



## **San Antonio's Manufacturing Industry**

**Economic Impact  
In 2011**

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## HIGHLIGHTS

- The manufacturing industry is **one of the largest sectors of the San Antonio economy**. Its economic impact in 2011 was **\$22.5 billion**, excluding the positive impact of exported products.
- Manufacturing has been a **major economic driver** in San Antonio for more than two decades, growing from a **\$7 billion** industry in 1991 to **\$13 billion** in 2001 and **\$22.5 billion** in 2011.
- San Antonio's manufacturing is very **diverse**, spanning virtually every industrial product line. Its principal sectors have grown and evolved over time in response to national and global changes in the manufacturing environment.
- San Antonio manufacturers paid more than **\$2.4 billion in wages and salaries** to **51,024 employees** in 2011.
- Jobs in manufacturing pay very well. The 2011 average salary of manufacturing employees was \$47,499, **substantially above the San Antonio average**, continuing a consistent trend.

Study Conducted By  
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## INTRODUCTION

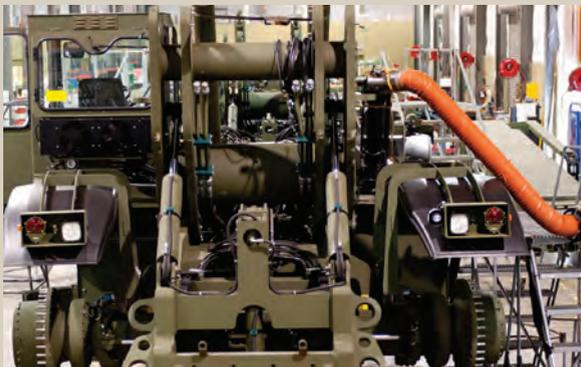
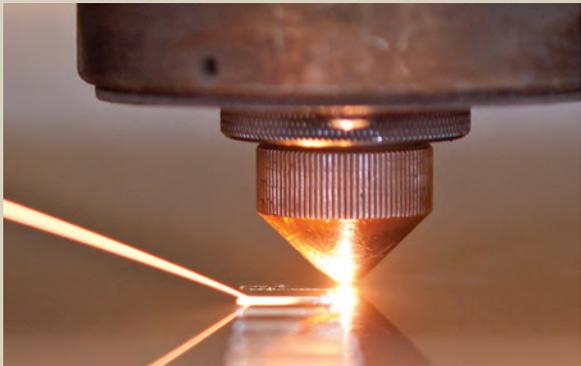
The **Manufacturing Industry** has long had a presence in San Antonio dating back to the Canary Island settlers in the early 1700's. Largely unnoticed by the general public, the 1,556 manufacturing companies in the greater San Antonio area have made products critical to the regional, national and world economies for decades. Virtually every segment of manufacturing is represented by the manufacturers within the San Antonio region, producing goods ranging from food products and power generation to satellite communications and autonomous robots.

Recent additions to San Antonio's portfolio of manufacturers, such as Toyota, Caterpillar and companies supporting the Eagle Ford Shale production activity — plus the continued growth of existing production facilities — have positively contributed to the regional economy and have also added visibility to San Antonio's manufacturing presence.

The San Antonio Manufacturers Association (SAMA) represents the manufacturing industry within the San Antonio region. Recognized as a regional, state and national leader in the development of programs to benefit both the Industry and the community, SAMA has commissioned this study in conjunction with the Greater San Antonio Chamber of Commerce to identify the manufacturing industry's contributions to the region's economy.



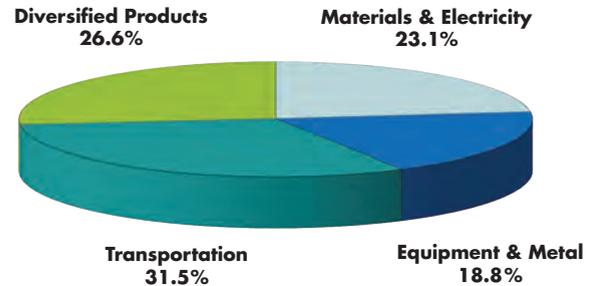
Over 80% of the 1,556 manufacturing companies in the Greater San Antonio Metropolitan Area (MSA) are small businesses, each employing 50 or fewer employees, and account for the majority of the manufacturing employment in the region.



