0.3	87.5%	-6.3%
20 Costume Jewelry & Notions	396	0.0	0.0	0.0	0.7	1.7	8.3%	8.3%

Sources: BLS, Economy.com, Milken Institute



Redding

Redding's 45 manufacturing sectors employ some 4,300 people, representing a decline of nearly 9 percent since 1992. The 20 largest sectors generate 95 percent of Redding's manufacturing employment.

The lumber industry remains Redding's largest provider of manufacturing jobs. Sawmills and paper mills each employ just over 1,000 people, representing declines in employment of 9.8 percent and 12.3 percent since 1992. Logging, another major employment sector, reduced its workforce size by a factor of 4.5 from 470 in 1992. Millwork is the only sector tied to lumber that has not declined, but grown 18.9 percent in the past ten years. Other bright spots in the area's manufacturing employment picture include soap, cleaners and toilet goods, up 24.4 percent over 1992 levels; and commercial printing, and special industry machinery, both up by about 70 percent. Along with special industry machinery, growth has also been recorded by the related sectors of industrial machinery and general industrial machinery. Continued diversification into such growing manufacturing sectors could make up for the losses occurring in Redding's traditional manufacturing sectors.

Redding Summary
Basic Economic Indicators

INDUSTRY	SIC	1992 EMP (In Thous.)	1996 EMP (In Thous.)	2001 EMP (In Thous.)	2001 GDP (In Millions)	2001 LQ	Emp Growth (92 - 01)	Emp Growth (96 - 01)
1 Sawmills & Planing Mills	242	1.1	1.1	1.0	69.8	21.8	-9.9%	-6.4%
2 Paper Mills	262	1.1	1.2	1.0	39.9	113.3	-12.8%	-14.0%
3 Women'S & Misses' Outerwear	233	0.3	0.2	0.3	0.5	0.7	-15.2%	5.3%
4 Millwork Plywood & Structural Member	243	0.2	0.2	0.3	11.1	2.1	18.9%	24.1%
5 Soap Cleaners & Toilet Goods	284	0.2	0.2	0.2	21.0	4.2	24.4%	13.2%
6 Newspapers	271	0.2	0.2	0.2	7.4	0.9	-8.8%	-12.2%
7 Commercial Printing	275	0.1	0.1	0.2	7.9	0.7	69.9%	22.5%
8 Special Industry Machinery	355	0.1	0.1	0.1	17.9	1.8	71.1%	12.1%
9 Miscellaneous Plastics Products	308	0.2	0.1	0.1	5.5	0.4	-35.7%	0.9%
10 Jewelry Silverware & Plated Ware	391	0.0	0.1	0.1	6.1	4.5	285.7%	30.1%
11 Logging	241	0.5	0.2	0.1	10.8	7.4	-77.7%	-52.1%
12 Medical Instruments & Supplies	384	0.0	0.0	0.1	5.6	0.4	295.2%	93.0%
13 Beverages	208	0.1	0.1	0.1	10.2	0.5	41.8%	18.2%
14 Industrial Machinery	359	0.0	0.1	0.1	6.6	0.4	56.8%	4.5%
15 General Industrial Machinery	356	0.0	0.0	0.1	12.7	1.0	1550.0%	120.0%
16 Fabricated Structural Metal Products	344	0.1	0.1	0.1	5.5	0.3	-25.6%	-14.1%
17 Concrete Gypsum & Plaster Product	327	0.1	0.1	0.1	3.8	0.6	0.0%	9.3%
18 Misc Wood Products	249	0.1	0.1	0.1	1.0	1.6	-10.8%	0.0%
19 Measuring & Controlling Devices	382	0.1	0.1	0.0	1.9	0.2	-9.3%	-35.5%
20 Cement Hydraulic	324	0.1	0.1	0.0	10.6	5.7	-39.7%	-23.0%

Sources: BLS, Economy.com, Milken Institute

**Appendix II: Business Incentives by State⁴²****Mid Atlantic Region:****Delaware:**

Industrial Revenue Bonds

Export-Import Financing

Delaware Innovation Fund Venture Capital

Small Business Innovation Research Bridge Grant Assistance Small Business

Administration Assistance

Maryland:

Industrial Development Financing:

- Loan Guarantees
- Taxable and Tax-Exempt Bonds
- Trade Financing

Seafood and Aquaculture Loans Energy Financing Community Financing:

- Loans to Businesses or Local Governments Small Business Development Financing:
- Contract Financing
- Equity Participation Investment for Franchises, Technology-Based Businesses, and Business

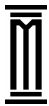
Acquisitions

- Surety Bond Guaranty or Direct Bonding
- Long-Term Guaranty Program Daycare Financing:
- Direct Loans and Loan Guarantees Investment Financing:
- Start-Ups, First- and Second-Stage Technology-Driven

Companies Maryland Economic Development Assistance Authority Fund Maryland Competitive Advantage Financing Fund Smart-Growth Economic Development Infrastructure Fund International Financing:

- Supplementary Export Financing
- Export Development Assistance
- Foreign-Trade Zones Tax Incentives:

⁴² Data in this Appendix was provided by Area Development Online, www.area-development.com



- Job Creation Tax Credits
- One Maryland Tax Credits
- Enterprise Zone Tax Credits
- Federal Empowerment Zones Incentives
- Brownfields Revitalization

Incentives

Employee Training

Recruitment Assistance

New Jersey:

New Jersey Economic Development Authority:

- Business Relocation Grants
- Business Employment Incentive Program (BEIP)
- Corporate Tax Credits
- High-Tech Initiatives
- Sub-Chapter S Provision
- Direct Loans/Loan Guarantees
- Statewide Loan Pool
- Tax-Exempt Private Activity Bonds
- Taxable Bonds
- Trade Adjustment Assistance Center
- Recycling Loans

New York:

Direct Loans and/or Grants

Interest Rate Subsidies

Loans and Grants for Working Capital Assistance

Energy Cost Savings

Foreign-Trade Zones

Economic Development Zones

Infrastructure Assistance

Pennsylvania:

Department of Community and Economic Development (DCED)

- Single Application for Assistance — financial assistance from myriad funding programs can be obtained with a single application form available from the DCED's Customer Service Center. Eligible uses of funding programs include:
 - Land and Building Acquisition
 - Expansion and Construction
 - Machinery and Equipment Purchases
 - Site Remediation



- Workforce Development
- Refinancing
- Infrastructure
- Venture Capital
- Job Creation
- Technical Assistance
- Technology Investment
- Tax Credits and Abatements

Midwest Region:

Illinois:

Participation Loan Program
Development Corporation Participation Program
Minority, Women and Disability Participation Loan Program
Illinois Capital Access Program
Surety Bond Guaranty Program
Business Development Public Infrastructure
Affordable Financing of Public Infrastructure Program
Enterprise Zone Participation Loan Program
Enterprise Zone Program (tax abatement)
High Impact Business Program
Tax Increment Financing Program
Community Development Assistance Program
Community Services Block Grant Loan Program
Illinois Technology Advancement and Development Program
Illinois Facade Loan Program
Foreign-Trade Zones
Day Care Initiative Program
Economic Recovery Loan (ER) Program
State Treasurer's Economic Program
Targeted Initiative Program

Indiana:

Industrial Development Grant Fund
Skills Enhancement Fund
Economic Development for a Growing Economy (EDGE)
Tax Credits
Tax Increment
Financing
Strategic Development Fund
Venture Capital
Industrial Development Infrastructure Program
Public Facility Energy Efficiency Program



Industrial Energy Efficiency Audits and Fund
Alternative Energy Systems Program
Recycling Market Development Grants and Loans
Trade Finance Program
Trade Show Assistance Program
Foreign-Trade Zones
Enterprise Zones
Industrial Development Guarantee Fund (loans)
Tax-Exempt Bonds
Indiana Small Business Development Corporation Loan Programs
Skills 2016
TECH Fund
21st Century Research and Development Fund

Iowa:

Iowa New Jobs and Income Program (tax credits and exemptions for large investments)
Enterprise Zones
Community Economic Betterment Account (loans, grants, guarantees, comprehensive management assistance)
Economic Development Set-Aside Program (loans, grants)
Iowa New Jobs Training Assistance
Value-Added Agricultural Products and Processes Financial Assistance Program — VAAPFAP (loans, grants)
Targeted Small Business Financing (loans, grants)
Self-Employment Loan Program (loans)
Export Trade Assistance Program
Urban Revitalization Areas
Tax Exemptions for Industrial Property
Tax Credits for New Employees and Research & Development
Local Tax Increment Financing Authority
Federal SBA Direct Loans and Guaranteed Loan Programs

Kansas:

Economic Development Bonds (industrial revenue bonds)
Kansas Development Finance Authority (bonds)
Tax Increment Financing
Risk Capital (statewide system)
Local Seed Capital Pool
Kansas Technology Enterprise Corporation (research grants)
Kansas Industrial Training and Retraining Programs
Training and Equipment Grants
R&D Tax Credits
Enterprise Zones Kansas Partnership Fund (infrastructure development)



High Performance Incentive Program
Kansas Economic Opportunity Initiative Fund
Kansas Main Street Program (loans/grants)
IMPACT (Investments in Major Projects and Comprehensive Training)
KEIEP (Kansas Existing Industry Expansion Program)

Michigan:

Job Creation Tax Credits (expanded to include high tech)
Renaissance (Tax-Free) Zones
Industrial Development Revenue Bonds (taxable and tax-exempt)
Technology and Productivity Consulting
Permit Coordination
Site Reclamation (grants, loans)
Enterprise Zones
Foreign-Trade Zones
Brownfield Redevelopment and Core Communities Fund
Personal Property Tax Abatement
Customized Job Training
Michigan Renaissance Fund
(community grants for infrastructure and site development improvements)
Worker Recruitment
Tax Abatements (expanded to include high tech)
SmartZones (clusters of high-tech growth to support business)
Michigan Site Network
SelectSites (ready for turnaround)
Site proposal assistance

Minnesota:

Capital Access Program
Minnesota Investment Fund Program
Urban Challenge Grant Program
Rural Challenge Grant Program
Export Loan Guarantee Program
Minnesota Enterprise Zone Program
Small Business Development Loan Program
Small Cities Development Program

Missouri:

Tax-Exempt Industrial Development Bonds
Missouri Development Finance Board
Missouri Customized Training Program
Missouri First Linked Deposit
Industrial Infrastructure Grants
Action Fund Loan Program
Tax Increment Financing



Foreign-Trade Zone
Rebuilding Community Tax
Credits
Enterprise Zone Tax Credits
Business Facility Tax Credits
New Jobs Training Bonds
Tax Credits Skills Development
Brownfield Redevelopment Tax Credit

Nebraska:

Industrial Development Revenue Bonds (low-interest financing)
Nebraska Investment Finance Authority
Economic Development Loan Program
Nebraska Development Finance Service (low-interest financing)
Nebraska Energy Fund
Small Business Innovation Research Program
Statewide SBA 504
Local Development Corporations
Skill Training Employment Program
Heartland Capital Fund Limited (seed capital)
Nebraska Enterprise Opportunity Network
Community Improvement Financing
Nebraska Employment and Investment Growth Act (tax credits)
Nebraska Employment Expansion and Investment Incentive Act (tax credits)
Nebraska Rural Economic Opportunities Act (tax credits)
Invest Nebraska Act (tax credits)
Nebraska Venture Capital Forum Program

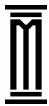
North Dakota:

North Dakota Department of Commerce—Economic Development & Finance Division:

- North Dakota Development Fund (gap financing) Bank of North Dakota:
- PACE (interest buydown program)
- MATCH (low-interest loans)
- Business Development Loans
- Micro Business Loan Program Job Service North Dakota:
- Workforce 2000
- North Dakota New Jobs Program

Ohio:

Economic Development Financing
Community Development Block Grants
Revolving Loan Funds
Enterprise Zones
Minority Business Development Financing



Ohio Industrial Training Program
Enterprise Bond Program
Job Creation Tax Credit
Machinery Investment Tax Credit

South Dakota:

REDI Fund (low-interest loans)
S.D. Economic Development Finance Authority (pooled bond program)
Industrial Revenue Bonds
Workforce Development
Training Grants
Statewide CDC (SBA 504 Loan Program)
MicroLOAN South Dakota
(low-interest loans for small companies)
APEX (value-added ag loan program)

Wisconsin:

Business Employees Skills Training Awards (BEST)
Brownfields Initiative
Community Development Block Grant Program — Public Facilities for Economic
Development
Development Zone Program
Employee Ownership Assistance Loan Program
Enterprise Development Zone Program
Industrial Revenue Bonds
Minority Business Development Fund
Rural Economic Development Program
Tax Incremental Financing
Wisconsin Trade Project Program
Wisconsin Development Fund:
• Major Economic Development Program
• Customized Labor Training Fund
• Technology Development Fund
Certified Capital Company Program

The Mountain Region:

Colorado:

Access Loans/SBA 504 Fixed Asset Program (long-term, fixed-rate loans)
Export Credit Insurance Program
Quality Investment Capital Program (fixed-rate financing for small business)
Rural Development Loan Program
Community Development Block Grant Funding Programs
Economic Development Commission Funds
Private Activity Bonds



Enterprise Zones
Job Training Programs

Idaho:

New Industries Training Program
Work force Development Training Fund
Gem Community Program (technical assistance to communities)
Idaho Community Development Block Grants (infrastructure)
Idaho Business Network (notification and assistance in contracting with government and some major corporations)
Certified Development Corporations (loans)
Small Business Development Centers (technical assistance)
International Marketing Action Program
Tax Increment Financing
New Jobs Tax Credit

Montana:

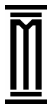
Workforce Grants with 50 percent qualifying match
Business economic development loans with interest rates as low as 2 percent
Stand-Alone and Pooled Industrial Revenue Bond Programs
Research and Commercialization Grants
Infrastructure Development Loans with payments deductible from corporate taxes
Foreign-Trade Zone

Nevada:

Sales Tax Deferral and Abatement
Business Tax Abatement
Property Tax Abatement
Foreign-Trade Zones
Job Training
Personal Property Tax
Abatement
Industrial Development Revenue Bonds

Utah:

Industrial Development Bonds
Tax Increment Financing
Custom Fit Training Program
Research & Development (R&D) Tax Credits
Enterprise Zones
Industrial Assistance Funds
Manufacturing Equipment Sales Tax Exemption
Short Term Intensive Training (STIT)
Workforce Investment Act (WIA)



Recycling Market Development Zone Program
Revolving Loan Funds

Wyoming:

Wyoming Business Council, Infrastructure and Community Considerations:

- Community Development Block Grants – Technical Assistance Grants
 - Infrastructure Grants
 - Planning Only Grants
 - Job Training Grants
- Work Force Training Grants
- Wyoming Partnership Challenge Loan Program Wyoming Industrial Development Corporation
- Industrial Development Revenue Bonds

New England Region:

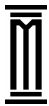
Connecticut:

Connecticut Development Authority: Direct Loans

- Loan Guarantees (especially in urban areas)
- Low-Cost SBA 504 Loans
- Tax-Exempt Industrial Revenue Bonds
- Connecticut Job Training Finance Program (loans, assistance for job training)

Connecticut Department of Economic and Community Development:

- Manufacturing Assistance Fund (loans, guarantees, tax credits)
- State Enterprise Zone Program
- Urban Jobs Program
- Industrial Parks Program
- Turnaround Assistance Program
- Insurance Reinvestment Tax Credit Program
- Industry Clusters Initiative
- Brownfields Liability Limits Connecticut Innovations, Inc.
- Risk Capital Investments
- Biotechnology Facilities Fund
- Guarantees and Direct Loans for laboratory construction and renovation
- Connecticut Technology Partnership
- Yankee Ingenuity Initiative
- Critical Technologies Program
- Renewable Energy Fund



Maine:

Department of Economic and Community Development:

- Governor's Training Initiative
- Jobs and Investment Tax Credit
- Business Equipment Tax Reimbursement Program
- Research Expense Credit
- Super R&D Credit
- High-Technology Investment Tax Credit
- Municipal Tax Increment

