
West Piedmont Workforce Investment Area Layoff Aversion Strategy

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Executive Summary

In recent years, the West Piedmont Workforce Investment Area has been hard hit by industry closures and layoffs.¹ Already in fiscal year 2009-10, major layoffs have impacted 622 industry jobs within the region, and these job losses come on the heels of major layoffs affecting 811 jobs in fiscal year 2008-09, and 291 jobs in fiscal year 2007-08. This report presents an analysis that supports a two-part strategy to aid in the aversion of future layoffs within the West Piedmont Workforce Investment Area.

The first part of that strategy involves identifying industry clusters within the region that are at significant risk for future layoffs. To accomplish that task, we used recent economic data to assess the performance of nine key regional industry clusters that were previously identified in 2009 as part of a U.S. Department of Labor *Regional Innovation Grant*. Our analysis showed that five of those nine previously identified clusters – *Chemicals and Materials*, *Fabricated Metals and Equipment*, *General Manufacturing*, *Textiles*, and *Wood Products* – are at significant risk for future layoffs.

The second part of the strategy consists of developing a resource map that identifies the specific occupations associated with those industry clusters, the education and training programs that support those occupations, and the education providers within the region that offer those programs. By illuminating existing training programs within the West Piedmont Workforce Investment Area that directly support the identified at risk industry clusters, this resource map provides a tool that the West Piedmont Workforce Investment Board can use to more effectively target scarce incumbent worker training resources, thereby aiding in the aversion of future layoffs.

This report was produced by Mangum Economic Consulting, LLC at the request of the West Piedmont Workforce Investment Board.

¹ The West Piedmont Workforce Investment Area includes the counties of Henry, Patrick, and Pittsylvania, and the cities of Danville and Martinsville.

I. Introduction

In recent years the West Piedmont Workforce Investment Area has been hard hit by industry closures and layoffs.² So far in fiscal year 2009-10, Gildan Inc., an apparel manufacturer, has announced it will be closing with a loss of 92 local jobs, and Stanley Furniture Company, a furniture manufacturer, has announced a permanent reduction of 530 local jobs. This loss of 622 industry jobs comes on the heels of major layoffs affecting 811 jobs in fiscal year 2008-09, and 291 jobs in fiscal year 2007-08.

This report presents an analysis that supports a two-part strategy to aid in the aversion of future layoffs within the West Piedmont Workforce Investment Area. The first part of that strategy involves identifying industry clusters within the region that are at significant risk for future layoffs. The second part consists of developing a resource map that identifies the specific occupations associated with those industry clusters, the education and training programs that support those occupations, and the education providers within the region that offer those programs. In combination, these two analytical steps provide a tool that the West Piedmont Workforce Investment Board can use to more effectively target scarce incumbent worker training resources, thereby better aiding at risk industries in bolstering their economic competitiveness and avoiding future layoffs.

The remainder of this report is divided into four sections. In the *Recent Economic Trends* section, we briefly describe recent economic trends within the West Piedmont Workforce Area. This information is intended to provide a context for the analysis that follows. In the *Cluster Analysis* section, we identify at risk industry clusters within the West Piedmont Workforce Investment Area and describe the method that was used to perform that identification. In the *Workforce Training* section, we then map the occupations employed within those at risk industry clusters into their requisite education and training programs, and then identify the education providers within the region that offer those programs. Finally in the *Conclusion* section, we summarize the findings from the previous analyses and describe how those findings can be used in the context of a layoff aversion strategy.

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II. Recent Economic Trends

As with the state as a whole, total employment in the West Piedmont Workforce Investment Area began to decline in the last half of 2008 and then fell sharply through most of 2009, before rebounding slightly in the fourth quarter of the year. Job losses within the West Piedmont Workforce Investment Area tended to be more severe than at the statewide level however. Figure 1 depicts total employment within the West Piedmont Workforce Investment Area between 2007:Q1 and 2009:Q4 (the most recent quarter for which data are available). As this graph shows, between the 2008:Q4 and 2009:Q3, total employment within the region fell from 71,786 to 66,610, for a loss of 5,176 jobs or 7.2 percent. By way of comparison, total job losses for the state as a whole over this period were 3.7 percent.

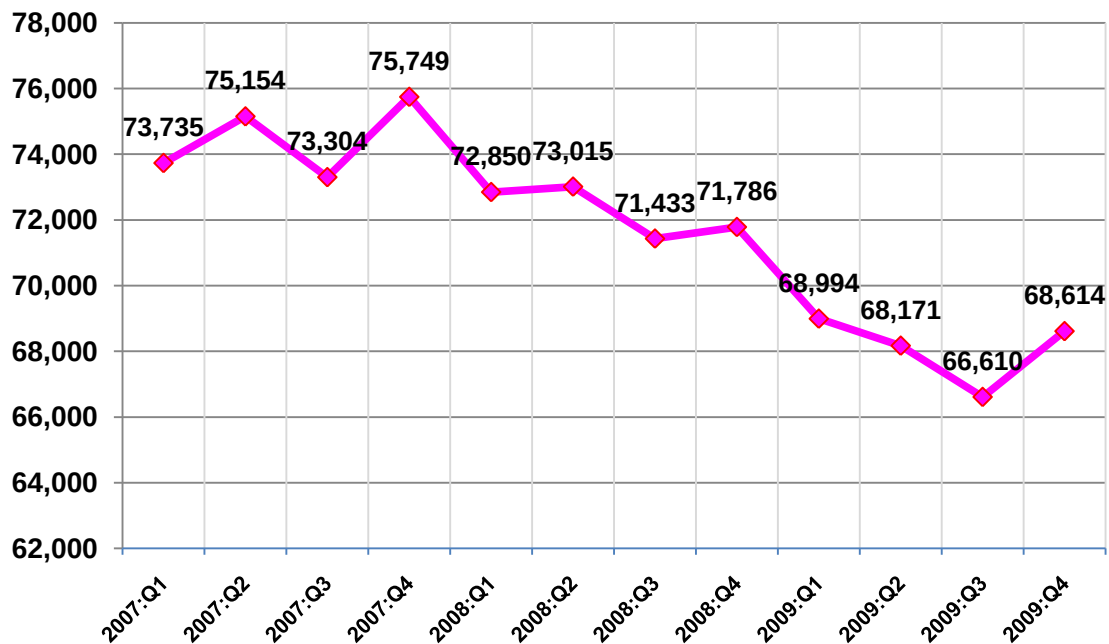


Figure 1: Total Employment in the West Piedmont Workforce Investment Area – 2007:Q1 to 2009:Q4³

Figure 2 provides similar data for the regional and statewide unemployment rate between January 2007 and April 2010 (the most recent month for which data are available). As these data show, the unemployment rate within the West Piedmont Workforce Investment Area rose sharply in the later part of 2008, increasing from

³ Data Source: Virginia Employment Commission.

7.4 percent in August of 2008 to 13.0 percent in January of 2009. It is also important to note that over this period the gap between the West Piedmont Workforce Investment Area's unemployment rate and the statewide rate doubled, rising from approximately 3 percent to 6 percent.

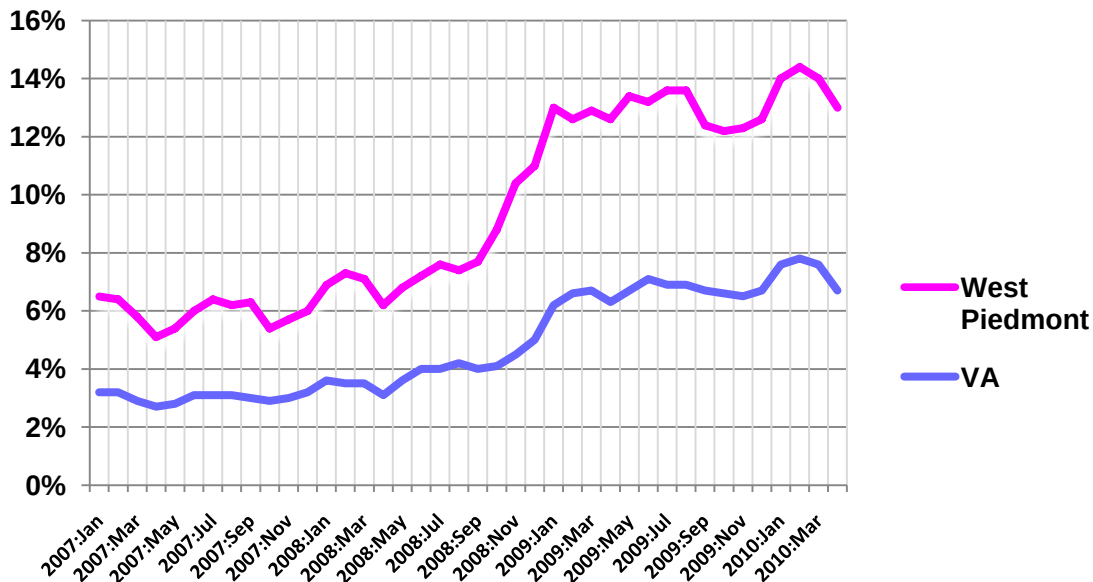


Figure 2: West Piedmont Workforce Investment Area and Statewide Unemployment Rate – January 2007 to April 2010⁴

In combination, what these data show is that, even though the 2008-09 recession had a significant negative impact on Virginia as a whole, its impact on the West Piedmont Workforce Investment Area was even more severe.

III. Cluster Analysis

In this section, we identify at risk industry clusters within the West Piedmont Workforce Investment Area and describe the method that was used to perform that identification. This analysis relies heavily on previous work that was done for the STREAMLINE bi-state leadership group in 2009 as part of a U.S. Department of Labor *Regional Innovation Grant*.

⁴ Data Source: Virginia Employment Commission.

Identification of Regional Industry Clusters

In early 2009, our firm supported the STREAMLINE bi-state leadership group's regional efforts, by, among other things, developing an industry cluster analysis for the greater West Piedmont area. Although the term "cluster" is often used somewhat loosely to refer to a group of businesses or other entities that are in close geographic proximity or share some other common characteristic, the term "cluster analysis" has a much more precise meaning. It refers to a statistical technique that uses commonalities between industries' customer and supplier networks – who they sell to and who they buy from – to group them into clusters of economically related industries. By grouping industries on the basis of these relationships, we are able to identify groups of industries that benefit from being located in close proximity to one another, quantify the depth and breadth of their economic connection to the region, and identify those industry clusters that serve as regional economic drivers.

Method

To perform our industry cluster analysis, we employed 2007 data from IMPLAN, a commonly used regional economic simulation model.⁵ Consistent with a method pioneered by Feser and Bergman,⁶ industries were first assessed on the basis of four separate characteristics: 1) the relationship between their individual supplier networks, 2) the relationship between their supplier and customer networks, 3) the relationship between their customer networks, and 4) the relationship between their customer and supplier networks. These four groups of correlations were then compiled into a single "linkage matrix." We then applied Ward's hierarchical cluster method to that linkage matrix to derive clusters of core industries for the region.

In the second stage of the analysis, we assessed the relative economic significance of each cluster, using a set of performance indicators that were first employed by Hill and Brennan.⁷ That set of indicators is comprised of eleven measures:

1. *Employment Location Quotient (LQ Employment)*: Measures the degree to which a region has an employment concentration within a specific industry relative to the national norm (2007 data).

⁵ *Data Source*: Minnesota IMPLAN Group, Inc.

⁶ Edward J. Feser and Edward M. Berman, "National Industry Cluster Templates: A Framework for Applied Regional Cluster Analysis," *Regional Studies*, 2000, vol.34, no.1, pp.1-19.

⁷ Edward W. Hill and John F. Brennan, "A Methodology for Identifying the Drivers of Industrial Clusters: The Foundation of Regional Competitive Advantage," *Economic Development Quarterly*, February 2000, vol.14, no.1, pp.65-96.

2. *Establishment Location Quotient (LQ Establishments)*: Measures the degree to which a region concentrates within a specific industry based on number of local establishments relative to the national norm (2007 data).
3. *Relative Earnings Ratio (REratio)*: Measures average industry pay within the region relative to average industry pay within the nation (2007 data).
4. *Growth in Industry Pay Relative to Region Pay (RREratio)*: Measures growth in industry pay between 2001 and 2007 relative to growth in region pay between 2001 and 2007.
5. *Change in Importance of Industry (ΔLI)*: Measures change in the proportion of regional employment accounted for by the industry between 2001 and 2007.
6. *Sales Ratio*: Measures industry sales as a proportion of regional sales (2007 data).
7. *Purchase Ratio*: Measures industry purchases as a proportion of regional purchases (2007 data).
8. *Type 1 Multiplier Ratio*: Measure the industry's Type 1 Multiplier relative to the regional average. Type 1 Multipliers measure the economic ripple, or Keynesian multiplier, effects that an industry has on the regional economy (2007 data).
9. *Proportion of Industry Output Exported*: Measures the proportion of an industry's output that is exported out of the region (2007 data).
10. *Industry Exports as a Proportion of Regional Exports*: Measures the industry's exports as a proportion of total regional exports (2007 data).
11. *Employment Growth Ratio*: The industry's nationally projected annual employment growth between 2006 and 2016

Results

Using this method, we identified eleven existing industry clusters within the greater West Piedmont area. Nine of these clusters – *Chemicals and Materials, Construction, Fabricated Metals and Equipment, Finance, General Manufacturing, Healthcare, Textiles, Transportation, and Wood Products* – were shown by the performance indicators to be of particular economic importance to the region. Full detail on the core industries that are included in each of these clusters, along with their top supplier and customers, and top twenty occupations in terms of employment, are provided in Appendix 1 of this report.

Evaluation of Currently “At Risk” Clusters

Building on this earlier analysis, we have used more recent data from the critical 2007 to 2009 period to re-evaluate the economic performance of the nine previously specified industry clusters. The purpose of this analysis is to identify those clusters that are currently most at risk for future layoffs.

Overall between 2007 and 2009, employment within the West Piedmont Workforce Investment Area declined by 8.6 percent. Table 1 ranks the change in employment over this period for each of the previously specified clusters. As these data show, the *Textiles* cluster suffered the largest loss in employment, falling from 1,672 to 262 jobs, for a decline of 84.3 percent. The *Wood Products* cluster suffered the second largest decline in employment (34.9 percent), followed by *General Manufacturing* (27.6 percent), *Fabricated Metals and Equipment* (20.9 percent), and *Construction* (13.2 percent). At the other end of the spectrum, employment within the *Healthcare* cluster increased by 4.8 percent between 2007 and 2009.

Table 1: Change in Industry Cluster Employment – West Piedmont Workforce Investment Area – 2007 to 2009⁸

Cluster Name	Average Employment 2007	Average Employment 2009	% Change
Textiles	1,672	262	-84.3%
Wood Products	2,397	1,560	-34.9%
General Manufacturing	6,721	4,865	-27.6%
Fabricated Metals and Equipment	387	306	-20.9%
Construction	3,146	2,731	-13.2%
Finance	1,799	1,563	-13.1%
Chemicals and Materials	503	444	-11.7%
Transportation	1,609	1,442	-10.4%
Healthcare	8,761	9,180	4.8%

⁸ Data Source: Virginia Employment Commission.

Table 2 provides a similar ranking for the change in average weekly wages between 2007 and 2009. Overall over this period, nominal wages in the West Piedmont Workforce Investment Area increased by 2.7 percent. Of the nine identified industry clusters, wage performance within the *Textiles* cluster was the worst, with average weekly wages falling by 4.6 percent between 2007 and 2009. The *Transportation* and *Wood Products* clusters also experienced declines in weekly wages (2.4 and 1.0 percent respectively). Wage increases in the *Chemicals and Materials*, and *Fabricated Metals and Equipment* clusters, although positive, were below the regional average. While wage increases in the *General Manufacturing* (8.0 percent), *Construction* (5.0 percent), *Healthcare* (3.3 percent), and *Finance* (2.9 percent) clusters all exceeded the regional average.

Table 2: Change in Industry Cluster Average Weekly Wage – West Piedmont Workforce Investment Area – 2007 to 2009⁹

Cluster Name	Average Weekly Wage 2007	Average Weekly Wage 2009	% Change
Textiles	\$579	\$552	-4.6%
Transportation	\$589	\$575	-2.4%
Wood Products	\$594	\$588	-1.0%
Chemicals and Materials	\$869	\$879	1.2%
Fabricated Metals and Equipment	\$653	\$664	1.7%
Finance	\$682	\$702	2.9%
Healthcare	\$616	\$636	3.3%
Construction	\$547	\$574	5.0%
General Manufacturing	\$628	\$678	8.0%

Table 3 provides a look at changes in another measure of cluster performance – cluster employment as a share of total regional employment. As this table indicates, the *General Manufacturing* and *Textiles* clusters posted the largest declines in employment share, with *General Manufacturing* dropping from 9.0 to 7.1 percent of total regional employment, and *Textiles* falling from 2.2 to 0.4 percent. Again at the other end of the spectrum, the *Healthcare* cluster’s share of total regional employment increased from 11.8 to 13.5 percent.