## OVERVIEW

San Antonio's manufacturing industry is both large and diverse. Every major sector of U.S. manufacturing has a presence in the local economy.

### San Antonio Manufacturing in 2011



The **Materials and Electricity** sector includes the production of wood, paper and nonmetallic mineral products; petroleum products, plastic and rubber products and chemicals; and electricity. This sector accounts for approximately 23% of San Antonio's manufactured output.

**Equipment and Metal Products** include machinery, computer and electronic components and products, electrical equipment, electric appliances and components; the repair and maintenance of machinery and electronic equipment; and both primary and fabricated metal products. This sector makes up about 19% of San Antonio's manufacturing.

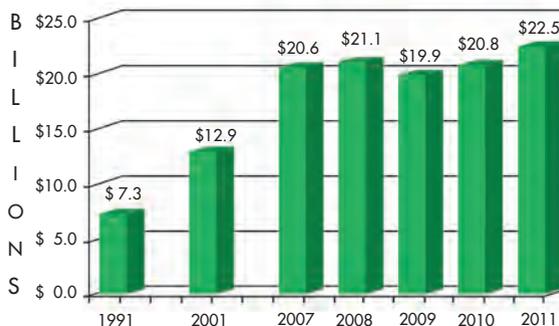
**Transportation** manufacturing activity in San Antonio is concentrated in the aerospace and motor vehicle industries. This sector has seen significant growth over the past two decades, now making up nearly one-third of the region's manufactured output.

The **Diversified Products** sector produces printing; food and beverages; textiles, apparel and leather products; furniture; and miscellaneous products such as medical equipment. This sector makes up about 27% of the San Antonio total.

## OVERALL ECONOMIC IMPACT

In 2011, the manufacturing industry **contributed a total of \$22.5 billion to the local economy, a healthy 75% increase from the 2001 level and more than triple its size in 1991.** If the multiplier effects resulting from the sales of products manufactured here to customers outside Texas were included, the total impact of the industry would probably exceed \$30 billion.

### Manufacturing Industry Economic Impact



## Conservative Estimates

These are very conservative figures because they represent only direct spending on final products and services in San Antonio, and exclude the multiplier effect associated with exported goods manufactured by companies in San Antonio. By using no multipliers, the study treats all of the products and services manufactured here as if they were purchased only by local residents. In fact, a substantial share of San Antonio's manufactured products are exported to customers outside of San Antonio, with a significant portion leaving Texas as well as the United States. These "export" sales bring new money into San Antonio, generating additional economic activity as the new spending circulates throughout the local economy.

While it would be ideal to include these multiplier effects, reliable estimates of the share of each sector's business derived from export sales for the San Antonio region are unavailable. However, it is possible to discern the approximate size of these export multipliers using data from the State Comptroller's Office on the share of in-state sales by San Antonio MSA firms classified as manufacturers. These proportions imply multiplier effects on the order of an additional \$10 billion over and above the \$22.5 billion direct economic impact cited above. Although this \$10 billion figure contains a significant margin of uncertainty, it suggests that if the overall impact of exports by the manufacturing industry on the San Antonio economy could be estimated with precision, it would probably have exceeded \$30 billion in 2011. If this estimate for out of state exports is conservatively accurate, manufacturing could potentially be the largest single industry in the region.

## Relationships with Other Impact Studies

Users of this study should be aware that there is some overlap between manufacturing as defined for the purposes of this study and other regional industries featured in some of The Chamber's previous economic impact studies. This overlap is unavoidable because the manufacturing of aerospace, computer and medical products is legitimately a part of both the manufacturing sector and the industry groupings to which these products belong. For this reason, it would be inappropriate to add up the economic impacts of all the industries profiled in The Chamber's reports since that would involve a significant amount of double counting.