Financing

- Employment Tax Increment Financing
- Employer-Assisted Day Care Credit
- Clean Fuel Tax Credit
- Employer Provided Long-Term Care Benefits Credit

Maine Technology Institute:

- Development Awards
- Seed Grants
- Cluster Enhancement Awards

Maine Technical College System:

- Maine Quality Centers (specialized technical training for workers in new or expanding business)

Finance Authority of Maine:

- Customized SMART & SMART-E Bonds (financing for industrial, warehousing, and manufacturing facilities and equipment at very competitive rates and terms)
- Major Business Expansion Program (low-cost financing for industrial projects up to \$25 million)
- Commercial Loan Insurance (providing access to capital for Maine business)
- Economic Recovery Loan Program
- Seed Capital Tax Credit Program
- Small Enterprise Growth Fund
- Occupational Safety Loan Program (low-interest direct loans for workplace safety equipment)
- Export Finance Program



Massachusetts:

Capital Access Program
Emerging Technology Fund
Export Finance Guarantee Fund
Economic Development Incentive Program
Investment Tax Credits
Corporate R&D Tax Credits

New Hampshire:

New Hampshire Economic Development Data System (computerized site-selection services)
Community Development Block Grants
New Hampshire Small Business Development Center
New Hampshire Business Finance Authority
New Hampshire Business Development Corporation
Export Financing
Industrial Development Bonds
Loan Guaranty Programs
Venture Capital Network, Inc.
Foreign-Trade Zone
Small Business Investment Company (venture capital funding)

Rhode Island:

Corporate Tax Rate Reductions for Job Creation
Investment Tax Credit
R&D Tax Credits
Job Training Tax Credit
Enterprise Zones
Flexible Bond and Small Business Financing

Vermont:

Vermont Economic Development Authority:

- Direct Loans
- Guarantees
- Industrial Revenue Bonds
- Submarket Interest Rates

Vermont Job Start (small business technical assistance)
Vermont Community Development Program
Vermont Training Program
ISO 9000 Training
Regional Development Corporations
Small Business Development
Center Vermont Venture Capital



Fund, Ltd. Vermont Business Assistance Network

Vermont Economic Progress Council:

- Economic Advancement Tax Incentives
- Downtown Development

Incentives

Financial Services Incentives

Credit for Income from Commercial Film Production

Rehabilitation Investment Tax Credit

The Pacific Region:

Alaska:

Agriculture Revolving Loan Fund

Alaska Industrial Development and Export Authority (long-term financing)

Alaska Science and Technology Foundation (grants and loans)

Rural Development Initiative Fund Program

Small Business Economic Development Revolving Loan Fund

Foreign-Trade Zones

Alaska Growth Capital

Commercial Fishing & Agriculture Bank (fishing, tourism & natural resources loans)

Alaska State Training and Employment Program

University of Alaska, Corporate College Programs

California:

California Employment Training Panel

Industrial Development Revenue Bonds

R&D Tax Credits (11 to 24 percent)

Manufacturers Investment Credit (6 percent)

Designated Incentives:

- Enterprise Zones (39 statewide)
- Recycling Market Development Zones
- Foreign-Trade Zones
- Manufacturing Enhancement Areas
- Local Area Military Base Recovery Areas (LAMBRAS) California Office of Small Business:
 - Loan Guarantee Programs
 - Farm Loans
 - Hazardous Waste Reduction Loans
 - Recycling
 - Small Business Development Centers (28 statewide)



Hawaii:

Hawaii Capital Loan Program (small business)
Hawaii Innovation Loan Program
Hawaii Enterprise Zones Program (excise and income tax incentives)
Hawaii Investment Attraction Program
Hawaii Strategic Development Corporation (venture capital)
Hawaii Technology Development Corporation (incubator facilities and technology development)
NELHA (incubator facility in ocean and marine-related products)
Community-Based Economic Development Program (grants and loans for nonprofit community-based organizations)
Business Action Center (one-stop license and business registration)
Small Business Development Centers
Foreign-Trade Zone
Investor tax incentives for new high-technology companies