⁹ Data Source: Virginia Employment Commission.

Table 3: Change in Industry Cluster Significance – West Piedmont Workforce Investment Area – 2007 to 2009¹⁰

Cluster Name	% of WIA Employment 2007	% of WIA Employment 2009	Difference
General Manufacturing	9.0%	7.1%	-1.9%
Textiles	2.2%	0.4%	-1.8%
Wood Products	3.2%	2.3%	-0.9%
Construction	4.2%	4.0%	-0.2%
Finance	2.4%	2.3%	-0.1%
Fabricated Metals and Equipment	0.5%	0.4%	-0.1%
Transportation	2.2%	2.1%	-0.1%
Chemicals and Materials	0.7%	0.7%	0.0%
Healthcare	11.8%	13.5%	1.7%

Table 4 updates the location quotients for each of the specified industry clusters. Location quotients measure an industry’s “footprint” within a region relative to some benchmark, in this case the industry’s footprint in the state. If the location quotient is above one, the industry has a larger presence in the region than one would expect based on the statewide norm. If the location quotient is below one, the reverse is true. As the data depicted in Table 4 demonstrate, the regional footprint of the *Textiles*, *General Manufacturing*, and *Wood Products* clusters all declined between 2007 and 2009, with the *Textiles* cluster posting the largest drop (10.0 to 2.1). In contrast, the relative size of the *Construction*, and *Chemicals and Materials* clusters actually increased between 2007 and 2009.

Finally, Table 5 looks at recent data on unemployment claimants by industry and maps those data into the nine identified industry clusters. What these data show is that, collectively, these nine clusters accounted for approximately 62 percent of all unemployment claimants in May 2010 (the most recent month for which data are available), with the *General Manufacturing* cluster comprising the largest proportion of that number (25.4 percent).

¹⁰ Data Source: Virginia Employment Commission.

Table 4: Change in Industry Cluster Location Quotient – West Piedmont Workforce Investment Area – 2007 to 2009¹¹

Cluster Name	2007 Location Quotient	2009 Location Quotient	Difference
Textiles	10.0	2.1	-7.8
General Manufacturing	5.0	4.7	-0.3
Wood Products	6.4	6.1	-0.3
Fabricated Metals and Equipment	0.7	0.7	0.0
Finance	0.7	0.7	0.0
Health	1.2	1.2	0.0
Transportation	1.3	1.3	0.0
Construction	0.6	0.7	0.1
Chemicals and Materials	2.3	3.4	1.1

Table 5: May 2010 Unemployment Claimants by Industry Cluster – West Piedmont Workforce Investment Area¹²

Cluster Name	May 2010 Claimants	As % of Total
General Manufacturing	370	25.4%
Textiles	133	9.1%
Construction	123	8.4%
Fabricated Metals and Equipment	85	5.8%
Transportation	80	5.5%
Wood Products	54	3.7%
Health	51	3.5%
Finance	5	0.3%
Chemicals and Materials	4	0.3%

¹¹ Data Source: Virginia Employment Commission.

¹² Data Source: Virginia Employment Commission.

Based on the data presented in Tables 1 through 5, we conclude that five of the nine industry clusters identified in the STREAMLINE bi-state leadership group's 2009 *Regional Innovation Grant* are significantly at risk for future layoffs. Those five at risk clusters are:

- *Chemicals and Materials,*
- *Fabricated Metals and Equipment,*
- *General Manufacturing,*
- *Textiles, and*
- *Wood Products*

IV. Workforce Training

In this section, we identify the occupations employed within the at risk *Chemicals and Materials, Fabricated Metals and Equipment, General Manufacturing, Textiles, and Wood Products* clusters, map those occupations into their associated training programs, and then identify the education providers within the West Piedmont Workforce Investment Area that offer those programs. The method used to accomplish this task is not new and has been successfully employed in earlier studies.¹³ The purpose of this analysis is to aid the West Piedmont Workforce Investment Board in more efficiently targeting scarce incumbent worker training resources, thereby enhancing the economic competitiveness of these at risk industries and decreasing the threat of future layoffs.

Our analysis involves a three step process. In the first step, we use a Virginia-specific staffing matrix developed by the Virginia Employment Commission to identify the specific occupations employed in the individual industries that comprise each of the five at risk clusters. In the next step, we use a crosswalk developed by the National Crosswalk Service Center (NCSC) to map those identified occupations into their associated education and training programs.¹⁴

¹³ Similar methods are used in at least seven states (California, Georgia, Idaho, Illinois, New Jersey, Utah, and Virginia) to project anticipated education and training demands. For an excellent exposition of this method see, William J. Drummond and Jan L Youtie, "Occupational Employment, Demand for College Graduates, and Migration: A Statewide View," a report to the Board of Regents, University System of Georgia, 1999. For an example of how this method has been used previously in Virginia see, A. Fletcher Mangum, "System-Wide Needs Assessment for Virginia Education," State Council of Higher Education for Virginia, March 28, 2002, p.90.

¹⁴ The National Crosswalk Service Center (NCSC) is funded by the U.S. Department of Labor, Employment and Training Administration. The specific NCSC crosswalk used in this analysis is the *2000 Standard Occupational Classification Crosswalk to 2000 Classification of Instructional Programs*. This crosswalk identifies the prerequisite instructional programs (classified according to the National Center for

Through the combination of these first two steps, we are able to create a crosswalk that identifies the occupations associated with each cluster, and the education and training programs associated with those occupations. Full detail on that crosswalk is provided in Appendix 2 of this report.

In the third step of the analysis, we use data from the U. S. Department of Education's Integrated Postsecondary Education Data System (IPEDS). These data are comprised of all graduates in academic year 2008-09 from degree-granting public or private, four-year or two-year, colleges and universities within the West Piedmont Workforce Investment Area. By comparing the list of requisite training programs developed in step two, with the list of graduates by program generated in step three, we are able to identify those education providers within the West Piedmont Workforce Investment Area that offer training programs that are directly linked to the five identified at risk industry clusters.

The results of that analysis are provided in Table 6. As these data indicate, there are three postsecondary education institutions within the West Piedmont Workforce Investment Area – Averett University, Danville Community College, and Patrick Henry Community College – that provide training programs that are linked to occupations within the five identified at risk industry clusters.¹⁵

Educational Statistics' *2000 Classification of Instructional Program*, or *CIP*, code) necessary for employment in 1,364 specific occupations (classified according to the Bureau of Labor Statistics' *2000 Standard Occupational Classification*, or *SOC*, code). Often, these are many-to-many relationships where a given instructional program can serve as an avenue into one of many jobs, or one of several instructional programs can serve as a prerequisite for a given job.

¹⁵ It is important to realize that the data provided in Table 6 are subject to the limitations of the IPEDS database. From a practical perspective this means that some institutions that offer programs within the West Piedmont Workforce Area (most notably, Averett Non-Traditional and National College) cannot be included in the analysis because data for all their campus locations throughout the state are reported in IPEDS as a single entity. As a result, it is not possible to determine which of their programs are specifically offered in the West Piedmont Workforce Area, as opposed to elsewhere in Virginia.

Table 6: Cluster Related Training Programs

Cluster	SOC Code	SOC Title	CIP Code	CIP Title	Averett Univ.	DCC	PHCC
Chemicals and Materials	111011	Chief Executives	520101	Business/Commerce, General	X		
Chemicals and Materials	111011	Chief Executives	520201	Business Administration and Management, General	X		
Chemicals and Materials	111021	General and Operations Managers	520101	Business/Commerce, General	X		
Chemicals and Materials	111021	General and Operations Managers	520201	Business Administration and Management, General	X		
Chemicals and Materials	112021	Marketing Managers	521401	Marketing/Marketing Management, General	X		
Chemicals and Materials	112022	Sales Managers	520101	Business/Commerce, General	X		
Chemicals and Materials	112022	Sales Managers	520201	Business Administration and Management, General	X		
Chemicals and Materials	112022	Sales Managers	521401	Marketing/Marketing Management, General	X		
Chemicals and Materials	113011	Administrative Services Managers	520101	Business/Commerce, General	X		
Chemicals and Materials	113011	Administrative Services Managers	520201	Business Administration and Management, General	X		
Chemicals and Materials	113021	Computer and Information Systems Managers	110101	Computer and Information Sciences, General		X	X
Chemicals and Materials	113021	Computer and Information Systems Managers	110401	Information Science/Studies	X		

Cluster	SOC Code	SOC Title	CIP Code	CIP Title	Averett Univ.	DCC	PHCC
Chemicals and Materials	113031	Financial Managers	520801	Finance, General	X		
Chemicals and Materials	113051	Industrial Production Managers	520101	Business/Commerce, General	X		
Chemicals and Materials	113051	Industrial Production Managers	520201	Business Administration and Management, General	X		
Chemicals and Materials	113071	Transportation, Storage, and Distribution Managers	490104	Aviation/Airway Management and Operations	X		
Chemicals and Materials	113071	Transportation, Storage, and Distribution Managers	520101	Business/Commerce, General	X		
Chemicals and Materials	113071	Transportation, Storage, and Distribution Managers	520201	Business Administration and Management, General	X		
Chemicals and Materials	119041	Engineering Managers	140101	Engineering, General		X	
Chemicals and Materials	119199	Managers, All Other	520101	Business/Commerce, General	X		
Chemicals and Materials	119199	Managers, All Other	520201	Business Administration and Management, General	X		
Chemicals and Materials	119199	Managers, All Other	520299	Business Administration, Management and Operations, Other		X	X
Chemicals and Materials	131051	Cost Estimators	520101	Business/Commerce, General	X		
Chemicals and Materials	131051	Cost Estimators	520201	Business Administration and Management, General	X		
Chemicals and Materials	132011	Accountants and Auditors	520301	Accounting	X		

Cluster	SOC Code	SOC Title	CIP Code	CIP Title	Averett Univ.	DCC	PHCC
Chemicals and Materials	151021	Computer Programmers	520208	E-Commerce/Electronic Commerce	X		
Chemicals and Materials	151051	Computer Systems Analysts	110101	Computer and Information Sciences, General		X	X
Chemicals and Materials	151061	Database Administrators	110101	Computer and Information Sciences, General		X	X
Chemicals and Materials	151071	Network and Computer Systems Administrators	110101	Computer and Information Sciences, General		X	X
Chemicals and Materials	151071	Network and Computer Systems Administrators	110401	Information Science/Studies	X		
Chemicals and Materials	173026	Industrial Engineering Technicians	150612	Industrial Technology/Technician		X	X
Chemicals and Materials	192031	Chemists	400501	Chemistry, General	X		
Chemicals and Materials	192041	Environmental Scientists and Specialists, Including Health	030104	Environmental Science	X		
Chemicals and Materials	291111	Registered Nurses	511601	Nursing - Registered Nurse Training (RN, ASN, BSN, MSN)		X	X
Chemicals and Materials	433031	Bookkeeping, Accounting, and Auditing Clerks	520399	Accounting and Related Services, Other		X	X
Chemicals and Materials	492094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	470105	Industrial Electronics Technology/Technician			X
Fabricated Metals and Equipment	111011	Chief Executives	520101	Business/Commerce, General	X		

Cluster	SOC Code	SOC Title	CIP Code	CIP Title	Averett Univ.	DCC	PHCC
Fabricated Metals and Equipment	111011	Chief Executives	520201	Business Administration and Management, General	X		
Fabricated Metals and Equipment	111021	General and Operations Managers	520101	Business/Commerce, General	X		
Fabricated Metals and Equipment	111021	General and Operations Managers	520201	Business Administration and Management, General	X		
Fabricated Metals and Equipment	112021	Marketing Managers	521401	Marketing/Marketing Management, General	X		
Fabricated Metals and Equipment	112022	Sales Managers	520101	Business/Commerce, General	X		
Fabricated Metals and Equipment	112022	Sales Managers	520201	Business Administration and Management, General	X		
Fabricated Metals and Equipment	112022	Sales Managers	521401	Marketing/Marketing Management, General	X		
Fabricated Metals and Equipment	113011	Administrative Services Managers	520101	Business/Commerce, General	X		
Fabricated Metals and Equipment	113011	Administrative Services Managers	520201	Business Administration and Management, General	X		

Cluster	SOC Code	SOC Title	CIP Code	CIP Title	Averett Univ.	DCC	PHCC
Fabricated Metals and Equipment	113021	Computer and Information Systems Managers	110101	Computer and Information Sciences, General		X	X
Fabricated Metals and Equipment	113021	Computer and Information Systems Managers	110401	Information Science/Studies	X		
Fabricated Metals and Equipment	113031	Financial Managers	520801	Finance, General	X		
Fabricated Metals and Equipment	113051	Industrial Production Managers	520101	Business/Commerce, General	X		
Fabricated Metals and Equipment	113051	Industrial Production Managers	520201	Business Administration and Management, General	X		
Fabricated Metals and Equipment	113071	Transportation, Storage, and Distribution Managers	490104	Aviation/Airway Management and Operations	X		
Fabricated Metals and Equipment	113071	Transportation, Storage, and Distribution Managers	520101	Business/Commerce, General	X		
Fabricated Metals and Equipment	113071	Transportation, Storage, and Distribution Managers	520201	Business Administration and Management, General	X		
Fabricated Metals and Equipment	119021	Construction Managers	520101	Business/Commerce, General	X		

Cluster	SOC Code	SOC Title	CIP Code	CIP Title	Averett Univ.	DCC	PHCC
Fabricated Metals and Equipment	119021	Construction Managers	520201	Business Administration and Management, General	X		
Fabricated Metals and Equipment	119041	Engineering Managers	140101	Engineering, General		X	
Fabricated Metals and Equipment	119199	Managers, All Other	520101	Business/Commerce, General	X		
Fabricated Metals and Equipment	119199	Managers, All Other	520201	Business Administration and Management, General	X		
Fabricated Metals and Equipment	119199	Managers, All Other	520299	Business Administration, Management and Operations, Other		X	X
Fabricated Metals and Equipment	131051	Cost Estimators	520101	Business/Commerce, General	X		
Fabricated Metals and Equipment	131051	Cost Estimators	520201	Business Administration and Management, General	X		
Fabricated Metals and Equipment	131111	Management Analysts	520101	Business/Commerce, General	X		
Fabricated Metals and Equipment	131111	Management Analysts	520201	Business Administration and Management, General	X		

Cluster	SOC Code	SOC Title	CIP Code	CIP Title	Averett Univ.	DCC	PHCC
Fabricated Metals and Equipment	132011	Accountants and Auditors	520301	Accounting	X		
Fabricated Metals and Equipment	132051	Financial Analysts	520801	Finance, General	X		
Fabricated Metals and Equipment	151021	Computer Programmers	520208	E-Commerce/Electronic Commerce	X		
Fabricated Metals and Equipment	151032	Computer Software Engineers, Systems Software	110401	Information Science/Studies	X		
Fabricated Metals and Equipment	151051	Computer Systems Analysts	110101	Computer and Information Sciences, General		X	X
Fabricated Metals and Equipment	151061	Database Administrators	110101	Computer and Information Sciences, General		X	X
Fabricated Metals and Equipment	151071	Network and Computer Systems Administrators	110101	Computer and Information Sciences, General		X	X
Fabricated Metals and Equipment	151071	Network and Computer Systems Administrators	110401	Information Science/Studies	X		
Fabricated Metals and Equipment	151081	Network Systems and Data Communications Analysts	110101	Computer and Information Sciences, General		X	X

Cluster	SOC Code	SOC Title	CIP Code	CIP Title	Averett Univ.	DCC	PHCC
Fabricated Metals and Equipment	151099	Computer Specialists, All Other	110101	Computer and Information Sciences, General		X	X
Fabricated Metals and Equipment	151099	Computer Specialists, All Other	110401	Information Science/Studies	X		
Fabricated Metals and Equipment	172199	Engineers, All Other	140101	Engineering, General		X	
Fabricated Metals and Equipment	173026	Industrial Engineering Technicians	150612	Industrial Technology/Technician		X	X
Fabricated Metals and Equipment	192031	Chemists	400501	Chemistry, General	X		
Fabricated Metals and Equipment	433031	Bookkeeping, Accounting, and Auditing Clerks	520399	Accounting and Related Services, Other		X	X
Fabricated Metals and Equipment	512021	Coil Winders, Tapers, and Finishers	470105	Industrial Electronics Technology/Technician			X
Fabricated Metals and Equipment	512022	Electrical and Electronic Equipment Assemblers	470105	Industrial Electronics Technology/Technician			X
General Manufacturing	111011	Chief Executives	520101	Business/Commerce, General	X		
General Manufacturing	111011	Chief Executives	520201	Business Administration and Management, General	X		