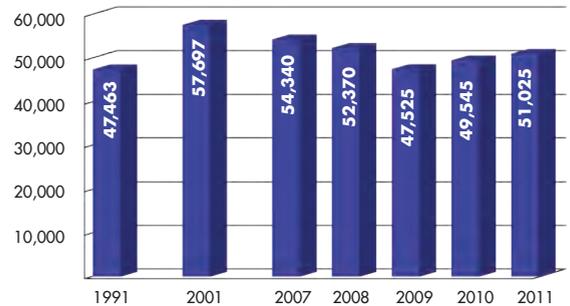


## THE MANUFACTURING WORKFORCE

In 2011, a total of 51,024 people worked in the manufacturing industry, constituting 6% of the total number of employed San Antonians. Although impacted by the Great Recession of 2008-09, manufacturing employment has remained relatively constant over the last five years, regaining much of the losses attributed to the recession.

Of greater significance than the overall headcount is the steady evolution of manufacturing job opportunities away from low-skill sectors of the economy and toward high-skill, high-tech sectors. This has resulted in significant wage gains as manufacturing has evolved to meet the increased technology demands of the Industry.

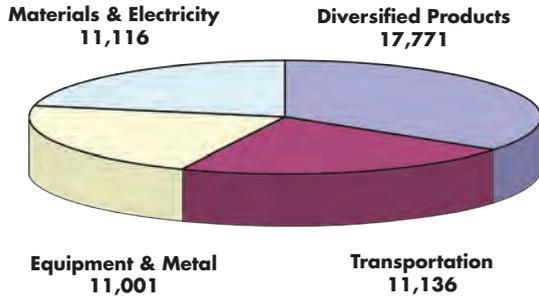
### Total Employees



## THE MANUFACTURING PAYROLL

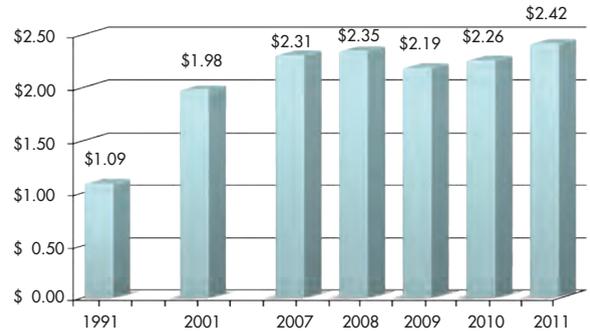
Manufacturing employment is widely distributed across the four major sectors. While large gains have occurred in transportation since 2006 when Toyota manufacturing operations commenced in Bexar County, there have been significant employment reductions in the Diversified Products segment during this same period.

### Employment in Manufacturing



### Annual Payroll

(Billions)



It is important to note that these figures include only direct wage payments. Total compensation, which includes benefits, would be considerably higher.

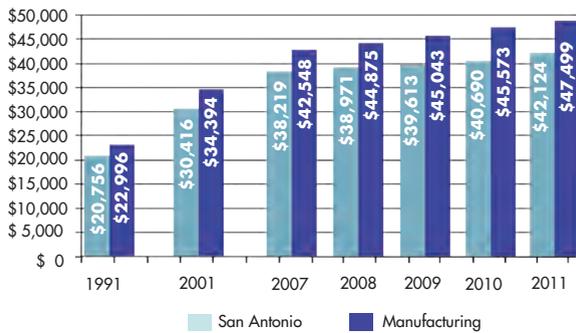


# AN ANNUAL WAGE CONSISTENTLY WELL ABOVE SAN ANTONIO AVERAGE

Individuals employed in the manufacturing industry earned, on average, \$47,499 in 2011. This is approximately **11% above the 2011 average** of \$42,124 for all workers in San Antonio.