Oregon:

Enterprise Zones
Commercial Properties Under Construction Property Tax Exemption
Business Energy Tax Credit
Pollution-Control Tax Credit
Research Tax Credit
Computer and Scientific Equipment Donation Tax Credit
Strategic Investment Programs for Capital-Intensive Industries
Job Training Program
Industrial Development Bond Program
Oregon Business Development Fund
Small-Scale Energy Loan Program
Oregon Port Revolving Loan Fund
Oregon Capital Access Program
Oregon Entrepreneurial Development Loan Fund
Oregon Credit Enhancement Fund
Foreign-Trade Zones

Washington:

Sales and Use Tax Exemption on Machinery and Equipment
Business and Occupation Tax Credits
Distressed Area Business & Occupation Tax Credit Program
Distressed Area Sales and Use Tax Deferral/Exemption Program
High-Technology Business & Occupation Tax Credit Program
High-Technology Sales and Use Tax Deferral/Exemption Program
Industrial Development Revenue Bonds
Community Economic Revitalization Board Funding
Umbrella Bonds
Development Loan Fund



Forest Products Division's Revolving Loan Fund
Washington State Job Skills Program
Employee Training
Community Empowerment Zones
Enterprise Communities
Foreign-Trade Zones

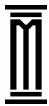
South Region:

Alabama:

Industrial Development Bonds
Capital Investment Credit
Job Creation Tax Credit
Economic Development Loan Program
Wallace Plan for Linked Deposits
Revolving Loan Fund
Small Business Administration 504 Loans
Small Business Administration 7A Program
REA Rural Economic Development Loan and Grant Program
USDA Rural Development Program
Industrial Development Grant Program
Industrial Access Program
Infrastructure Grant Program
Public Works and Facilities Grant
Appalachian Regional Commission Grants
Enterprise Zones
\$22 Billion Public Pension Fund

Arkansas:

Arkansas Department of Economic Development Bond Guaranty Program
Arkansas Development Finance Authority (bonds, bond guaranty program)
Arkansas Capital Corporation (loans, shared risks)
Arkansas Science and Technology Authority Investment Fund (seed capital)
Arkansas Motion Picture Incentive
Arkansas Biotechnology Development & Training Act
Arkansas Tourism Development Act
Industrial Revenue Bonds
Economic Development District Revolving Loan Funds
Arkansas Department of Economic Development Customized Training Incentive Program
General Obligation Bonds
Arkansas Enterprise Zone Program (Advantage Arkansas)
Foreign-Trade Zones
Day-Care Facility Tax Incentive Program
Recycling Equipment Tax Credit



Free Port Law
Create Rebate Program
Arkansas Economic Development Act
Arkansas Emerging Energy Technology Development Act
Small Business Development Loan
InvestArk Tax Credit
Tuition Reimbursement Tax Credit
Technical Careers Student Loan Forgiveness Program

Florida:

Qualified Target Industry Tax Refund
Quick Industry Response Training Program
Economic Development Transportation Fund (Road Fund)
Qualified Defense Contractor Tax Refund
High-Impact Performance Incentive Grants
Capital Investment Tax Credit
Silicon Technology Sales & Use Tax Exemption
Selected Sales Tax Exemption for Florida Businesses
Tax Exemptions within the Aviation Industry
Rural & Urban Job Tax Credit Programs
Expedited and Online Permitting
Enterprise Bond Program
Venture Capital Network Development
Rural Community Development Revolving Loan Program
Florida Manufacturing Technology Center
Innovation and Commercialization Centers
Incumbent Worker Training Program
Space, Defense, and Space Technology Sales Tax Exemption
Brownfield Redevelopment Bonus Refund Program
Florida Manufacturing Extension Programs

Georgia:

Taxable and Tax-Exempt Industrial Development Bonds
Business Development Corporation of Georgia (loans)
Venture Capital
Advanced Technology Development Center
Business Loan Guarantee Program
Regional Revolving Loan Fund
Agribusiness Loan Program
Business and Industrial Loan Program
Quick Start (job training)
Technical Institutes
Job Tax Credits and Investment Tax Credits
Inventory Tax Exemptions
Enterprise Zones