Cluster	SOC Code	SOC Title	CIP Code	CIP Title	Averett Univ.	DCC	PHCC
General Manufacturing	111021	General and Operations Managers	520101	Business/Commerce, General	X		
General Manufacturing	111021	General and Operations Managers	520201	Business Administration and Management, General	X		
General Manufacturing	112021	Marketing Managers	521401	Marketing/Marketing Management, General	X		
General Manufacturing	112022	Sales Managers	520101	Business/Commerce, General	X		
General Manufacturing	112022	Sales Managers	520201	Business Administration and Management, General	X		
General Manufacturing	112022	Sales Managers	521401	Marketing/Marketing Management, General	X		
General Manufacturing	113011	Administrative Services Managers	520101	Business/Commerce, General	X		
General Manufacturing	113011	Administrative Services Managers	520201	Business Administration and Management, General	X		
General Manufacturing	113021	Computer and Information Systems Managers	110101	Computer and Information Sciences, General		X	X
General Manufacturing	113021	Computer and Information Systems Managers	110401	Information Science/Studies	X		
General Manufacturing	113031	Financial Managers	520801	Finance, General	X		
General Manufacturing	113051	Industrial Production Managers	520101	Business/Commerce, General	X		
General Manufacturing	113051	Industrial Production Managers	520201	Business Administration and Management, General	X		

Cluster	SOC Code	SOC Title	CIP Code	CIP Title	Averett Univ.	DCC	PHCC
General Manufacturing	113071	Transportation, Storage, and Distribution Managers	490104	Aviation/Airway Management and Operations	X		
General Manufacturing	113071	Transportation, Storage, and Distribution Managers	520101	Business/Commerce, General	X		
General Manufacturing	113071	Transportation, Storage, and Distribution Managers	520201	Business Administration and Management, General	X		
General Manufacturing	119021	Construction Managers	520101	Business/Commerce, General	X		
General Manufacturing	119021	Construction Managers	520201	Business Administration and Management, General	X		
General Manufacturing	119041	Engineering Managers	140101	Engineering, General		X	
General Manufacturing	119199	Managers, All Other	520101	Business/Commerce, General	X		
General Manufacturing	119199	Managers, All Other	520201	Business Administration and Management, General	X		
General Manufacturing	119199	Managers, All Other	520299	Business Administration, Management and Operations, Other		X	X
General Manufacturing	131051	Cost Estimators	520101	Business/Commerce, General	X		
General Manufacturing	131051	Cost Estimators	520201	Business Administration and Management, General	X		
General Manufacturing	132011	Accountants and Auditors	520301	Accounting	X		
General Manufacturing	151021	Computer Programmers	520208	E-Commerce/Electronic Commerce	X		

Cluster	SOC Code	SOC Title	CIP Code	CIP Title	Averett Univ.	DCC	PHCC
General Manufacturing	151051	Computer Systems Analysts	110101	Computer and Information Sciences, General		X	X
General Manufacturing	151061	Database Administrators	110101	Computer and Information Sciences, General		X	X
General Manufacturing	151071	Network and Computer Systems Administrators	110101	Computer and Information Sciences, General		X	X
General Manufacturing	151071	Network and Computer Systems Administrators	110401	Information Science/Studies	X		
General Manufacturing	172199	Engineers, All Other	140101	Engineering, General		X	
General Manufacturing	173026	Industrial Engineering Technicians	150612	Industrial Technology/Technician		X	X
General Manufacturing	192031	Chemists	400501	Chemistry, General	X		
General Manufacturing	192041	Environmental Scientists and Specialists, Including Health	030104	Environmental Science	X		
General Manufacturing	291111	Registered Nurses	511601	Nursing - Registered Nurse Training (RN, ASN, BSN, MSN)		X	X
General Manufacturing	411011	First-Line Supervisors/Managers of Retail Sales Workers	520208	E-Commerce/Electronic Commerce	X		
General Manufacturing	433031	Bookkeeping, Accounting, and Auditing Clerks	520399	Accounting and Related Services, Other		X	X
General Manufacturing	492094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	470105	Industrial Electronics Technology/Technician			X
Textiles	111011	Chief Executives	520101	Business/Commerce, General	X		

Cluster	SOC Code	SOC Title	CIP Code	CIP Title	Averett Univ.	DCC	PHCC
Textiles	111011	Chief Executives	520201	Business Administration and Management, General	X		
Textiles	111021	General and Operations Managers	520101	Business/Commerce, General	X		
Textiles	111021	General and Operations Managers	520201	Business Administration and Management, General	X		
Textiles	113051	Industrial Production Managers	520101	Business/Commerce, General	X		
Textiles	113051	Industrial Production Managers	520201	Business Administration and Management, General	X		
Textiles	132011	Accountants and Auditors	520301	Accounting	X		
Textiles	433031	Bookkeeping, Accounting, and Auditing Clerks	520399	Accounting and Related Services, Other		X	X
Textiles	492094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	470105	Industrial Electronics Technology/Technician			X
Wood Products	111011	Chief Executives	520101	Business/Commerce, General	X		
Wood Products	111011	Chief Executives	520201	Business Administration and Management, General	X		
Wood Products	111021	General and Operations Managers	520101	Business/Commerce, General	X		
Wood Products	111021	General and Operations Managers	520201	Business Administration and Management, General	X		
Wood Products	112021	Marketing Managers	521401	Marketing/Marketing Management, General	X		
Wood Products	112022	Sales Managers	520101	Business/Commerce, General	X		
Wood Products	112022	Sales Managers	520201	Business Administration and Management, General	X		

Cluster	SOC Code	SOC Title	CIP Code	CIP Title	Averett Univ.	DCC	PHCC
Wood Products	112022	Sales Managers	521401	Marketing/Marketing Management, General	X		
Wood Products	113011	Administrative Services Managers	520101	Business/Commerce, General	X		
Wood Products	113011	Administrative Services Managers	520201	Business Administration and Management, General	X		
Wood Products	113021	Computer and Information Systems Managers	110101	Computer and Information Sciences, General		X	X
Wood Products	113021	Computer and Information Systems Managers	110401	Information Science/Studies	X		
Wood Products	113031	Financial Managers	520801	Finance, General	X		
Wood Products	113051	Industrial Production Managers	520101	Business/Commerce, General	X		
Wood Products	113051	Industrial Production Managers	520201	Business Administration and Management, General	X		
Wood Products	113071	Transportation, Storage, and Distribution Managers	490104	Aviation/Airway Management and Operations	X		
Wood Products	113071	Transportation, Storage, and Distribution Managers	520101	Business/Commerce, General	X		
Wood Products	113071	Transportation, Storage, and Distribution Managers	520201	Business Administration and Management, General	X		
Wood Products	119041	Engineering Managers	140101	Engineering, General		X	
Wood Products	119199	Managers, All Other	520101	Business/Commerce, General	X		
Wood Products	119199	Managers, All Other	520201	Business Administration and Management, General	X		
Wood Products	119199	Managers, All Other	520299	Business Administration, Management and Operations, Other		X	X

Cluster	SOC Code	SOC Title	CIP Code	CIP Title	Averett Univ.	DCC	PHCC
Wood Products	131051	Cost Estimators	520101	Business/Commerce, General	X		
Wood Products	131051	Cost Estimators	520201	Business Administration and Management, General	X		
Wood Products	132011	Accountants and Auditors	520301	Accounting	X		
Wood Products	173026	Industrial Engineering Technicians	150612	Industrial Technology/Technician		X	X
Wood Products	433031	Bookkeeping, Accounting, and Auditing Clerks	520399	Accounting and Related Services, Other		X	X

V. Conclusion

In recent years, the West Piedmont Workforce Investment Area has been hard hit by industry closures and layoffs.¹⁶ Already in fiscal year 2009-10, major layoffs have impacted 622 industry jobs within the region, and these job losses come on the heels of major layoffs affecting 811 jobs in fiscal year 2008-09, and 291 jobs in fiscal year 2007-08.

This report has presented an analysis that supports a two-part strategy to aid in the aversion of future layoffs within the West Piedmont Workforce Investment Area. The first part of that strategy involves identifying industry clusters within the region that are at significant risk for future layoffs. To accomplish that task, we used recent economic data to assess the performance of nine key regional industry clusters that were previously identified in 2009 as part of a U.S. Department of Labor *Regional Innovation Grant*. Our analysis showed that five of those nine previously identified clusters – *Chemicals and Materials*, *Fabricated Metals and Equipment*, *General Manufacturing*, *Textiles*, and *Wood Products* – are at significant risk for future layoffs.

The second part of the strategy consists of developing a resource map that identifies the specific occupations associated with those industry clusters, the education and training programs that support those occupations, and the education providers within the region that offer those programs. By illuminating existing training programs within the West Piedmont Workforce Investment Area that directly support the identified at risk industry clusters, this resource map provides a tool that the West Piedmont Workforce Investment Board can use to more effectively target scarce incumbent worker training resources, thereby aiding in the aversion of future layoffs.

¹⁶ The West Piedmont Workforce Investment Area includes the counties of Henry, Patrick, and Pittsylvania, and the cities of Danville and Martinsville.

Appendix 1: Cluster Detail

In the tables that follow, we provide detail on the specific industries that comprise each of the affected clusters, along with information on their supplier and customer networks, and estimated occupational employment.

Chemicals and Materials Cluster

Table A1-1: Core Industries, Suppliers, and Customers

Core Industries	Top Suppliers	Top Customers
Basic Chemical Manufacturing	Resin, Rubber, and Synthetic Fibers	Resin, Rubber, and Synthetic Fibers
Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	Cleaning Compound and Toiletry Mfg	Power Generation and Supply
	Plastics Product Manufacturing	Motor Vehicle/Part Merchant Wholesalers
	Specialized Freight Trucking	Furniture & Furnishings Merchant Whse
	General Freight Trucking	Lumber and Supply Merchant Wholesalers
	Tobacco Manufacturing	Commercial Goods Merchant Wholesalers
	Motor Vehicle Parts Manufacturing	Electric Goods Merchant Wholesalers
	Converted Paper Product Manufacturing	Hardware & Plumbing Merchant Wholesalers
	Machinery & Supply Merchant Wholesalers	Machinery & Supply Merchant Wholesalers
	Hardware & Plumbing Merchant Wholesalers	Misc Durable Goods Merchant Wholesalers

Chemicals and Materials Cluster

Table A1-2: Top Occupations within Cluster

Occupation
Chemical Plant and System Operators
Mixing and Blending Machine Setters, Operators, and Tenders
Chemists
First-Line Supervisors/Managers of Production and Operating Workers
Chemical Equipment Operators and Tenders
Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders
Extruding and Forming Machine Setters, Operators, and Tenders, Synthetic and Glass Fibers
Chemical Technicians
Inspectors, Testers, Sorters, Samplers, and Weighers
Maintenance Workers, Machinery
Maintenance and Repair Workers, General
Packaging and Filling Machine Operators and Tenders
Chemical Engineers
Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders
Assemblers and Fabricators, All Other
Production, Planning, and Expediting Clerks
Office Clerks, General
Business Operations Specialists, All Other
Executive Secretaries and Administrative Assistants
Industrial Production Managers

Construction Cluster

Table A2-1: Core Industries, Suppliers, and Customers

Core Industries	Top Suppliers	Top Customers
Residential Building Construction		Architectural and Engineering Services
Nonresidential Building Construction		Motor Vehicle/Part Merchant Wholesalers
Utility System Construction		Furniture & Furnishings Merchant Whsle
Land Subdivision		Lumber and Supply Merchant Wholesalers
Highway, Street, and Bridge Construction		Commercial Goods Merchant Wholesalers
Other Heavy Construction		Electric Goods Merchant Wholesalers
Building Foundation/Exterior Contractors		Hardware & Plumbing Merchant Wholesalers
Building Equipment Contractors		Machinery & Supply Merchant Wholesalers
Building Finishing Contractors		Misc Durable Goods Merchant Wholesalers
Other Specialty Trade Contractors		Apparel/Piece Goods Merchant Wholesalers

Construction Cluster

Table A2-2: Top Occupations within Cluster

Occupation
Carpenters
Construction Laborers
First-Line Supervisors/Managers of Construction Trades and Extraction Workers
Electricians
Office Clerks, General
Plumbers, Pipefitters, and Steamfitters
Operating Engineers and Other Construction Equipment Operators
Cement Masons and Concrete Finishers
Painters, Construction and Maintenance
Heating, Air Conditioning, and Refrigeration Mechanics and Installers
Cost Estimators
Helpers--Electricians
Brickmasons and Blockmasons
Helpers--Carpenters
Sheet Metal Workers
Construction Managers
Bookkeeping, Accounting, and Auditing Clerks
Helpers--Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters
Drywall and Ceiling Tile Installers
Truck Drivers, Heavy and Tractor-Trailer

Fabricated Metals and Equipment Cluster

Table A3-1: Core Industries, Suppliers, and Customers

Core Industries	Top Suppliers	Top Customers
Architectural and Structural Metals Manufacturing	Automotive Repair and Maintenance	Motor Vehicle Parts Manufacturing
Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	Motor Vehicle Parts Manufacturing	Motor Vehicle/Part Merchant Wholesalers
Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	Specialized Freight Trucking	Furniture & Furnishings Merchant Whse
Motor Vehicle Parts Manufacturing	General Freight Trucking	Lumber and Supply Merchant Wholesalers
	Tobacco Manufacturing	Commercial Goods Merchant Wholesalers
	Motor Vehicle Parts Manufacturing	Electric Goods Merchant Wholesalers
	Machinery & Supply Merchant Wholesalers	Hardware & Plumbing Merchant Wholesalers
	Hardware & Plumbing Merchant Wholesalers	Machinery & Supply Merchant Wholesalers
	Misc Nondurable Goods Merchant Whse	Misc Durable Goods Merchant Wholesalers
	Electronic Markets and Agents/Brokers	Apparel/Piece Goods Merchant Wholesalers

Fabricated Metals and Equipment Cluster

Table A3-2: Top Occupations within Cluster

Occupation
Team Assemblers
Machinists
First-Line Supervisors/Managers of Production and Operating Workers
Inspectors, Testers, Sorters, Samplers, and Weighers
Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic
Welders, Cutters, Solderers, and Brazers
Structural Metal Fabricators and Fitters
Computer-Controlled Machine Tool Operators, Metal and Plastic
Maintenance and Repair Workers, General
Helpers--Production Workers
General and Operations Managers
Industrial Truck and Tractor Operators
Office Clerks, General
Laborers and Freight, Stock, and Material Movers, Hand
Industrial Machinery Mechanics
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products
Bookkeeping, Accounting, and Auditing Clerks
Shipping, Receiving, and Traffic Clerks
Industrial Engineers
Industrial Production Managers

Finance Cluster

Table A4-1: Core Industries, Suppliers, and Customers

Core Industries	Top Suppliers	Top Customers
Depository Credit Intermediation	Depository Credit Intermediation	Depository Credit Intermediation
Non-depository Credit Intermediation	Insurance Carriers	Insurance Agencies, Brokerages & Support
Activities Related to Credit Intermediation	Insurance Agencies, Brokerages & Support	Security & Commodity Investment Activity
Security & Commodity Investment Activity	Professional and Similar Organizations	Other Financial Investment Activities
Other Financial Investment Activities	Civic and Social Organizations	Non-depository Credit Intermediation
Insurance Carriers	Activities Related to Credit Intermediation	Activities Related to Credit Intermediation
Insurance Agencies, Brokerages & Support	Non-depository Credit Intermediation	Full-Service Restaurants
	Residential Building Construction	Limited-Service Eating Places
	Nonresidential Building Construction	Special Food Services
	Security & Commodity Investment Activity	Employment Services

Finance Cluster

Table A4-2: Top Occupations within Cluster

Occupation
Tellers
Loan Officers
Customer Service Representatives
Office Clerks, General
Loan Interviewers and Clerks
First-Line Supervisors/Managers of Office and Administrative Support Workers
Insurance Sales Agents
Bill and Account Collectors
Securities, Commodities, and Financial Services Sales Agents
Bookkeeping, Accounting, and Auditing Clerks
Insurance Claims and Policy Processing Clerks
New Accounts Clerks
Claims Adjusters, Examiners, and Investigators
Financial Managers
Insurance Underwriters
Sales Representatives, Services, All Other
Accountants and Auditors
Executive Secretaries and Administrative Assistants
General and Operations Managers
Cashiers