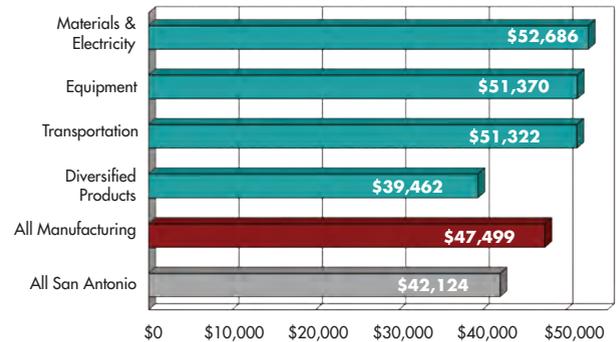


## Manufacturing Average Salary vs. San Antonio Average



**The average salary in the Manufacturing sector has been consistently higher than the San Antonio average.**

## 2011 Average Salaries



Workers in the Materials and Electricity, Equipment and Metal Products, and Transportation sectors all earned wages averaging in excess of \$51,000. Wages in the Diversified Products sector, in which the traditional labor-intensive, lower-wage industries are concentrated, earned less.

It is important to note that the employment figures include both full-time and part-time employees, so the average salary reported here is lower than that received by a typical full-time employee.



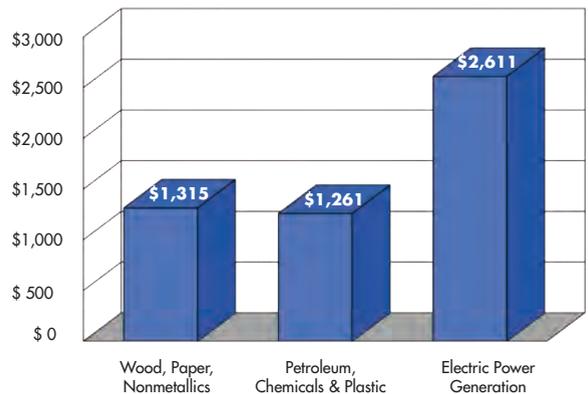
In May 2012, the San Antonio/New Braunfels area was ranked as number seven of the 65 largest metropolitan areas for manufacturing employment growth based upon recent growth trends, as well as job growth over the past five and 10 year periods. (Forbes.com May, 24th, 2012)



## THE MATERIALS & ELECTRICITY SECTOR

The **Materials and Electricity** sector includes a wide range of products and materials, ranging from electricity to paper products to chemicals. We have grouped these businesses into three clusters: wood, paper and nonmetallic mineral products; production of petroleum, chemicals, plastic and rubber products; and electric power generation. Of these, electric power generation is the largest and the fastest-growing over the decade (up 76% since 2001), reflecting the region's continued growth, while the other two subsectors have been roughly stable over that period.

**Economic Impact of the Materials & Electricity Sector**  
(Millions)



We expect that the Petroleum, Chemicals and Plastic Products sector will reflect significant growth in the near future as jobs related to Eagle Ford Shale production become established in San Antonio.



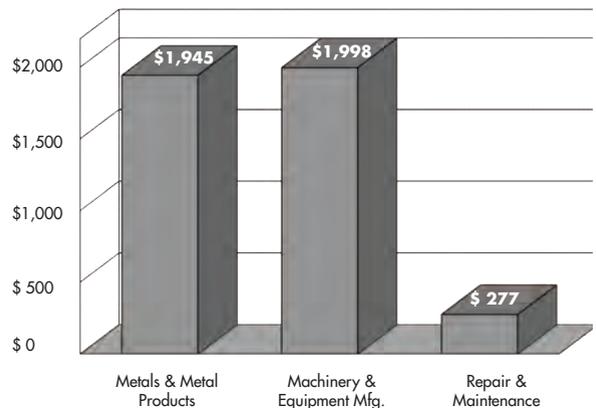
The San Antonio Manufacturers Association (SAMA) is one of Texas' oldest manufacturing industry associations, supporting the region's manufacturers since 1914. SAMA, in partnership with key community organizations, has been instrumental in the establishment of workforce development programs.

## THE EQUIPMENT & METAL PRODUCTS SECTOR

This sector includes the manufacture of machinery, electrical and computer equipment, and primary as well as fabricated metal products. It also includes a relatively small but fast-growing group of businesses that repair and maintain equipment and machinery.