Foreign-Trade Zones
Loans for Rural Industry
Export Finance Fund
R&D Tax Credits
State of Georgia Tobacco Settlement Fund (One Georgia)

Kentucky:

Kentucky Economic Development Finance Authority (direct loans)
Commonwealth Small Business Development Corporation (SBA 504 loans)
State Income Tax Credits for Debt Service Costs:

- New and Expanded Manufacturing
- New Service and Technology Businesses Bluegrass State Skills Corporation (training)

Enterprise Zones
Foreign-Trade Zones

Louisiana:

Industrial Revenue Bonds
Direct, Guaranteed, and Participation Business Loans
Small Business Linked Deposit Program
Direct and Guaranteed Loans on Agricultural Products
CDBG (low-interest loans to companies that hire low- and moderate-income people)
Industrial Property Tax Exemption
Research Park Tax Exemption
Inventory Tax Credit
Jobs Tax Credit
Enterprise Zones
Quality Jobs Program (5 percent of payroll)
Capital Investment Tax Credit
Work Force Development and Training
Economic Development Awards Program

Mississippi:

Advantage Mississippi Initiative:

- Incentives
- Community Capacity Building
- Housing Programs
- Water and Sewage Systems
- World Trade Center
- Rural Development Office
- University Connections



- E-Government
- Information Technology
- Intermodal Transportation

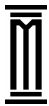
Access Road Program
Airport Revitalization Program
Infrastructure Program
Port Revitalization Revolving Loan Program
Agribusiness Enterprise Loan
Business Investment Act Program
Emerging Crop Program
Energy Investment Program
Guaranty Loan Program
Minority Business Enterprise Loan
Minority Surety Bond Guaranty Program
Small Business Assistance Program
Small Enterprise Development Finance Program
Telecommunications Act
Major Economic Impact
Authority Act
Rural Economic Development Act
Economic Development
Highway Act
Mississippi Investments Act
Free Port Warehouse Law
Railroad Revitalization Act
Foreign-Trade Zones
International Trade Offices

North Carolina:

Industrial Revenue Bonds
Foreign-Trade Zones
Industrial Development Fund
Investment Tax Credit
Job Creation Tax Credit
Central Administrative Office Tax Credit
R&D Tax Credit
Worker Training Tax Credit
Development Zones
Customized Training Program
CDBG Program

South Carolina:

Jobs Economic Development Authority:



- Loans
- Taxable Industrial Development Bonds
- Tax-Exempt Industrial Development Bonds

Carolina Capital Investment Corporation (loans)
Export Working Capital Guarantee Program
Business Development Corporation of South Carolina (loans)
Palmetto Seed Capital Fund (venture capital)
Tax Increment Financing for Redevelopment Areas
Foreign-Trade Zones

Tennessee:

Tennessee Industrial Infrastructure Program (TIIP)
Job Skills
Community Development Block Grants
Industrial Training Services
Private Activity Bonds
Revolving Loan Funds
Tennessee Valley Authority (revolving loans)
Tennessee Child-Care Facilities Program
Rural Economic & Community Development (loan and grant programs)
Small Business Administration:

- 504 loans
- 7A loans
- Microloans Demonstration Program

Small Business Energy Loan Program
Industrial Highway Access ARC (grants)
Jobs Tax Credit
Corporate Headquarters Tax Credit

Virginia:

Community Development Block Grants
Small Business Financing
Authority:

- Tax-Exempt Industrial Development Bonds
- Umbrella IDB Program
- Loan Guaranty Program
- Export Financing Assistance Program
- Economic Development Revolving Loan Fund
- Child Day Care Financing Program
- Defense Conversion Revolving Loan Fund



- Virginia Capital Access Program

Virginia Coalfield Economic Development Authority
Virginia Capital, L.P.
Industrial Access Road Program
Rail Industrial Access Program
Work Force Training Programs
Foreign-Trade Zones
Enterprise Zones
Technology Zones
Governor's Opportunity Fund
Solar Photovoltaic Manufacturing Grants
Small Business Environmental Compliance Assistance Fund
Virginia Center for Innovative Technology (CIT)
Global Market Research (GMR)
Virginia's Small Business Development Center Network (VSBDC)
Brownfield Local Tax Rebate Program
Virginia Investment Partnership Grant Fund