General Manufacturing Cluster

Table A5-1: Core Industries, Suppliers, and Customers

Core Industries	Top Suppliers	Top Customers
Converted Paper Product Manufacturing	Cleaning Compound and Toiletry Mfg	Motor Vehicle/Part Merchant Wholesalers
Printing and Related Support Activities	Residential Building Construction	Furniture & Furnishings Merchant Whse
Soap, Cleaning Compound, and Toilet Preparation Manufacturing	Plastics Product Manufacturing	Lumber and Supply Merchant Wholesalers
Plastics Product Manufacturing	Tobacco Manufacturing	Commercial Goods Merchant Wholesalers
Cement and Concrete Product Manufacturing	Nonresidential Building Construction	Electric Goods Merchant Wholesalers
Coating, Engraving, Heat Treating, and Allied Activities	Residential Building Construction	Hardware & Plumbing Merchant Wholesalers
Household and Institutional Furniture and Kitchen Cabinet Manufacturing	Other Wood Product Manufacturing	Machinery & Supply Merchant Wholesalers
Office Furniture (including Fixtures) Manufacturing	Motor Vehicle Parts Manufacturing	Misc Durable Goods Merchant Wholesalers
Medical Equipment and Supplies Manufacturing	Machinery & Supply Merchant Wholesalers	Apparel/Piece Goods Merchant Wholesalers
Other Miscellaneous Manufacturing	Hardware & Plumbing Merchant Wholesalers	Grocery Product Merchant Wholesalers

General Manufacturing Cluster

Table A5-2: Top Occupations within Cluster

Occupation
Woodworking Machine Setters, Operators, and Tenders, Except Sawing
Team Assemblers
Cabinetmakers and Bench Carpenters
Laborers and Freight, Stock, and Material Movers, Hand
First-Line Supervisors/Managers of Production and Operating Workers
Helpers--Production Workers
Industrial Truck and Tractor Operators
Paper Goods Machine Setters, Operators, and Tenders
Packers and Packagers, Hand
Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic
Inspectors, Testers, Sorters, Samplers, and Weighers
Maintenance and Repair Workers, General
Machine Feeders and Offbearers
Coating, Painting, and Spraying Machine Setters, Operators, and Tenders
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products
Furniture Finishers
Sawing Machine Setters, Operators, and Tenders, Wood
Customer Service Representatives
Industrial Machinery Mechanics
Office Clerks, General

Healthcare Cluster

Table A6-1: Core Industries, Suppliers, and Customers

Core Industries	Top Suppliers	Top Customers
Offices of Physicians	General Medical and Surgical Hospitals	Lessors of Real Estate
Offices of Dentists	Offices of Dentists	Offices of Real Estate Agents & Brokers
Offices of Other Health Practitioners	Offices of Physicians	Activities Related to Real Estate
Outpatient Care Centers	Offices of Other Health Practitioners	Employment Services
Home Health Care Services	Other Ambulatory Health Care Services	Power Generation and Supply
Other Ambulatory Health Care Services	Outpatient Care Centers	Motor Vehicle/Part Merchant Wholesalers
General Medical and Surgical Hospitals	Professional and Similar Organizations	Furniture & Furnishings Merchant Whse
Nursing Care Facilities	Civic and Social Organizations	Lumber and Supply Merchant Wholesalers
Residential Mental Health Facilities	Spectator Sports	Commercial Goods Merchant Wholesalers
Community Care Facility for the Elderly	Nursing Care Facilities	Electric Goods Merchant Wholesalers
Other Residential Care Facilities		Lessors of Real Estate
Individual and Family Services		Offices of Real Estate Agents & Brokers
Vocational Rehabilitation Services		Activities Related to Real Estate
Child Day Care Services		Employment Services

Healthcare Cluster

Table A6-2: Top Occupations within Cluster

Occupation
Nursing Aides, Orderlies, and Attendants
Registered Nurses
Licensed Practical and Licensed Vocational Nurses
Home Health Aides
Maids and Housekeeping Cleaners
Cooks, Institution and Cafeteria
Office Clerks, General
Food Servers, Nonrestaurant
Janitors and Cleaners, Except Maids and Housekeeping Cleaners
Food Preparation Workers
Combined Food Preparation and Serving Workers, Including Fast Food
Personal and Home Care Aides
Recreation Workers
Maintenance and Repair Workers, General
Medical and Health Services Managers
Radiologic Technologists and Technicians
Rehabilitation Counselors
Receptionists and Information Clerks
Medical and Clinical Laboratory Technologists
Interviewers, Except Eligibility and Loan

Textiles Cluster

Table A7-1: Core Industries, Suppliers, and Customers

Core Industries	Top Suppliers	Top Customers
Fiber, Yarn, and Thread Mills	Fiber, Yarn, and Thread Mills	Power Generation and Supply
Fabric Mills	Textile and Fabric Finishing and Fabric	Motor Vehicle/Part Merchant Wholesalers
Textile and Fabric Finishing and Fabric Coating Mills	Fabric Mills	Furniture & Furnishings Merchant Whse
Other Textile Product Mills	Motor Vehicle Parts Manufacturing	Lumber and Supply Merchant Wholesalers
	Plastics Product Manufacturing	Commercial Goods Merchant Wholesalers
	Other Textile Product Mills	Electric Goods Merchant Wholesalers
		Hardware & Plumbing Merchant Wholesalers
		Machinery & Supply Merchant Wholesalers
		Misc Durable Goods Merchant Wholesalers
		Apparel/Piece Goods Merchant Wholesalers

Textiles Cluster

Table A7-2: Top Occupations within Cluster

Occupation
Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders
Textile Knitting and Weaving Machine Setters, Operators, and Tenders
Textile Bleaching and Dyeing Machine Operators and Tenders
First-Line Supervisors/Managers of Production and Operating Workers
Maintenance and Repair Workers, General
Inspectors, Testers, Sorters, Samplers, and Weighers
Sewing Machine Operators
Laborers and Freight, Stock, and Material Movers, Hand
Helpers--Production Workers
Industrial Machinery Mechanics
Industrial Truck and Tractor Operators
Machinists
Machine Feeders and Offbearers
Office Clerks, General
Stock Clerks and Order Fillers
Textile, Apparel, and Furnishings Workers, All Other
Maintenance Workers, Machinery
Shipping, Receiving, and Traffic Clerks
Team Assemblers

Transportation Cluster

Table A8-1: Core Industries, Suppliers, and Customers

Core Industries	Top Suppliers	Top Customers
General Freight Trucking	Specialized Freight Trucking	General Freight Trucking
Specialized Freight Trucking	General Freight Trucking	Specialized Freight Trucking
Taxi and Limousine Service	Residential Building Construction	Employment Services
Other Ground Passenger Transportation	Converted Paper Product Manufacturing	Warehousing and Storage
Support Activities, Road Transportation	Machinery & Supply Merchant Wholesalers	Office Administrative Services
Freight Transportation Arrangement	Hardware & Plumbing Merchant Wholesalers	Motor Vehicle/Part Merchant Wholesalers
Warehousing and Storage	Misc Nondurable Goods Merchant Whsle	Furniture & Furnishings Merchant Whsle
	Electronic Markets and Agents/Brokers	Lumber and Supply Merchant Wholesalers
	Petroleum Merchant Wholesalers	Commercial Goods Merchant Wholesalers
	Chemical Merchant Wholesalers	Electric Goods Merchant Wholesalers

Transportation Cluster

Table A8-2: Top Occupations within Cluster

Occupation
Truck Drivers, Heavy and Tractor-Trailer
Laborers and Freight, Stock, and Material Movers, Hand
Industrial Truck and Tractor Operators
Truck Drivers, Light or Delivery Services
Shipping, Receiving, and Traffic Clerks
Stock Clerks and Order Fillers
Packers and Packagers, Hand
Office Clerks, General
First-Line Supervisors/Managers of Transportation and Material-Moving Machine and Vehicle Operators
Bus and Truck Mechanics and Diesel Engine Specialists
Dispatchers, Except Police, Fire, and Ambulance
First-Line Supervisors/Managers of Office and Administrative Support Workers
First-Line Supervisors/Managers of Helpers, Laborers, and Material Movers, Hand
Customer Service Representatives
Bookkeeping, Accounting, and Auditing Clerks
General and Operations Managers
Maintenance and Repair Workers, General
Bus Drivers, Transit and Intercity
Billing and Posting Clerks and Machine Operators
Sales Representatives, Services, All Other

Wood Products Cluster

Table A9-1: Core Industries, Suppliers, and Customers

Core Industries	Top Suppliers	Top Customers
Sawmills and Wood Preservation	Other Wood Product Manufacturing	Logging
Veneer, Plywood, and Engineered Wood Product Manufacturing	Sawmills and Wood Preservation	Sawmills and Wood Preservation
Other Wood Product Manufacturing	Residential Building Construction	Other Wood Product Manufacturing
	Veneer and Engineered Wood Products	General Freight Trucking
	Nonresidential Building Construction	Specialized Freight Trucking
	Building Foundation/Exterior Contractors	Motor Vehicle/Part Merchant Wholesalers
	Other Specialty Trade Contractors	Furniture & Furnishings Merchant Whse
	Building Equipment Contractors	Lumber and Supply Merchant Wholesalers
	Building Finishing Contractors	Commercial Goods Merchant Wholesalers
	Other Heavy Construction	Electric Goods Merchant Wholesalers

Wood Products Cluster

Table A9-2: Top Occupations within Cluster

Occupation
Laborers and Freight, Stock, and Material Movers, Hand
Sawing Machine Setters, Operators, and Tenders, Wood
Woodworking Machine Setters, Operators, and Tenders, Except Sawing
Team Assemblers
Industrial Truck and Tractor Operators
Carpenters
First-Line Supervisors/Managers of Production and Operating Workers
Truck Drivers, Heavy and Tractor-Trailer
Machine Feeders and Offbearers
Helpers--Production Workers
Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic
Cabinetmakers and Bench Carpenters
Maintenance and Repair Workers, General
Packers and Packagers, Hand
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products
Inspectors, Testers, Sorters, Samplers, and Weighers
Office Clerks, General
Packaging and Filling Machine Operators and Tenders
Shipping, Receiving, and Traffic Clerks
Logging Equipment Operators

Appendix 2: Cluster, Occupation, and Training Program Crosswalk

The table that follows provides a crosswalk between each industry cluster and the occupations employed within that cluster (by Standard Occupation Code (SOC) and SOC Title), and each occupation and the prerequisite training programs associated with that occupation (by Classification of Instructional Program (CIP) Code and CIP Title).

Table A10: Cluster, Occupation, and Training Crosswalk

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Chemicals and Materials	111011	Chief Executives	440401	Public Administration
Chemicals and Materials	111011	Chief Executives	440501	Public Policy Analysis
Chemicals and Materials	111011	Chief Executives	449999	Public Administration and Social Service Professions, Other
Chemicals and Materials	111011	Chief Executives	520101	Business/Commerce, General
Chemicals and Materials	111011	Chief Executives	520201	Business Administration and Management, General
Chemicals and Materials	111011	Chief Executives	520701	Entrepreneurship/Entrepreneurial Studies
Chemicals and Materials	111011	Chief Executives	521101	International Business/Trade/Commerce
Chemicals and Materials	111021	General and Operations Managers	440401	Public Administration
Chemicals and Materials	111021	General and Operations Managers	520101	Business/Commerce, General
Chemicals and Materials	111021	General and Operations Managers	520201	Business Administration and Management, General
Chemicals and Materials	111021	General and Operations Managers	520701	Entrepreneurship/Entrepreneurial Studies
Chemicals and Materials	111021	General and Operations Managers	521101	International Business/Trade/Commerce
Chemicals and Materials	112021	Marketing Managers	190203	Consumer Merchandising/Retailing Management
Chemicals and Materials	112021	Marketing Managers	190905	Apparel and Textile Marketing Management
Chemicals and Materials	112021	Marketing Managers	521401	Marketing/Marketing Management, General
Chemicals and Materials	112021	Marketing Managers	521402	Marketing Research
Chemicals and Materials	112021	Marketing Managers	521403	International Marketing
Chemicals and Materials	112021	Marketing Managers	521499	Marketing, Other
Chemicals and Materials	112022	Sales Managers	190203	Consumer Merchandising/Retailing Management
Chemicals and Materials	112022	Sales Managers	520101	Business/Commerce, General
Chemicals and Materials	112022	Sales Managers	520201	Business Administration and Management, General

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Chemicals and Materials	112022	Sales Managers	521401	Marketing/Marketing Management, General
Chemicals and Materials	112022	Sales Managers	521499	Marketing, Other
Chemicals and Materials	113011	Administrative Services Managers	440401	Public Administration
Chemicals and Materials	113011	Administrative Services Managers	510711	Medical/Health Management and Clinical Assistant/Specialist
Chemicals and Materials	113011	Administrative Services Managers	520101	Business/Commerce, General
Chemicals and Materials	113011	Administrative Services Managers	520201	Business Administration and Management, General
Chemicals and Materials	113011	Administrative Services Managers	520202	Purchasing, Procurement/Acquisitions and Contracts Management
Chemicals and Materials	113021	Computer and Information Systems Managers	110101	Computer and Information Sciences, General
Chemicals and Materials	113021	Computer and Information Systems Managers	110401	Information Science/Studies
Chemicals and Materials	113021	Computer and Information Systems Managers	110701	Computer Science
Chemicals and Materials	113021	Computer and Information Systems Managers	111001	System Administration/Administrator
Chemicals and Materials	113021	Computer and Information Systems Managers	520205	Operations Management and Supervision
Chemicals and Materials	113021	Computer and Information Systems Managers	521201	Management Information Systems, General
Chemicals and Materials	113021	Computer and Information Systems Managers	521206	Information Resources Management/CIO Training
Chemicals and Materials	113021	Computer and Information Systems Managers	521207	Knowledge Management
Chemicals and Materials	113031	Financial Managers	520304	Accounting and Finance
Chemicals and Materials	113031	Financial Managers	520305	Accounting and Business/Management
Chemicals and Materials	113031	Financial Managers	520801	Finance, General
Chemicals and Materials	113031	Financial Managers	520806	International Finance
Chemicals and Materials	113031	Financial Managers	520808	Public Finance
Chemicals and Materials	113031	Financial Managers	520809	Credit Management
Chemicals and Materials	113031	Financial Managers	520899	Finance and Financial Management Services, Other
Chemicals and Materials	113051	Industrial Production Managers	520101	Business/Commerce, General
Chemicals and Materials	113051	Industrial Production Managers	520201	Business Administration and Management, General

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Chemicals and Materials	113051	Industrial Production Managers	520205	Operations Management and Supervision
Chemicals and Materials	113061	Purchasing Managers	520202	Purchasing, Procurement/Acquisitions and Contracts Management
Chemicals and Materials	113071	Transportation, Storage, and Distribution Managers	440401	Public Administration
Chemicals and Materials	113071	Transportation, Storage, and Distribution Managers	490101	Aeronautics/Aviation/Aerospace Science and Technology, General
Chemicals and Materials	113071	Transportation, Storage, and Distribution Managers	490104	Aviation/Airway Management and Operations
Chemicals and Materials	113071	Transportation, Storage, and Distribution Managers	520101	Business/Commerce, General
Chemicals and Materials	113071	Transportation, Storage, and Distribution Managers	520201	Business Administration and Management, General
Chemicals and Materials	113071	Transportation, Storage, and Distribution Managers	520203	Logistics and Materials Management
Chemicals and Materials	119041	Engineering Managers	040201	Architecture (BArch, BA/BS, MArch, MA/MS, PhD)
Chemicals and Materials	119041	Engineering Managers	040301	City/Urban, Community and Regional Planning
Chemicals and Materials	119041	Engineering Managers	040401	Environmental Design/Architecture
Chemicals and Materials	119041	Engineering Managers	040501	Interior Architecture
Chemicals and Materials	119041	Engineering Managers	040601	Landscape Architecture (BS, BSLA, BLA, MSLA, MLA, PhD)
Chemicals and Materials	119041	Engineering Managers	140101	Engineering, General
Chemicals and Materials	119041	Engineering Managers	140201	Aerospace, Aeronautical and Astronautical Engineering
Chemicals and Materials	119041	Engineering Managers	140301	Agricultural/Biological Engineering and Bioengineering
Chemicals and Materials	119041	Engineering Managers	140401	Architectural Engineering
Chemicals and Materials	119041	Engineering Managers	140501	Biomedical/Medical Engineering
Chemicals and Materials	119041	Engineering Managers	140601	Ceramic Sciences and Engineering
Chemicals and Materials	119041	Engineering Managers	140701	Chemical Engineering
Chemicals and Materials	119041	Engineering Managers	140801	Civil Engineering, General
Chemicals and Materials	119041	Engineering Managers	140802	Geotechnical Engineering
Chemicals and Materials	119041	Engineering Managers	140803	Structural Engineering
Chemicals and Materials	119041	Engineering Managers	140804	Transportation and Highway Engineering
Chemicals and Materials	119041	Engineering Managers	140805	Water Resources Engineering