Equipment manufacturing has experienced the largest growth, increasing from \$1.5 billion in 2001 to \$2 billion in 2011, as more equipment manufacturers expand their San Antonio operations. Although down from a high of \$2.8 billion in 2008, the Metal Products sector is nearly as big (\$1.9 billion) and represents one of the largest manufacturing industry employment segments. Equipment Repair and Maintenance, increasingly a high-tech business, is small in absolute size (\$277 million) but it is growing very rapidly, more than doubling since 2001.

**Economic Impact of the Equipment & Metal Products Sector**  
(Millions)



Texas' total manufacturing output was \$192 billion in 2011, which represents 14.7% of the total gross state product. Manufacturing also accounted for 93% of Texas' exports in 2011. ("Texas Manufacturing Facts" - National Association of Manufacturers)

# THE TRANSPORTATION SECTOR

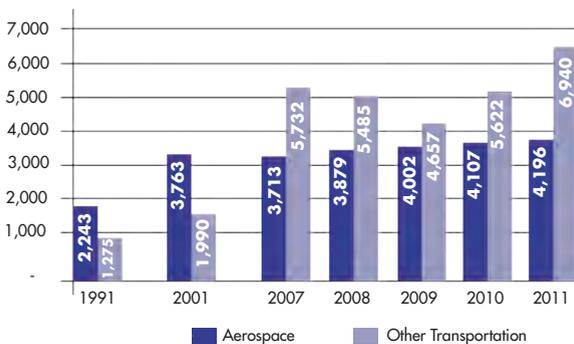
**Transportation Manufacturing** in San Antonio is concentrated in two major product lines: aerospace manufacturing and heavy maintenance, and the manufacturing of motor vehicles and their components. Due to confidentiality restrictions, specific data for the motor vehicles segment could not be obtained. For this reason, the estimates for the transportation sector have been divided into aerospace and “all other” components. However, the vast majority of the non-aerospace transportation activity in this region involves parts or products related to motor vehicles; very few boats, railcars or miscellaneous transportation products are made here.

The Transportation sector has shown the biggest gains of any sector, nearly tripling over the decade since 2001. A significant portion of this increase reflects the opening of the Toyota plant in November, 2006. Also contributing to this growth has been the increased manufacturing of heavy-duty industrial vehicles and components within the region, with the addition of Caterpillar and Kalmar production facilities. Although there has been a substantial volume of motor vehicle components and products manufactured in the region in prior years, this non-aerospace sector has grown substantially since 2006.

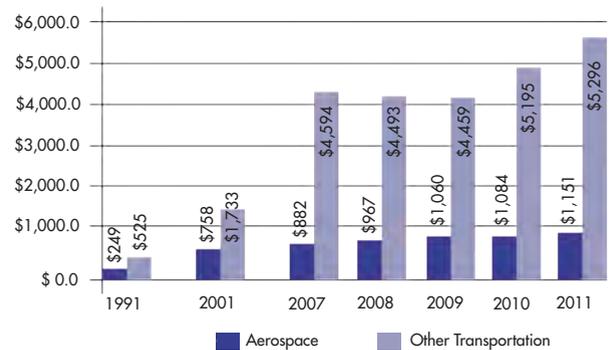


The Aerospace sector has also grown significantly over time, up 50% since 2001. It is now more than quadruple its size in 1991. This largely reflects the movement of military aircraft maintenance activities at the former Kelly Air Force Base into the increased presence of maintenance, repair and overhaul (MRO) operations in San Antonio private sector, as well as the expansion of such lines of business as custom interiors for executive and head-of-state aircraft. It is anticipated that this sub-sector will continue to grow.