West Virginia:

West Virginia Economic Development Authority (direct loans)
West Virginia Capital Company Act (venture capital)
Certified Development Corporation (SBA 504)
Capital Access Program (loan loss reserve fund)
Governor's Guaranteed Work Force Program
West Virginia Jobs Investment Trust (equity investments in private sector)
Super Tax Credit (for projects creating more than 50 jobs)
Freeport Tax Amendment
Industrial Access Road Program
Low-Interest Loans and Grants for Infrastructure

Southwest Region:

Arizona:

Accelerated Depreciation of Personal Property
Economic Strengths Projects
Energy Business Loan Program
Enterprise Zones
Foreign-Trade Zones
Industrial Revenue Bonds
Private Activity Bonds
Chemical Tax Exemption
Commerce and Economic Development Commission Low-Interest Loans and Grants
Defense Restructuring
Machinery and Equipment Tax Exemption



Military Reuse Zones
R&D Equipment Sales and Use Tax Exemption
R&D Tax Credits
Revolving Energy Loan for Arizona
Sales Tax Exemption for Manufacturing and Equipment
Tax Credits to Defense Contractors
Tax Credits for Pollution-Control Equipment
Technical Training Income Tax Credit
Work Force Development
IT Training Tax Credit
Job Training

New Mexico:

Community Development Revolving Loan Fund Program
504 Loan Program
Community Development Block Grant Program
Economic Development Setaside Loan
New Mexico SMB/FmHA Guaranty Purchases
New Mexico Business Bonds
New Mexico Real-Property-Related Business Loans
Industrial Development Training Package
New Mexico Investment Tax Credit
Small Business 27J Exemption
Double-Weighted Sales Formula for Corporate Tax Reporting
Corporate Childcare Income Tax Credit
New Mexico Venture Capital Investments
Foreign-Trade Zones
Industrial Revenue Bonds
Investment Tax Credit
Rural Jobs Tax Credit
Technology Jobs Tax Credit
Research and Development Tax Credit
Interstate WATS Tax Exemption
Welfare-to-Work Opportunity Tax Credit
Qualified Business Facility Rehabilitation Credit
Development Incentive Act Exemption (of up to 50 percent personal property tax)

Oklahoma:

Oklahoma Quality Jobs Program ("cash-back" incentive for major manufacturing and service employers with rebates up to 5 percent of taxable wages for up to 10 years)
American Indian Land Usage (accelerated depreciation for federal tax purposes and state tax savings)
Oklahoma Small Employers Quality Jobs Program ("cash-back" incentive payments for firms with 90 employees or less)
Oklahoma Finance



Authorities:

- Pooled Business Finance Program
- Tax-Exempt Manufacturing Industrial Development Bond Program

Bid Assistance Centers (assistance in securing federal government contracts)
Oklahoma Center for the Advancement of Science and Technology (tech-transfer programs)

Oklahoma Capital Investment Board (venture-capital portfolio program)

Capital Access Program

Tribal Financing

Export Finance Program

Customized Job Training

Freeport Law

Industrial Access Road

Assistance

Foreign-Trade Zones

Local Finance & Build-to-Suit Programs

Tax Credits, Exemptions, and Refunds

Five Year Property Tax

Abatement

Sales Tax Refund on Construction Materials

Texas:

Industrial Revenue Bonds

Rapid Response Program (re-employment assistance)

Texas Capital Fund:

- Real Estate Development Program
- Infrastructure Grant Program
- Main Street Program

Texas Enterprise Zone Program

Foreign-Trade Zones

Maquiladoras

Texas Leverage Fund

Linked Deposit Program

Texas Capital Access Fund

Texas Agricultural Finance Authority Loan Guaranty Program (agricultural)

Linked Deposit Program (agricultural)

Young Farmer Loan Guaranty Program (agricultural)

Farm and Ranch Finance Program (agricultural)



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