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Chemicals and Materials	119041	Engineering Managers	140899	Civil Engineering, Other
Chemicals and Materials	119041	Engineering Managers	140901	Computer Engineering, General
Chemicals and Materials	119041	Engineering Managers	140902	Computer Hardware Engineering
Chemicals and Materials	119041	Engineering Managers	140903	Computer Software Engineering
Chemicals and Materials	119041	Engineering Managers	140999	Computer Engineering, Other
Chemicals and Materials	119041	Engineering Managers	141001	Electrical, Electronics and Communications Engineering
Chemicals and Materials	119041	Engineering Managers	141101	Engineering Mechanics
Chemicals and Materials	119041	Engineering Managers	141201	Engineering Physics
Chemicals and Materials	119041	Engineering Managers	141301	Engineering Science
Chemicals and Materials	119041	Engineering Managers	141401	Environmental/Environmental Health Engineering
Chemicals and Materials	119041	Engineering Managers	141801	Materials Engineering
Chemicals and Materials	119041	Engineering Managers	141901	Mechanical Engineering
Chemicals and Materials	119041	Engineering Managers	142001	Metallurgical Engineering
Chemicals and Materials	119041	Engineering Managers	142101	Mining and Mineral Engineering
Chemicals and Materials	119041	Engineering Managers	142201	Naval Architecture and Marine Engineering
Chemicals and Materials	119041	Engineering Managers	142301	Nuclear Engineering
Chemicals and Materials	119041	Engineering Managers	142401	Ocean Engineering
Chemicals and Materials	119041	Engineering Managers	142501	Petroleum Engineering
Chemicals and Materials	119041	Engineering Managers	142701	Systems Engineering
Chemicals and Materials	119041	Engineering Managers	142801	Textile Sciences and Engineering
Chemicals and Materials	119041	Engineering Managers	143101	Materials Science
Chemicals and Materials	119041	Engineering Managers	143201	Polymer/Plastics Engineering
Chemicals and Materials	119041	Engineering Managers	143301	Construction Engineering
Chemicals and Materials	119041	Engineering Managers	143401	Forest Engineering
Chemicals and Materials	119041	Engineering Managers	143501	Industrial Engineering
Chemicals and Materials	119041	Engineering Managers	143601	Manufacturing Engineering
Chemicals and Materials	119041	Engineering Managers	143801	Surveying Engineering
Chemicals and Materials	119041	Engineering Managers	143901	Geological/Geophysical Engineering
Chemicals and Materials	119041	Engineering Managers	149999	Engineering, Other

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Chemicals and Materials	119199	Managers, All Other	440401	Public Administration
Chemicals and Materials	119199	Managers, All Other	449999	Public Administration and Social Service Professions, Other
Chemicals and Materials	119199	Managers, All Other	500508	Theatre/Theatre Arts Management
Chemicals and Materials	119199	Managers, All Other	500704	Arts Management
Chemicals and Materials	119199	Managers, All Other	520101	Business/Commerce, General
Chemicals and Materials	119199	Managers, All Other	520201	Business Administration and Management, General
Chemicals and Materials	119199	Managers, All Other	520206	Non-Profit/Public/Organizational Management
Chemicals and Materials	119199	Managers, All Other	520299	Business Administration, Management and Operations, Other
Chemicals and Materials	119199	Managers, All Other	520701	Entrepreneurship/Entrepreneurial Studies
Chemicals and Materials	119199	Managers, All Other	520702	Franchising and Franchise Operations
Chemicals and Materials	119199	Managers, All Other	520703	Small Business Administration/Management
Chemicals and Materials	119199	Managers, All Other	520799	Entrepreneurial and Small Business Operations, Other
Chemicals and Materials	119199	Managers, All Other	520903	Tourism and Travel Services Management
Chemicals and Materials	119199	Managers, All Other	520999	Hospitality Administration/Management, Other
Chemicals and Materials	119199	Managers, All Other	529999	Business, Management, Marketing, and Related Support Services, Other
Chemicals and Materials	131023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	521801	Sales, Distribution, and Marketing Operations, General
Chemicals and Materials	131051	Cost Estimators	141801	Materials Engineering
Chemicals and Materials	131051	Cost Estimators	141901	Mechanical Engineering
Chemicals and Materials	131051	Cost Estimators	143301	Construction Engineering
Chemicals and Materials	131051	Cost Estimators	143601	Manufacturing Engineering
Chemicals and Materials	131051	Cost Estimators	151001	Construction Engineering Technology/Technician
Chemicals and Materials	131051	Cost Estimators	520101	Business/Commerce, General
Chemicals and Materials	131051	Cost Estimators	520201	Business Administration and Management, General
Chemicals and Materials	131072	Compensation, Benefits, and Job Analysis Specialists	521001	Human Resources Management/Personnel Administration, General
Chemicals and Materials	131072	Compensation, Benefits, and Job Analysis Specialists	521002	Labor and Industrial Relations

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Chemicals and Materials	131073	Training and Development Specialists	521001	Human Resources Management/Personnel Administration, General
Chemicals and Materials	131073	Training and Development Specialists	521003	Organizational Behavior Studies
Chemicals and Materials	131199	Business Operations Specialists, All Other	529999	Business, Management, Marketing, and Related Support Services, Other
Chemicals and Materials	132011	Accountants and Auditors	301601	Accounting and Computer Science
Chemicals and Materials	132011	Accountants and Auditors	520301	Accounting
Chemicals and Materials	132011	Accountants and Auditors	520303	Auditing
Chemicals and Materials	132011	Accountants and Auditors	520304	Accounting and Finance
Chemicals and Materials	132011	Accountants and Auditors	520305	Accounting and Business/Management
Chemicals and Materials	132011	Accountants and Auditors	521601	Taxation
Chemicals and Materials	151021	Computer Programmers	110102	Artificial Intelligence and Robotics
Chemicals and Materials	151021	Computer Programmers	110201	Computer Programming/Programmer, General
Chemicals and Materials	151021	Computer Programmers	110202	Computer Programming, Specific Applications
Chemicals and Materials	151021	Computer Programmers	110203	Computer Programming, Vendor/Product Certification
Chemicals and Materials	151021	Computer Programmers	110801	Web Page, Digital/Multimedia and Information Resources Design
Chemicals and Materials	151021	Computer Programmers	110803	Computer Graphics
Chemicals and Materials	151021	Computer Programmers	111004	Web/Multimedia Management and Webmaster
Chemicals and Materials	151021	Computer Programmers	261103	Bioinformatics
Chemicals and Materials	151021	Computer Programmers	510709	Medical Office Computer Specialist/Assistant
Chemicals and Materials	151021	Computer Programmers	512706	Medical Informatics
Chemicals and Materials	151021	Computer Programmers	520208	E-Commerce/Electronic Commerce
Chemicals and Materials	151021	Computer Programmers	521201	Management Information Systems, General
Chemicals and Materials	151031	Computer Software Engineers, Applications	110102	Artificial Intelligence and Robotics
Chemicals and Materials	151031	Computer Software Engineers, Applications	110103	Information Technology
Chemicals and Materials	151031	Computer Software Engineers, Applications	110701	Computer Science
Chemicals and Materials	151031	Computer Software Engineers, Applications	140901	Computer Engineering, General
Chemicals and Materials	151031	Computer Software Engineers, Applications	140903	Computer Software Engineering
Chemicals and Materials	151031	Computer Software Engineers, Applications	151299	Computer Engineering Technologies/Technicians, Other

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Chemicals and Materials	151031	Computer Software Engineers, Applications	261103	Bioinformatics
Chemicals and Materials	151031	Computer Software Engineers, Applications	512706	Medical Informatics
Chemicals and Materials	151031	Computer Software Engineers, Applications	512799	Medical Illustration and Informatics, Other
Chemicals and Materials	151041	Computer Support Specialists	010106	Agricultural Business Technology
Chemicals and Materials	151041	Computer Support Specialists	110301	Data Processing and Data Processing Technology/Technician
Chemicals and Materials	151041	Computer Support Specialists	151203	Computer Hardware Technology/Technician
Chemicals and Materials	151041	Computer Support Specialists	151204	Computer Software Technology/Technician
Chemicals and Materials	151041	Computer Support Specialists	301601	Accounting and Computer Science
Chemicals and Materials	151041	Computer Support Specialists	510709	Medical Office Computer Specialist/Assistant
Chemicals and Materials	151051	Computer Systems Analysts	110101	Computer and Information Sciences, General
Chemicals and Materials	151051	Computer Systems Analysts	110103	Information Technology
Chemicals and Materials	151051	Computer Systems Analysts	110501	Computer Systems Analysis/Analyst
Chemicals and Materials	151051	Computer Systems Analysts	111004	Web/Multimedia Management and Webmaster
Chemicals and Materials	151061	Database Administrators	110101	Computer and Information Sciences, General
Chemicals and Materials	151061	Database Administrators	110501	Computer Systems Analysis/Analyst
Chemicals and Materials	151061	Database Administrators	110802	Data Modeling/Warehousing and Database Administration
Chemicals and Materials	151061	Database Administrators	111003	Computer and Information Systems Security
Chemicals and Materials	151061	Database Administrators	521201	Management Information Systems, General
Chemicals and Materials	151071	Network and Computer Systems Administrators	110101	Computer and Information Sciences, General
Chemicals and Materials	151071	Network and Computer Systems Administrators	110401	Information Science/Studies
Chemicals and Materials	151071	Network and Computer Systems Administrators	110501	Computer Systems Analysis/Analyst
Chemicals and Materials	151071	Network and Computer Systems Administrators	110901	Computer Systems Networking and Telecommunications
Chemicals and Materials	151071	Network and Computer Systems Administrators	111001	System Administration/Administrator
Chemicals and Materials	151071	Network and Computer Systems Administrators	111002	System, Networking, and LAN/WAN Management/Manager
Chemicals and Materials	151071	Network and Computer Systems Administrators	111003	Computer and Information Systems Security
Chemicals and Materials	151071	Network and Computer Systems Administrators	119999	Computer and Information Sciences and Support Services, Other
Chemicals and Materials	172041	Chemical Engineers	140701	Chemical Engineering
Chemicals and Materials	172051	Civil Engineers	140801	Civil Engineering, General

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Chemicals and Materials	172051	Civil Engineers	140804	Transportation and Highway Engineering
Chemicals and Materials	172051	Civil Engineers	140805	Water Resources Engineering
Chemicals and Materials	172051	Civil Engineers	140899	Civil Engineering, Other
Chemicals and Materials	172071	Electrical Engineers	141001	Electrical, Electronics and Communications Engineering
Chemicals and Materials	172081	Environmental Engineers	141401	Environmental/Environmental Health Engineering
Chemicals and Materials	172111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	141401	Environmental/Environmental Health Engineering
Chemicals and Materials	172112	Industrial Engineers	143501	Industrial Engineering
Chemicals and Materials	172141	Mechanical Engineers	141901	Mechanical Engineering
Chemicals and Materials	173013	Mechanical Drafters	151306	Mechanical Drafting and Mechanical Drafting CAD/CADD
Chemicals and Materials	173023	Electrical and Electronic Engineering Technicians	150303	Electrical, Electronic and Communications Engineering Technology/Technician
Chemicals and Materials	173023	Electrical and Electronic Engineering Technicians	150305	Telecommunications Technology/Technician
Chemicals and Materials	173023	Electrical and Electronic Engineering Technicians	150399	Electrical and Electronic Engineering Technologies/Technicians, Other
Chemicals and Materials	173023	Electrical and Electronic Engineering Technicians	151201	Computer Engineering Technology/Technician
Chemicals and Materials	173023	Electrical and Electronic Engineering Technicians	151202	Computer Technology/Computer Systems Technology
Chemicals and Materials	173026	Industrial Engineering Technicians	150612	Industrial Technology/Technician
Chemicals and Materials	173026	Industrial Engineering Technicians	150613	Manufacturing Technology/Technician
Chemicals and Materials	173026	Industrial Engineering Technicians	150699	Industrial Production Technologies/Technicians, Other
Chemicals and Materials	173026	Industrial Engineering Technicians	151501	Engineering/Industrial Management
Chemicals and Materials	191022	Microbiologists	011203	Soil Microbiology
Chemicals and Materials	191022	Microbiologists	260207	Structural Biology
Chemicals and Materials	191022	Microbiologists	260210	Biochemistry/Biophysics and Molecular Biology
Chemicals and Materials	191022	Microbiologists	260405	Neuroanatomy
Chemicals and Materials	191022	Microbiologists	260499	Cell/Cellular Biology and Anatomical Sciences, Other
Chemicals and Materials	191022	Microbiologists	260502	Microbiology, General
Chemicals and Materials	192031	Chemists	400501	Chemistry, General
Chemicals and Materials	192031	Chemists	400502	Analytical Chemistry
Chemicals and Materials	192031	Chemists	400503	Inorganic Chemistry

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Chemicals and Materials	192031	Chemists	400504	Organic Chemistry
Chemicals and Materials	192031	Chemists	400506	Physical and Theoretical Chemistry
Chemicals and Materials	192031	Chemists	400507	Polymer Chemistry
Chemicals and Materials	192031	Chemists	400508	Chemical Physics
Chemicals and Materials	192031	Chemists	400599	Chemistry, Other
Chemicals and Materials	192041	Environmental Scientists and Specialists, Including Health	030103	Environmental Studies
Chemicals and Materials	192041	Environmental Scientists and Specialists, Including Health	030104	Environmental Science
Chemicals and Materials	193021	Market Research Analysts	450601	Economics, General
Chemicals and Materials	193021	Market Research Analysts	450602	Applied Economics
Chemicals and Materials	193021	Market Research Analysts	450603	Econometrics and Quantitative Economics
Chemicals and Materials	193021	Market Research Analysts	450605	International Economics
Chemicals and Materials	193021	Market Research Analysts	520601	Business/Managerial Economics
Chemicals and Materials	193021	Market Research Analysts	521402	Marketing Research
Chemicals and Materials	194031	Chemical Technicians	011001	Food Science
Chemicals and Materials	194031	Chemical Technicians	410301	Chemical Technology/Technician
Chemicals and Materials	291111	Registered Nurses	511601	Nursing - Registered Nurse Training (RN, ASN, BSN, MSN)
Chemicals and Materials	291111	Registered Nurses	511603	Adult Health Nurse/Nursing
Chemicals and Materials	291111	Registered Nurses	511604	Nurse Anesthetist
Chemicals and Materials	291111	Registered Nurses	511605	Family Practice Nurse/Nurse Practitioner
Chemicals and Materials	291111	Registered Nurses	511606	Maternal/Child Health and Neonatal Nurse/Nursing
Chemicals and Materials	291111	Registered Nurses	511607	Nurse Midwife/Nursing Midwifery
Chemicals and Materials	291111	Registered Nurses	511608	Nursing Science (MS, PhD)
Chemicals and Materials	291111	Registered Nurses	511609	Pediatric Nurse/Nursing
Chemicals and Materials	291111	Registered Nurses	511610	Psychiatric/Mental Health Nurse/Nursing
Chemicals and Materials	291111	Registered Nurses	511611	Public Health/Community Nurse/Nursing
Chemicals and Materials	291111	Registered Nurses	511612	Perioperative/Operating Room and Surgical Nurse/Nursing
Chemicals and Materials	291111	Registered Nurses	511616	Clinical Nurse Specialist
Chemicals and Materials	291111	Registered Nurses	511617	Critical Care Nursing