**Transportation  
Number of Employees**



**Transportation  
Economic Impact (Millions)**



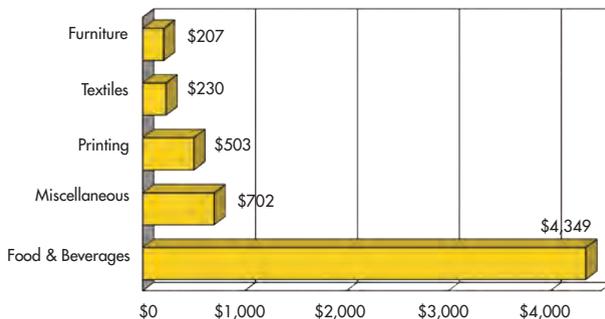
Overall, the Transportation sector reflects the most significant regional manufacturing growth, increasing ten-fold since 1991 and three-fold in the last decade.

## THE DIVERSIFIED PRODUCTS SECTOR

As the name implies, this sector represents a variety of manufacturing industries that don't fit neatly into the other three categories. These include food and beverages (by far the largest of these clusters, with more than half of the employment and more than three-quarters of the economic impact); printing; furniture; miscellaneous manufacturing (including such products as medical equipment, jewelry, toys and caskets); and clothing, textiles and apparel.

This grouping contains the largest manufacturing employment of any of the four major sectors, with the manufacture of food and beverage products providing more jobs (9,374) than any other manufacturing category.

**Diversified Products  
Economic Impact (Millions)**



Three (textiles, furniture and printing) of the five sectors have experienced declining employment in the last decade (12,357 in 2001 compared to 2,701 in 2011), reflecting broader industry trends. This is not unique to San Antonio: as the manufacturing of these items has moved from the U.S. to foreign sites, domestic employment in these low-skill, low-wage industries has shrunk. Textiles and Furniture combined now employ only a little more than a third of the number who worked there a decade ago. Additionally, the movement to digital media is reflected in the printing industry trend. The food and beverage sector, on the other hand, has more than doubled its regional economic impact since 2001.

## LOOKING TO THE FUTURE

It will surprise many, if not most, San Antonians to learn that their Manufacturing Industry has been one of the largest pieces of the local economy for a very long time. Unlike industries that interact directly with the public, the Manufacturing Industry is largely invisible. However, the impact of the Manufacturing Industry on San Antonio's economy is significant and vital to the community.

San Antonio's Manufacturing Industry has quietly followed national and global trends. Business opportunities and jobs in relatively low-skill markets, like apparel manufacturing, have declined in the United States, while there is high demand for technology-based products and the skilled workers needed to make them in such industries as machinery, aerospace, motor vehicles, plastics, and the business of servicing the increasingly complex machines that make and support these products.

One of the biggest challenges San Antonio and the nation face is the shortage of workers with the skills needed for modern manufacturing. The industry today bears little resemblance to the outdated stereotype of low-wage workers making low-end products. The San Antonio Manufacturers Association (SAMA) continues to work with regional education and workforce groups to ensure an adequate supply of skilled workers is available to meet the Industry's needs.

San Antonio is working to sustain and grow its Manufacturing Industry through the development of innovative programs to train employees for the future. The nationally recognized Advanced Technology and Manufacturing Academy (ATMA) was developed through a community partnership among SAMA, Alamo Colleges, local school districts and city government to encourage high school juniors and seniors to explore career paths in manufacturing and to help them acquire the skills needed for today's manufacturing jobs. Students earn a year of college credit and get real work experience through summer internships in local manufacturing businesses.

Additionally, SAMA has collaborated with both Alamo Colleges and Workforce Solutions-Alamo in the development of the "Just-In-Time" (JIT) Training Program for Manufacturers, which provides for advanced skills development training for unemployed workers and veterans. Other SAMA training programs include the Manufacturing Institute's "Dream It! – Do It!" program to promote manufacturing career opportunities, as well as programs to improve manufacturing productivity and efficiency in the region.

San Antonio's Manufacturing Industry, after years of anonymity, is poised for both increased recognition and rapid future expansion. In fact, as already noted, this study does not incorporate multiplier effects in its primary estimates, although we do present separately an approximation of the impact of the export sales effect.