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Chemicals and Materials	291111	Registered Nurses	511618	Occupational and Environmental Health Nursing
Chemicals and Materials	291111	Registered Nurses	511699	Nursing, Other
Chemicals and Materials	411012	First-Line Supervisors/Managers of Non-Retail Sales Workers	521899	General Merchandising, Sales, and Related Marketing Operations, Other
Chemicals and Materials	411012	First-Line Supervisors/Managers of Non-Retail Sales Workers	521909	Special Products Marketing Operations
Chemicals and Materials	411012	First-Line Supervisors/Managers of Non-Retail Sales Workers	521999	Specialized Merchandising, Sales, and Related Marketing Operations, Other
Chemicals and Materials	411012	First-Line Supervisors/Managers of Non-Retail Sales Workers	529999	Business, Management, Marketing, and Related Support Services, Other
Chemicals and Materials	414011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	521804	Selling Skills and Sales Operations
Chemicals and Materials	414011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	529999	Business, Management, Marketing, and Related Support Services, Other
Chemicals and Materials	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521801	Sales, Distribution, and Marketing Operations, General
Chemicals and Materials	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521899	General Merchandising, Sales, and Related Marketing Operations, Other
Chemicals and Materials	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521902	Fashion Merchandising
Chemicals and Materials	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521904	Apparel and Accessories Marketing Operations
Chemicals and Materials	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521909	Special Products Marketing Operations
Chemicals and Materials	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521999	Specialized Merchandising, Sales, and Related Marketing Operations, Other

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Chemicals and Materials	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	529999	Business, Management, Marketing, and Related Support Services, Other
Chemicals and Materials	419031	Sales Engineers	521804	Selling Skills and Sales Operations
Chemicals and Materials	431011	First-Line Supervisors/Managers of Office and Administrative Support Workers	010106	Agricultural Business Technology
Chemicals and Materials	431011	First-Line Supervisors/Managers of Office and Administrative Support Workers	510711	Medical/Health Management and Clinical Assistant/Specialist
Chemicals and Materials	431011	First-Line Supervisors/Managers of Office and Administrative Support Workers	520204	Office Management and Supervision
Chemicals and Materials	431011	First-Line Supervisors/Managers of Office and Administrative Support Workers	520207	Customer Service Management
Chemicals and Materials	433021	Billing and Posting Clerks and Machine Operators	520302	Accounting Technology/Technician and Bookkeeping
Chemicals and Materials	433031	Bookkeeping, Accounting, and Auditing Clerks	520302	Accounting Technology/Technician and Bookkeeping
Chemicals and Materials	433031	Bookkeeping, Accounting, and Auditing Clerks	520399	Accounting and Related Services, Other
Chemicals and Materials	433051	Payroll and Timekeeping Clerks	520302	Accounting Technology/Technician and Bookkeeping
Chemicals and Materials	433061	Procurement Clerks	520408	General Office Occupations and Clerical Services
Chemicals and Materials	434051	Customer Service Representatives	520406	Receptionist
Chemicals and Materials	434051	Customer Service Representatives	520411	Customer Service Support/Call Center/Teleservice Operation
Chemicals and Materials	434151	Order Clerks	520408	General Office Occupations and Clerical Services
Chemicals and Materials	434161	Human Resources Assistants, Except Payroll and Timekeeping	520408	General Office Occupations and Clerical Services
Chemicals and Materials	434171	Receptionists and Information Clerks	510703	Health Unit Coordinator/Ward Clerk
Chemicals and Materials	434171	Receptionists and Information Clerks	510712	Medical Reception/Receptionist
Chemicals and Materials	434171	Receptionists and Information Clerks	520406	Receptionist
Chemicals and Materials	434171	Receptionists and Information Clerks	520408	General Office Occupations and Clerical Services
Chemicals and Materials	435061	Production, Planning, and Expediting Clerks	520409	Parts, Warehousing, and Inventory Management Operations
Chemicals and Materials	435071	Shipping, Receiving, and Traffic Clerks	520408	General Office Occupations and Clerical Services
Chemicals and Materials	435071	Shipping, Receiving, and Traffic Clerks	520410	Traffic, Customs, and Transportation Clerk/Technician

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Chemicals and Materials	435081	Stock Clerks and Order Fillers	521803	Retailing and Retail Operations
Chemicals and Materials	435111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	520408	General Office Occupations and Clerical Services
Chemicals and Materials	436011	Executive Secretaries and Administrative Assistants	510716	Medical Administrative/Executive Assistant and Medical Secretary
Chemicals and Materials	436011	Executive Secretaries and Administrative Assistants	520401	Administrative Assistant and Secretarial Science, General
Chemicals and Materials	436011	Executive Secretaries and Administrative Assistants	520402	Executive Assistant/Executive Secretary
Chemicals and Materials	436014	Secretaries, Except Legal, Medical, and Executive	520401	Administrative Assistant and Secretarial Science, General
Chemicals and Materials	436014	Secretaries, Except Legal, Medical, and Executive	520402	Executive Assistant/Executive Secretary
Chemicals and Materials	439051	Mail Clerks and Mail Machine Operators, Except Postal Service	520408	General Office Occupations and Clerical Services
Chemicals and Materials	439061	Office Clerks, General	520408	General Office Occupations and Clerical Services
Chemicals and Materials	472141	Painters, Construction and Maintenance	460408	Painting/Painter and Wall Coverer
Chemicals and Materials	472152	Plumbers, Pipefitters, and Steamfitters	460502	Pipefitting/Pipefitter and Sprinkler Fitter
Chemicals and Materials	472152	Plumbers, Pipefitters, and Steamfitters	460503	Plumbing Technology/Plumber
Chemicals and Materials	472152	Plumbers, Pipefitters, and Steamfitters	460599	Plumbing and Related Water Supply Services, Other
Chemicals and Materials	491011	First-Line Supervisors/Managers of Mechanics, Installers, and Repairers	520205	Operations Management and Supervision
Chemicals and Materials	492094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	470104	Computer Installation and Repair Technology/Technician
Chemicals and Materials	492094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	470105	Industrial Electronics Technology/Technician
Chemicals and Materials	499021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	150501	Heating, Air Conditioning and Refrigeration Technology/Technician (ACH/ACR/ACHR/HRAC/HVAC/AC Technology)
Chemicals and Materials	499021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	150505	Solar Energy Technology/Technician
Chemicals and Materials	499021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	470201	Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician (HAC, HACR, HVAC, HVACR)
Chemicals and Materials	499041	Industrial Machinery Mechanics	470303	Industrial Mechanics and Maintenance Technology

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Chemicals and Materials	499041	Industrial Machinery Mechanics	470399	Heavy/Industrial Equipment Maintenance Technologies, Other
Chemicals and Materials	499042	Maintenance and Repair Workers, General	460412	Building/Construction Site Management/Manager
Chemicals and Materials	499043	Maintenance Workers, Machinery	470303	Industrial Mechanics and Maintenance Technology
Chemicals and Materials	499043	Maintenance Workers, Machinery	470399	Heavy/Industrial Equipment Maintenance Technologies, Other
Chemicals and Materials	511011	First-Line Supervisors/Managers of Production and Operating Workers	520205	Operations Management and Supervision
Chemicals and Materials	514121	Welders, Cutters, Solderers, and Brazers	480508	Welding Technology/Welder
Chemicals and Materials	518031	Water and Liquid Waste Treatment Plant and System Operators	150506	Water Quality and Wastewater Treatment Management and Recycling Technology/Technician
Chemicals and Materials	518091	Chemical Plant and System Operators	410301	Chemical Technology/Technician
Chemicals and Materials	519011	Chemical Equipment Operators and Tenders	410301	Chemical Technology/Technician
Chemicals and Materials	519023	Mixing and Blending Machine Setters, Operators, and Tenders	010401	Agricultural and Food Products Processing
Chemicals and Materials	519061	Inspectors, Testers, Sorters, Samplers, and Weighers	150702	Quality Control Technology/Technician
Chemicals and Materials	533031	Driver/Sales Workers	521803	Retailing and Retail Operations
Chemicals and Materials	533032	Truck Drivers, Heavy and Tractor-Trailer	490205	Truck and Bus Driver/Commercial Vehicle Operation
Chemicals and Materials	533033	Truck Drivers, Light or Delivery Services	490205	Truck and Bus Driver/Commercial Vehicle Operation
Chemicals and Materials	537051	Industrial Truck and Tractor Operators	490299	Ground Transportation, Other
Fabricated Metals and Equipment	111011	Chief Executives	440401	Public Administration
Fabricated Metals and Equipment	111011	Chief Executives	440501	Public Policy Analysis
Fabricated Metals and Equipment	111011	Chief Executives	449999	Public Administration and Social Service Professions, Other
Fabricated Metals and Equipment	111011	Chief Executives	520101	Business/Commerce, General
Fabricated Metals and Equipment	111011	Chief Executives	520201	Business Administration and Management, General
Fabricated Metals and Equipment	111011	Chief Executives	520701	Entrepreneurship/Entrepreneurial Studies
Fabricated Metals and Equipment	111011	Chief Executives	521101	International Business/Trade/Commerce

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Fabricated Metals and Equipment	111021	General and Operations Managers	440401	Public Administration
Fabricated Metals and Equipment	111021	General and Operations Managers	520101	Business/Commerce, General
Fabricated Metals and Equipment	111021	General and Operations Managers	520201	Business Administration and Management, General
Fabricated Metals and Equipment	111021	General and Operations Managers	520701	Entrepreneurship/Entrepreneurial Studies
Fabricated Metals and Equipment	111021	General and Operations Managers	521101	International Business/Trade/Commerce
Fabricated Metals and Equipment	112021	Marketing Managers	190203	Consumer Merchandising/Retailing Management
Fabricated Metals and Equipment	112021	Marketing Managers	190905	Apparel and Textile Marketing Management
Fabricated Metals and Equipment	112021	Marketing Managers	521401	Marketing/Marketing Management, General
Fabricated Metals and Equipment	112021	Marketing Managers	521402	Marketing Research
Fabricated Metals and Equipment	112021	Marketing Managers	521403	International Marketing
Fabricated Metals and Equipment	112021	Marketing Managers	521499	Marketing, Other
Fabricated Metals and Equipment	112022	Sales Managers	190203	Consumer Merchandising/Retailing Management
Fabricated Metals and Equipment	112022	Sales Managers	520101	Business/Commerce, General
Fabricated Metals and Equipment	112022	Sales Managers	520201	Business Administration and Management, General
Fabricated Metals and Equipment	112022	Sales Managers	521401	Marketing/Marketing Management, General
Fabricated Metals and Equipment	112022	Sales Managers	521499	Marketing, Other
Fabricated Metals and Equipment	113011	Administrative Services Managers	440401	Public Administration
Fabricated Metals and Equipment	113011	Administrative Services Managers	510711	Medical/Health Management and Clinical Assistant/Specialist
Fabricated Metals and Equipment	113011	Administrative Services Managers	520101	Business/Commerce, General

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Fabricated Metals and Equipment	113011	Administrative Services Managers	520201	Business Administration and Management, General
Fabricated Metals and Equipment	113011	Administrative Services Managers	520202	Purchasing, Procurement/Acquisitions and Contracts Management
Fabricated Metals and Equipment	113021	Computer and Information Systems Managers	110101	Computer and Information Sciences, General
Fabricated Metals and Equipment	113021	Computer and Information Systems Managers	110401	Information Science/Studies
Fabricated Metals and Equipment	113021	Computer and Information Systems Managers	110701	Computer Science
Fabricated Metals and Equipment	113021	Computer and Information Systems Managers	111001	System Administration/Administrator
Fabricated Metals and Equipment	113021	Computer and Information Systems Managers	520205	Operations Management and Supervision
Fabricated Metals and Equipment	113021	Computer and Information Systems Managers	521201	Management Information Systems, General
Fabricated Metals and Equipment	113021	Computer and Information Systems Managers	521206	Information Resources Management/CIO Training
Fabricated Metals and Equipment	113021	Computer and Information Systems Managers	521207	Knowledge Management
Fabricated Metals and Equipment	113031	Financial Managers	520304	Accounting and Finance
Fabricated Metals and Equipment	113031	Financial Managers	520305	Accounting and Business/Management
Fabricated Metals and Equipment	113031	Financial Managers	520801	Finance, General
Fabricated Metals and Equipment	113031	Financial Managers	520806	International Finance
Fabricated Metals and Equipment	113031	Financial Managers	520808	Public Finance
Fabricated Metals and Equipment	113031	Financial Managers	520809	Credit Management
Fabricated Metals and Equipment	113031	Financial Managers	520899	Finance and Financial Management Services, Other
Fabricated Metals and Equipment	113051	Industrial Production Managers	520101	Business/Commerce, General
Fabricated Metals and Equipment	113051	Industrial Production Managers	520201	Business Administration and Management, General

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Fabricated Metals and Equipment	113051	Industrial Production Managers	520205	Operations Management and Supervision
Fabricated Metals and Equipment	113061	Purchasing Managers	520202	Purchasing, Procurement/Acquisitions and Contracts Management
Fabricated Metals and Equipment	113071	Transportation, Storage, and Distribution Managers	440401	Public Administration
Fabricated Metals and Equipment	113071	Transportation, Storage, and Distribution Managers	490101	Aeronautics/Aviation/Aerospace Science and Technology, General
Fabricated Metals and Equipment	113071	Transportation, Storage, and Distribution Managers	490104	Aviation/Airway Management and Operations
Fabricated Metals and Equipment	113071	Transportation, Storage, and Distribution Managers	520101	Business/Commerce, General
Fabricated Metals and Equipment	113071	Transportation, Storage, and Distribution Managers	520201	Business Administration and Management, General
Fabricated Metals and Equipment	113071	Transportation, Storage, and Distribution Managers	520203	Logistics and Materials Management
Fabricated Metals and Equipment	119021	Construction Managers	151001	Construction Engineering Technology/Technician
Fabricated Metals and Equipment	119021	Construction Managers	520101	Business/Commerce, General
Fabricated Metals and Equipment	119021	Construction Managers	520201	Business Administration and Management, General
Fabricated Metals and Equipment	119021	Construction Managers	520205	Operations Management and Supervision
Fabricated Metals and Equipment	119041	Engineering Managers	040201	Architecture (BArch, BA/BS, MArch, MA/MS, PhD)
Fabricated Metals and Equipment	119041	Engineering Managers	040301	City/Urban, Community and Regional Planning
Fabricated Metals and Equipment	119041	Engineering Managers	040401	Environmental Design/Architecture
Fabricated Metals and Equipment	119041	Engineering Managers	040501	Interior Architecture
Fabricated Metals and Equipment	119041	Engineering Managers	040601	Landscape Architecture (BS, BSLA, BLA, MSLA, MLA, PhD)
Fabricated Metals and Equipment	119041	Engineering Managers	140101	Engineering, General
Fabricated Metals and Equipment	119041	Engineering Managers	140201	Aerospace, Aeronautical and Astronautical Engineering

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Fabricated Metals and Equipment	119041	Engineering Managers	140301	Agricultural/Biological Engineering and Bioengineering
Fabricated Metals and Equipment	119041	Engineering Managers	140401	Architectural Engineering
Fabricated Metals and Equipment	119041	Engineering Managers	140501	Biomedical/Medical Engineering
Fabricated Metals and Equipment	119041	Engineering Managers	140601	Ceramic Sciences and Engineering
Fabricated Metals and Equipment	119041	Engineering Managers	140701	Chemical Engineering
Fabricated Metals and Equipment	119041	Engineering Managers	140801	Civil Engineering, General
Fabricated Metals and Equipment	119041	Engineering Managers	140802	Geotechnical Engineering
Fabricated Metals and Equipment	119041	Engineering Managers	140803	Structural Engineering
Fabricated Metals and Equipment	119041	Engineering Managers	140804	Transportation and Highway Engineering
Fabricated Metals and Equipment	119041	Engineering Managers	140805	Water Resources Engineering
Fabricated Metals and Equipment	119041	Engineering Managers	140899	Civil Engineering, Other
Fabricated Metals and Equipment	119041	Engineering Managers	140901	Computer Engineering, General
Fabricated Metals and Equipment	119041	Engineering Managers	140902	Computer Hardware Engineering
Fabricated Metals and Equipment	119041	Engineering Managers	140903	Computer Software Engineering
Fabricated Metals and Equipment	119041	Engineering Managers	140999	Computer Engineering, Other
Fabricated Metals and Equipment	119041	Engineering Managers	141001	Electrical, Electronics and Communications Engineering
Fabricated Metals and Equipment	119041	Engineering Managers	141101	Engineering Mechanics
Fabricated Metals and Equipment	119041	Engineering Managers	141201	Engineering Physics
Fabricated Metals and Equipment	119041	Engineering Managers	141301	Engineering Science

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Fabricated Metals and Equipment	119041	Engineering Managers	141401	Environmental/Environmental Health Engineering
Fabricated Metals and Equipment	119041	Engineering Managers	141801	Materials Engineering
Fabricated Metals and Equipment	119041	Engineering Managers	141901	Mechanical Engineering
Fabricated Metals and Equipment	119041	Engineering Managers	142001	Metallurgical Engineering
Fabricated Metals and Equipment	119041	Engineering Managers	142101	Mining and Mineral Engineering
Fabricated Metals and Equipment	119041	Engineering Managers	142201	Naval Architecture and Marine Engineering
Fabricated Metals and Equipment	119041	Engineering Managers	142301	Nuclear Engineering
Fabricated Metals and Equipment	119041	Engineering Managers	142401	Ocean Engineering
Fabricated Metals and Equipment	119041	Engineering Managers	142501	Petroleum Engineering
Fabricated Metals and Equipment	119041	Engineering Managers	142701	Systems Engineering
Fabricated Metals and Equipment	119041	Engineering Managers	142801	Textile Sciences and Engineering
Fabricated Metals and Equipment	119041	Engineering Managers	143101	Materials Science
Fabricated Metals and Equipment	119041	Engineering Managers	143201	Polymer/Plastics Engineering
Fabricated Metals and Equipment	119041	Engineering Managers	143301	Construction Engineering
Fabricated Metals and Equipment	119041	Engineering Managers	143401	Forest Engineering
Fabricated Metals and Equipment	119041	Engineering Managers	143501	Industrial Engineering
Fabricated Metals and Equipment	119041	Engineering Managers	143601	Manufacturing Engineering
Fabricated Metals and Equipment	119041	Engineering Managers	143801	Surveying Engineering
Fabricated Metals and Equipment	119041	Engineering Managers	143901	Geological/Geophysical Engineering

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Fabricated Metals and Equipment	119041	Engineering Managers	149999	Engineering, Other
Fabricated Metals and Equipment	119199	Managers, All Other	440401	Public Administration
Fabricated Metals and Equipment	119199	Managers, All Other	449999	Public Administration and Social Service Professions, Other
Fabricated Metals and Equipment	119199	Managers, All Other	500508	Theatre/Theatre Arts Management
Fabricated Metals and Equipment	119199	Managers, All Other	500704	Arts Management
Fabricated Metals and Equipment	119199	Managers, All Other	520101	Business/Commerce, General
Fabricated Metals and Equipment	119199	Managers, All Other	520201	Business Administration and Management, General
Fabricated Metals and Equipment	119199	Managers, All Other	520206	Non-Profit/Public/Organizational Management
Fabricated Metals and Equipment	119199	Managers, All Other	520299	Business Administration, Management and Operations, Other
Fabricated Metals and Equipment	119199	Managers, All Other	520701	Entrepreneurship/Entrepreneurial Studies
Fabricated Metals and Equipment	119199	Managers, All Other	520702	Franchising and Franchise Operations
Fabricated Metals and Equipment	119199	Managers, All Other	520703	Small Business Administration/Management
Fabricated Metals and Equipment	119199	Managers, All Other	520799	Entrepreneurial and Small Business Operations, Other
Fabricated Metals and Equipment	119199	Managers, All Other	520903	Tourism and Travel Services Management
Fabricated Metals and Equipment	119199	Managers, All Other	520999	Hospitality Administration/Management, Other
Fabricated Metals and Equipment	119199	Managers, All Other	529999	Business, Management, Marketing, and Related Support Services, Other
Fabricated Metals and Equipment	131023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	521801	Sales, Distribution, and Marketing Operations, General
Fabricated Metals and Equipment	131051	Cost Estimators	141801	Materials Engineering
Fabricated Metals and Equipment	131051	Cost Estimators	141901	Mechanical Engineering

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Fabricated Metals and Equipment	131051	Cost Estimators	143301	Construction Engineering
Fabricated Metals and Equipment	131051	Cost Estimators	143601	Manufacturing Engineering
Fabricated Metals and Equipment	131051	Cost Estimators	151001	Construction Engineering Technology/Technician
Fabricated Metals and Equipment	131051	Cost Estimators	520101	Business/Commerce, General
Fabricated Metals and Equipment	131051	Cost Estimators	520201	Business Administration and Management, General
Fabricated Metals and Equipment	131071	Employment, Recruitment, and Placement Specialists	521001	Human Resources Management/Personnel Administration, General
Fabricated Metals and Equipment	131071	Employment, Recruitment, and Placement Specialists	521002	Labor and Industrial Relations
Fabricated Metals and Equipment	131072	Compensation, Benefits, and Job Analysis Specialists	521001	Human Resources Management/Personnel Administration, General
Fabricated Metals and Equipment	131072	Compensation, Benefits, and Job Analysis Specialists	521002	Labor and Industrial Relations
Fabricated Metals and Equipment	131073	Training and Development Specialists	521001	Human Resources Management/Personnel Administration, General
Fabricated Metals and Equipment	131073	Training and Development Specialists	521003	Organizational Behavior Studies
Fabricated Metals and Equipment	131111	Management Analysts	520101	Business/Commerce, General
Fabricated Metals and Equipment	131111	Management Analysts	520201	Business Administration and Management, General
Fabricated Metals and Equipment	131199	Business Operations Specialists, All Other	529999	Business, Management, Marketing, and Related Support Services, Other
Fabricated Metals and Equipment	132011	Accountants and Auditors	301601	Accounting and Computer Science
Fabricated Metals and Equipment	132011	Accountants and Auditors	520301	Accounting
Fabricated Metals and Equipment	132011	Accountants and Auditors	520303	Auditing
Fabricated Metals and Equipment	132011	Accountants and Auditors	520304	Accounting and Finance
Fabricated Metals and Equipment	132011	Accountants and Auditors	520305	Accounting and Business/Management

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Fabricated Metals and Equipment	132011	Accountants and Auditors	521601	Taxation
Fabricated Metals and Equipment	132051	Financial Analysts	520304	Accounting and Finance
Fabricated Metals and Equipment	132051	Financial Analysts	520305	Accounting and Business/Management
Fabricated Metals and Equipment	132051	Financial Analysts	520801	Finance, General
Fabricated Metals and Equipment	151021	Computer Programmers	110102	Artificial Intelligence and Robotics
Fabricated Metals and Equipment	151021	Computer Programmers	110201	Computer Programming/Programmer, General
Fabricated Metals and Equipment	151021	Computer Programmers	110202	Computer Programming, Specific Applications
Fabricated Metals and Equipment	151021	Computer Programmers	110203	Computer Programming, Vendor/Product Certification
Fabricated Metals and Equipment	151021	Computer Programmers	110801	Web Page, Digital/Multimedia and Information Resources Design
Fabricated Metals and Equipment	151021	Computer Programmers	110803	Computer Graphics
Fabricated Metals and Equipment	151021	Computer Programmers	111004	Web/Multimedia Management and Webmaster
Fabricated Metals and Equipment	151021	Computer Programmers	261103	Bioinformatics
Fabricated Metals and Equipment	151021	Computer Programmers	510709	Medical Office Computer Specialist/Assistant
Fabricated Metals and Equipment	151021	Computer Programmers	512706	Medical Informatics
Fabricated Metals and Equipment	151021	Computer Programmers	520208	E-Commerce/Electronic Commerce
Fabricated Metals and Equipment	151021	Computer Programmers	521201	Management Information Systems, General
Fabricated Metals and Equipment	151031	Computer Software Engineers, Applications	110102	Artificial Intelligence and Robotics
Fabricated Metals and Equipment	151031	Computer Software Engineers, Applications	110103	Information Technology
Fabricated Metals and Equipment	151031	Computer Software Engineers, Applications	110701	Computer Science

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Fabricated Metals and Equipment	151031	Computer Software Engineers, Applications	140901	Computer Engineering, General
Fabricated Metals and Equipment	151031	Computer Software Engineers, Applications	140903	Computer Software Engineering
Fabricated Metals and Equipment	151031	Computer Software Engineers, Applications	151299	Computer Engineering Technologies/Technicians, Other
Fabricated Metals and Equipment	151031	Computer Software Engineers, Applications	261103	Bioinformatics
Fabricated Metals and Equipment	151031	Computer Software Engineers, Applications	512706	Medical Informatics
Fabricated Metals and Equipment	151031	Computer Software Engineers, Applications	512799	Medical Illustration and Informatics, Other
Fabricated Metals and Equipment	151032	Computer Software Engineers, Systems Software	110102	Artificial Intelligence and Robotics
Fabricated Metals and Equipment	151032	Computer Software Engineers, Systems Software	110103	Information Technology
Fabricated Metals and Equipment	151032	Computer Software Engineers, Systems Software	110401	Information Science/Studies
Fabricated Metals and Equipment	151032	Computer Software Engineers, Systems Software	110701	Computer Science
Fabricated Metals and Equipment	151032	Computer Software Engineers, Systems Software	140901	Computer Engineering, General
Fabricated Metals and Equipment	151032	Computer Software Engineers, Systems Software	151299	Computer Engineering Technologies/Technicians, Other
Fabricated Metals and Equipment	151041	Computer Support Specialists	010106	Agricultural Business Technology
Fabricated Metals and Equipment	151041	Computer Support Specialists	110301	Data Processing and Data Processing Technology/Technician
Fabricated Metals and Equipment	151041	Computer Support Specialists	151203	Computer Hardware Technology/Technician
Fabricated Metals and Equipment	151041	Computer Support Specialists	151204	Computer Software Technology/Technician
Fabricated Metals and Equipment	151041	Computer Support Specialists	301601	Accounting and Computer Science
Fabricated Metals and Equipment	151041	Computer Support Specialists	510709	Medical Office Computer Specialist/Assistant
Fabricated Metals and Equipment	151051	Computer Systems Analysts	110101	Computer and Information Sciences, General

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Fabricated Metals and Equipment	151051	Computer Systems Analysts	110103	Information Technology
Fabricated Metals and Equipment	151051	Computer Systems Analysts	110501	Computer Systems Analysis/Analyst
Fabricated Metals and Equipment	151051	Computer Systems Analysts	111004	Web/Multimedia Management and Webmaster
Fabricated Metals and Equipment	151061	Database Administrators	110101	Computer and Information Sciences, General
Fabricated Metals and Equipment	151061	Database Administrators	110501	Computer Systems Analysis/Analyst
Fabricated Metals and Equipment	151061	Database Administrators	110802	Data Modeling/Warehousing and Database Administration
Fabricated Metals and Equipment	151061	Database Administrators	111003	Computer and Information Systems Security
Fabricated Metals and Equipment	151061	Database Administrators	521201	Management Information Systems, General
Fabricated Metals and Equipment	151071	Network and Computer Systems Administrators	110101	Computer and Information Sciences, General
Fabricated Metals and Equipment	151071	Network and Computer Systems Administrators	110401	Information Science/Studies
Fabricated Metals and Equipment	151071	Network and Computer Systems Administrators	110501	Computer Systems Analysis/Analyst
Fabricated Metals and Equipment	151071	Network and Computer Systems Administrators	110901	Computer Systems Networking and Telecommunications
Fabricated Metals and Equipment	151071	Network and Computer Systems Administrators	111001	System Administration/Administrator
Fabricated Metals and Equipment	151071	Network and Computer Systems Administrators	111002	System, Networking, and LAN/WAN Management/Manager
Fabricated Metals and Equipment	151071	Network and Computer Systems Administrators	111003	Computer and Information Systems Security
Fabricated Metals and Equipment	151071	Network and Computer Systems Administrators	119999	Computer and Information Sciences and Support Services, Other
Fabricated Metals and Equipment	151081	Network Systems and Data Communications Analysts	110101	Computer and Information Sciences, General
Fabricated Metals and Equipment	151081	Network Systems and Data Communications Analysts	110103	Information Technology
Fabricated Metals and Equipment	151081	Network Systems and Data Communications Analysts	110501	Computer Systems Analysis/Analyst

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Fabricated Metals and Equipment	151081	Network Systems and Data Communications Analysts	110901	Computer Systems Networking and Telecommunications
Fabricated Metals and Equipment	151081	Network Systems and Data Communications Analysts	111003	Computer and Information Systems Security
Fabricated Metals and Equipment	151099	Computer Specialists, All Other	110101	Computer and Information Sciences, General
Fabricated Metals and Equipment	151099	Computer Specialists, All Other	110301	Data Processing and Data Processing Technology/Technician
Fabricated Metals and Equipment	151099	Computer Specialists, All Other	110401	Information Science/Studies
Fabricated Metals and Equipment	151099	Computer Specialists, All Other	110701	Computer Science
Fabricated Metals and Equipment	151099	Computer Specialists, All Other	119999	Computer and Information Sciences and Support Services, Other
Fabricated Metals and Equipment	151099	Computer Specialists, All Other	261103	Bioinformatics
Fabricated Metals and Equipment	151099	Computer Specialists, All Other	261199	Biomathematics and Bioinformatics, Other
Fabricated Metals and Equipment	151099	Computer Specialists, All Other	521299	Management Information Systems and Services, Other
Fabricated Metals and Equipment	172061	Computer Hardware Engineers	140901	Computer Engineering, General
Fabricated Metals and Equipment	172061	Computer Hardware Engineers	140902	Computer Hardware Engineering
Fabricated Metals and Equipment	172071	Electrical Engineers	141001	Electrical, Electronics and Communications Engineering
Fabricated Metals and Equipment	172072	Electronics Engineers, Except Computer	141001	Electrical, Electronics and Communications Engineering
Fabricated Metals and Equipment	172111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	141401	Environmental/Environmental Health Engineering
Fabricated Metals and Equipment	172112	Industrial Engineers	143501	Industrial Engineering
Fabricated Metals and Equipment	172131	Materials Engineers	140601	Ceramic Sciences and Engineering
Fabricated Metals and Equipment	172131	Materials Engineers	141801	Materials Engineering
Fabricated Metals and Equipment	172131	Materials Engineers	142001	Metallurgical Engineering

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Fabricated Metals and Equipment	172141	Mechanical Engineers	141901	Mechanical Engineering
Fabricated Metals and Equipment	172199	Engineers, All Other	140101	Engineering, General
Fabricated Metals and Equipment	172199	Engineers, All Other	140401	Architectural Engineering
Fabricated Metals and Equipment	172199	Engineers, All Other	141101	Engineering Mechanics
Fabricated Metals and Equipment	172199	Engineers, All Other	141201	Engineering Physics
Fabricated Metals and Equipment	172199	Engineers, All Other	141301	Engineering Science
Fabricated Metals and Equipment	172199	Engineers, All Other	142401	Ocean Engineering
Fabricated Metals and Equipment	172199	Engineers, All Other	142701	Systems Engineering
Fabricated Metals and Equipment	172199	Engineers, All Other	142801	Textile Sciences and Engineering
Fabricated Metals and Equipment	172199	Engineers, All Other	143201	Polymer/Plastics Engineering
Fabricated Metals and Equipment	172199	Engineers, All Other	143301	Construction Engineering
Fabricated Metals and Equipment	172199	Engineers, All Other	143401	Forest Engineering
Fabricated Metals and Equipment	172199	Engineers, All Other	143601	Manufacturing Engineering
Fabricated Metals and Equipment	172199	Engineers, All Other	143801	Surveying Engineering
Fabricated Metals and Equipment	172199	Engineers, All Other	143901	Geological/Geophysical Engineering
Fabricated Metals and Equipment	172199	Engineers, All Other	149999	Engineering, Other
Fabricated Metals and Equipment	172199	Engineers, All Other	512312	Assistive/Augmentative Technology and Rehabilitation Engineering
Fabricated Metals and Equipment	173011	Architectural and Civil Drafters	040901	Architectural Technology/Technician
Fabricated Metals and Equipment	173011	Architectural and Civil Drafters	151301	Drafting and Design Technology/Technician, General

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Fabricated Metals and Equipment	173011	Architectural and Civil Drafters	151302	CAD/CADD Drafting and/or Design Technology/Technician
Fabricated Metals and Equipment	173011	Architectural and Civil Drafters	151303	Architectural Drafting and Architectural CAD/CADD
Fabricated Metals and Equipment	173011	Architectural and Civil Drafters	151304	Civil Drafting and Civil Engineering CAD/CADD
Fabricated Metals and Equipment	173012	Electrical and Electronics Drafters	151305	Electrical/Electronics Drafting and Electrical/Electronics CAD/CADD
Fabricated Metals and Equipment	173013	Mechanical Drafters	151306	Mechanical Drafting and Mechanical Drafting CAD/CADD
Fabricated Metals and Equipment	173023	Electrical and Electronic Engineering Technicians	150303	Electrical, Electronic and Communications Engineering Technology/Technician
Fabricated Metals and Equipment	173023	Electrical and Electronic Engineering Technicians	150305	Telecommunications Technology/Technician
Fabricated Metals and Equipment	173023	Electrical and Electronic Engineering Technicians	150399	Electrical and Electronic Engineering Technologies/Technicians, Other
Fabricated Metals and Equipment	173023	Electrical and Electronic Engineering Technicians	151201	Computer Engineering Technology/Technician
Fabricated Metals and Equipment	173023	Electrical and Electronic Engineering Technicians	151202	Computer Technology/Computer Systems Technology
Fabricated Metals and Equipment	173026	Industrial Engineering Technicians	150612	Industrial Technology/Technician
Fabricated Metals and Equipment	173026	Industrial Engineering Technicians	150613	Manufacturing Technology/Technician
Fabricated Metals and Equipment	173026	Industrial Engineering Technicians	150699	Industrial Production Technologies/Technicians, Other
Fabricated Metals and Equipment	173026	Industrial Engineering Technicians	151501	Engineering/Industrial Management
Fabricated Metals and Equipment	173027	Mechanical Engineering Technicians	150805	Mechanical Engineering/Mechanical Technology/Technician
Fabricated Metals and Equipment	173027	Mechanical Engineering Technicians	150899	Mechanical Engineering Related Technologies/Technicians, Other
Fabricated Metals and Equipment	192031	Chemists	400501	Chemistry, General
Fabricated Metals and Equipment	192031	Chemists	400502	Analytical Chemistry
Fabricated Metals and Equipment	192031	Chemists	400503	Inorganic Chemistry