## TECHNICAL NOTES

The information for this study, like its predecessor and most of the other Economic Impact Studies done for The Chamber, is derived from the Texas Workforce Commission's Covered Employment and Wages database. This data (total employment and wages) is assembled from unemployment insurance reports to the state. The data is aggregated by the TWC into the lines of business defined by the North American Industrial Classification System (NAICS) coding framework. It represents essentially a 100% sample of all the businesses with employees in each NAICS subcode.

The specific subcodes included in this study are listed on page 23. They cover the local manufacturing industry in great detail.

Selecting which NAICS codes to include was, in this case, a simple task. There are 21 primary NAICS codes for manufacturing, and San Antonio is represented in all of them. In addition, the industry oversight group for the study elected to incorporate electricity generation and the businesses that repair and maintain industrial equipment to give a more complete picture of the extent of manufacturing in San Antonio.

The TWC provides employment and salary information for each quarter of the calendar year. The employment figures for the four quarters in each year were averaged to obtain a representative employment level, and payroll figures were computed by summing the wages reported for each of the four quarters. Average salaries were calculated by dividing the total payroll by the number of employees.

Translating payroll information into economic impact involves the application of a conversion factor. Sales or revenue for each NAICS industry is calculated from the TWC's payroll figures using the ratio of sales to payroll for the corresponding industry in the San Antonio MSA as reported in the most relevant economic census. Thus, conversion factors based on the 2007 Economic Census were applied to data from the years 2007 to 2011, while conversion factors based on the 2002 Economic Census were used for the 2001 calculations, and the 1997 Economic Census was used for the 1991 estimates. These figures are specific to each NAICS code, and ranged (in 2007) from a low of 3.248 for commercial and industrial machinery repair to a high of 33.662 for petroleum products. This conversion factor simply translates payroll information into the amount of economic activity or impact generated for each specific industry. These conversion factors increased markedly from 2002 to 2007, reflecting increased efficiency and labor productivity within the Manufacturing Industry.

Keen-eyed readers who compare the 2007 estimates in this study with those in the 2006 study published five years ago will notice some significant jumps in the economic impact of most subsectors. This is due in large measure to the use of the larger (and more accurate) 2007 Economic Census figures in the current study.

This conversion factor is not the multiplier often employed in economic impact studies to calculate the total impact of an industry's export sales on the local economy. In fact, as already noted, since this study does not use a multiplier, it estimates economic impact based on the assumption that all services and products are consumed by local residents. Since the multiplier effect of the industry's export sales has been omitted, the estimates of economic impact in this report are quite conservative.

## NAICS CODES FOR MANUFACTURING INDUSTRY

### Materials and Electricity

#### Wood, Paper and Nonmetallic Mineral Products

- 321 Wood product manufacturing
- 322 Paper manufacturing
- 327 Nonmetallic mineral product manufacturing

#### Petroleum, Chemical and Plastic Products

- 324 Petroleum and coal products manufacturing
- 325 Chemical manufacturing
- 326 Plastics and rubber products manufacturing

#### Electric Power Generation

- 2211 Electric Power Generation, Transmission and Distribution

### Equipment and Metal Products

#### Equipment Manufacturing

- 333 Machinery manufacturing
- 334 Computer and Electronic Product Manufacturing
- 335 Electrical equipment, appliance and component manufacturing

#### Equipment Repair and Maintenance

- 8112 Electronic and precision equipment repair and maintenance
- 81131 Commercial and industrial machinery and equipment repair and maintenance

#### Metals and Metal Products

- 331 Primary metal manufacturing
- 332 Fabricated metal product manufacturing

### Transportation

- 336 Transportation equipment manufacturing
- 3364 Aerospace product and parts manufacturing

### Diversified Products

#### Printing

- 323 Printing and related support activities

#### Food and Beverages

- 311 Food manufacturing
- 312 Beverage and tobacco product manufacturing

#### Textiles, Apparel and Leather Goods

- 313 Textile mills
- 314 Textile product mills
- 315 Apparel manufacturing
- 316 Leather and allied product manufacturing

#### Furniture

- 337 Furniture manufacturing

#### Miscellaneous Manufacturing

- 339 Miscellaneous manufacturing

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THANKS TO THE SAMA MEMBERS  
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