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Fabricated Metals and Equipment	192031	Chemists	400504	Organic Chemistry
Fabricated Metals and Equipment	192031	Chemists	400506	Physical and Theoretical Chemistry
Fabricated Metals and Equipment	192031	Chemists	400507	Polymer Chemistry
Fabricated Metals and Equipment	192031	Chemists	400508	Chemical Physics
Fabricated Metals and Equipment	192031	Chemists	400599	Chemistry, Other
Fabricated Metals and Equipment	193021	Market Research Analysts	450601	Economics, General
Fabricated Metals and Equipment	193021	Market Research Analysts	450602	Applied Economics
Fabricated Metals and Equipment	193021	Market Research Analysts	450603	Econometrics and Quantitative Economics
Fabricated Metals and Equipment	193021	Market Research Analysts	450605	International Economics
Fabricated Metals and Equipment	193021	Market Research Analysts	520601	Business/Managerial Economics
Fabricated Metals and Equipment	193021	Market Research Analysts	521402	Marketing Research
Fabricated Metals and Equipment	194031	Chemical Technicians	011001	Food Science
Fabricated Metals and Equipment	194031	Chemical Technicians	410301	Chemical Technology/Technician
Fabricated Metals and Equipment	271024	Graphic Designers	010802	Agricultural Communication/Journalism
Fabricated Metals and Equipment	271024	Graphic Designers	110801	Web Page, Digital/Multimedia and Information Resources Design
Fabricated Metals and Equipment	271024	Graphic Designers	110803	Computer Graphics
Fabricated Metals and Equipment	271024	Graphic Designers	500401	Design and Visual Communications, General
Fabricated Metals and Equipment	271024	Graphic Designers	500402	Commercial and Advertising Art
Fabricated Metals and Equipment	271024	Graphic Designers	500404	Industrial Design

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Fabricated Metals and Equipment	271024	Graphic Designers	500409	Graphic Design
Fabricated Metals and Equipment	273042	Technical Writers	190202	Family and Consumer Sciences/Human Sciences Communication
Fabricated Metals and Equipment	273042	Technical Writers	231101	Technical and Business Writing
Fabricated Metals and Equipment	273042	Technical Writers	520501	Business/Corporate Communications
Fabricated Metals and Equipment	339032	Security Guards	430109	Security and Loss Prevention Services
Fabricated Metals and Equipment	339032	Security Guards	430112	Securities Services Administration/Management
Fabricated Metals and Equipment	411012	First-Line Supervisors/Managers of Non-Retail Sales Workers	521899	General Merchandising, Sales, and Related Marketing Operations, Other
Fabricated Metals and Equipment	411012	First-Line Supervisors/Managers of Non-Retail Sales Workers	521909	Special Products Marketing Operations
Fabricated Metals and Equipment	411012	First-Line Supervisors/Managers of Non-Retail Sales Workers	521999	Specialized Merchandising, Sales, and Related Marketing Operations, Other
Fabricated Metals and Equipment	411012	First-Line Supervisors/Managers of Non-Retail Sales Workers	529999	Business, Management, Marketing, and Related Support Services, Other
Fabricated Metals and Equipment	412022	Parts Salespersons	521804	Selling Skills and Sales Operations
Fabricated Metals and Equipment	412022	Parts Salespersons	521907	Vehicle and Vehicle Parts and Accessories Marketing Operations
Fabricated Metals and Equipment	414011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	521804	Selling Skills and Sales Operations
Fabricated Metals and Equipment	414011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	529999	Business, Management, Marketing, and Related Support Services, Other
Fabricated Metals and Equipment	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521801	Sales, Distribution, and Marketing Operations, General
Fabricated Metals and Equipment	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521899	General Merchandising, Sales, and Related Marketing Operations, Other

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Fabricated Metals and Equipment	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521902	Fashion Merchandising
Fabricated Metals and Equipment	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521904	Apparel and Accessories Marketing Operations
Fabricated Metals and Equipment	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521909	Special Products Marketing Operations
Fabricated Metals and Equipment	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521999	Specialized Merchandising, Sales, and Related Marketing Operations, Other
Fabricated Metals and Equipment	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	529999	Business, Management, Marketing, and Related Support Services, Other
Fabricated Metals and Equipment	419031	Sales Engineers	521804	Selling Skills and Sales Operations
Fabricated Metals and Equipment	419099	Sales and Related Workers, All Other	521803	Retailing and Retail Operations
Fabricated Metals and Equipment	419099	Sales and Related Workers, All Other	521804	Selling Skills and Sales Operations
Fabricated Metals and Equipment	419099	Sales and Related Workers, All Other	521899	General Merchandising, Sales, and Related Marketing Operations, Other
Fabricated Metals and Equipment	419099	Sales and Related Workers, All Other	521901	Auctioneering
Fabricated Metals and Equipment	419099	Sales and Related Workers, All Other	521909	Special Products Marketing Operations
Fabricated Metals and Equipment	419099	Sales and Related Workers, All Other	521999	Specialized Merchandising, Sales, and Related Marketing Operations, Other
Fabricated Metals and Equipment	419099	Sales and Related Workers, All Other	529999	Business, Management, Marketing, and Related Support Services, Other
Fabricated Metals and Equipment	431011	First-Line Supervisors/Managers of Office and Administrative Support Workers	010106	Agricultural Business Technology
Fabricated Metals and Equipment	431011	First-Line Supervisors/Managers of Office and Administrative Support Workers	510711	Medical/Health Management and Clinical Assistant/Specialist

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Fabricated Metals and Equipment	431011	First-Line Supervisors/Managers of Office and Administrative Support Workers	520204	Office Management and Supervision
Fabricated Metals and Equipment	431011	First-Line Supervisors/Managers of Office and Administrative Support Workers	520207	Customer Service Management
Fabricated Metals and Equipment	432011	Switchboard Operators, Including Answering Service	520406	Receptionist
Fabricated Metals and Equipment	433021	Billing and Posting Clerks and Machine Operators	520302	Accounting Technology/Technician and Bookkeeping
Fabricated Metals and Equipment	433031	Bookkeeping, Accounting, and Auditing Clerks	520302	Accounting Technology/Technician and Bookkeeping
Fabricated Metals and Equipment	433031	Bookkeeping, Accounting, and Auditing Clerks	520399	Accounting and Related Services, Other
Fabricated Metals and Equipment	433051	Payroll and Timekeeping Clerks	520302	Accounting Technology/Technician and Bookkeeping
Fabricated Metals and Equipment	433061	Procurement Clerks	520408	General Office Occupations and Clerical Services
Fabricated Metals and Equipment	434021	Correspondence Clerks	520408	General Office Occupations and Clerical Services
Fabricated Metals and Equipment	434051	Customer Service Representatives	520406	Receptionist
Fabricated Metals and Equipment	434051	Customer Service Representatives	520411	Customer Service Support/Call Center/Teleservice Operation
Fabricated Metals and Equipment	434071	File Clerks	520408	General Office Occupations and Clerical Services
Fabricated Metals and Equipment	434151	Order Clerks	520408	General Office Occupations and Clerical Services
Fabricated Metals and Equipment	434161	Human Resources Assistants, Except Payroll and Timekeeping	520408	General Office Occupations and Clerical Services
Fabricated Metals and Equipment	434171	Receptionists and Information Clerks	510703	Health Unit Coordinator/Ward Clerk
Fabricated Metals and Equipment	434171	Receptionists and Information Clerks	510712	Medical Reception/Receptionist
Fabricated Metals and Equipment	434171	Receptionists and Information Clerks	520406	Receptionist
Fabricated Metals and Equipment	434171	Receptionists and Information Clerks	520408	General Office Occupations and Clerical Services
Fabricated Metals and Equipment	435061	Production, Planning, and Expediting Clerks	520409	Parts, Warehousing, and Inventory Management Operations

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Fabricated Metals and Equipment	435071	Shipping, Receiving, and Traffic Clerks	520408	General Office Occupations and Clerical Services
Fabricated Metals and Equipment	435071	Shipping, Receiving, and Traffic Clerks	520410	Traffic, Customs, and Transportation Clerk/Technician
Fabricated Metals and Equipment	435081	Stock Clerks and Order Fillers	521803	Retailing and Retail Operations
Fabricated Metals and Equipment	435111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	520408	General Office Occupations and Clerical Services
Fabricated Metals and Equipment	436011	Executive Secretaries and Administrative Assistants	510716	Medical Administrative/Executive Assistant and Medical Secretary
Fabricated Metals and Equipment	436011	Executive Secretaries and Administrative Assistants	520401	Administrative Assistant and Secretarial Science, General
Fabricated Metals and Equipment	436011	Executive Secretaries and Administrative Assistants	520402	Executive Assistant/Executive Secretary
Fabricated Metals and Equipment	436014	Secretaries, Except Legal, Medical, and Executive	520401	Administrative Assistant and Secretarial Science, General
Fabricated Metals and Equipment	436014	Secretaries, Except Legal, Medical, and Executive	520402	Executive Assistant/Executive Secretary
Fabricated Metals and Equipment	439021	Data Entry Keyers	100305	Graphic and Printing Equipment Operator, General Production
Fabricated Metals and Equipment	439021	Data Entry Keyers	110601	Data Entry/Microcomputer Applications, General
Fabricated Metals and Equipment	439021	Data Entry Keyers	520407	Business/Office Automation/Technology/Data Entry
Fabricated Metals and Equipment	439061	Office Clerks, General	520408	General Office Occupations and Clerical Services
Fabricated Metals and Equipment	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460101	Mason/Masonry
Fabricated Metals and Equipment	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460201	Carpentry/Carpenter
Fabricated Metals and Equipment	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460301	Electrical and Power Transmission Installation/Installer, General
Fabricated Metals and Equipment	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460302	Electrician
Fabricated Metals and Equipment	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460303	Lineworker

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Fabricated Metals and Equipment	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460399	Electrical and Power Transmission Installers, Other
Fabricated Metals and Equipment	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460401	Building/Property Maintenance and Management
Fabricated Metals and Equipment	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460402	Concrete Finishing/Concrete Finisher
Fabricated Metals and Equipment	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460403	Building/Home/Construction Inspection/Inspector
Fabricated Metals and Equipment	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460404	Drywall Installation/Drywaller
Fabricated Metals and Equipment	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460406	Glazier
Fabricated Metals and Equipment	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460408	Painting/Painter and Wall Coverer
Fabricated Metals and Equipment	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460410	Roofer
Fabricated Metals and Equipment	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460412	Building/Construction Site Management/Manager
Fabricated Metals and Equipment	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460499	Building/Construction Finishing, Management, and Inspection, Other
Fabricated Metals and Equipment	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460503	Plumbing Technology/Plumber
Fabricated Metals and Equipment	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460504	Well Drilling/Driller
Fabricated Metals and Equipment	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460505	Blasting/Blaster
Fabricated Metals and Equipment	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	469999	Construction Trades, Other
Fabricated Metals and Equipment	472011	Boilermakers	480801	Boilermaking/Boilermaker

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Fabricated Metals and Equipment	472031	Carpenters	460201	Carpentry/Carpenter
Fabricated Metals and Equipment	472111	Electricians	460302	Electrician
Fabricated Metals and Equipment	472141	Painters, Construction and Maintenance	460408	Painting/Painter and Wall Coverer
Fabricated Metals and Equipment	472211	Sheet Metal Workers	480506	Sheet Metal Technology/Sheetworking
Fabricated Metals and Equipment	472221	Structural Iron and Steel Workers	460411	Metal Building Assembly/Assembler
Fabricated Metals and Equipment	472221	Structural Iron and Steel Workers	469999	Construction Trades, Other
Fabricated Metals and Equipment	474031	Fence Erectors	469999	Construction Trades, Other
Fabricated Metals and Equipment	491011	First-Line Supervisors/Managers of Mechanics, Installers, and Repairers	520205	Operations Management and Supervision
Fabricated Metals and Equipment	493023	Automotive Service Technicians and Mechanics	150803	Automotive Engineering Technology/Technician
Fabricated Metals and Equipment	493023	Automotive Service Technicians and Mechanics	470604	Automobile/Automotive Mechanics Technology/Technician
Fabricated Metals and Equipment	493023	Automotive Service Technicians and Mechanics	470612	Vehicle Emissions Inspection and Maintenance Technology/Technician
Fabricated Metals and Equipment	493023	Automotive Service Technicians and Mechanics	470613	Medium/Heavy Vehicle and Truck Technology/Technician
Fabricated Metals and Equipment	493023	Automotive Service Technicians and Mechanics	470614	Alternative Fuel Vehicle Technology/Technician
Fabricated Metals and Equipment	493042	Mobile Heavy Equipment Mechanics, Except Engines	010205	Agricultural Mechanics and Equipment/Machine Technology
Fabricated Metals and Equipment	493042	Mobile Heavy Equipment Mechanics, Except Engines	470302	Heavy Equipment Maintenance Technology/Technician
Fabricated Metals and Equipment	499041	Industrial Machinery Mechanics	470303	Industrial Mechanics and Maintenance Technology
Fabricated Metals and Equipment	499041	Industrial Machinery Mechanics	470399	Heavy/Industrial Equipment Maintenance Technologies, Other
Fabricated Metals and Equipment	499042	Maintenance and Repair Workers, General	460412	Building/Construction Site Management/Manager
Fabricated Metals and Equipment	499043	Maintenance Workers, Machinery	470303	Industrial Mechanics and Maintenance Technology

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Fabricated Metals and Equipment	499043	Maintenance Workers, Machinery	470399	Heavy/Industrial Equipment Maintenance Technologies, Other
Fabricated Metals and Equipment	499044	Millwrights	470303	Industrial Mechanics and Maintenance Technology
Fabricated Metals and Equipment	499044	Millwrights	470399	Heavy/Industrial Equipment Maintenance Technologies, Other
Fabricated Metals and Equipment	499098	Helpers--Installation, Maintenance, and Repair Workers	470303	Industrial Mechanics and Maintenance Technology
Fabricated Metals and Equipment	499099	Installation, Maintenance, and Repair Workers, All Other	470402	Gunsmithing/Gunsmith
Fabricated Metals and Equipment	499099	Installation, Maintenance, and Repair Workers, All Other	470409	Parts and Warehousing Operations and Maintenance Technology/Technician
Fabricated Metals and Equipment	499099	Installation, Maintenance, and Repair Workers, All Other	470499	Precision Systems Maintenance and Repair Technologies, Other
Fabricated Metals and Equipment	511011	First-Line Supervisors/Managers of Production and Operating Workers	520205	Operations Management and Supervision
Fabricated Metals and Equipment	512021	Coil Winders, Tapers, and Finishers	470105	Industrial Electronics Technology/Technician
Fabricated Metals and Equipment	512022	Electrical and Electronic Equipment Assemblers	470103	Communications Systems Installation and Repair Technology
Fabricated Metals and Equipment	512022	Electrical and Electronic Equipment Assemblers	470105	Industrial Electronics Technology/Technician
Fabricated Metals and Equipment	512023	Electromechanical Equipment Assemblers	150403	Electromechanical Technology/Electromechanical Engineering Technology
Fabricated Metals and Equipment	512023	Electromechanical Equipment Assemblers	150405	Robotics Technology/Technician
Fabricated Metals and Equipment	512023	Electromechanical Equipment Assemblers	150499	Electromechanical and Instrumentation and Maintenance Technologies/Technicians, Other
Fabricated Metals and Equipment	512041	Structural Metal Fabricators and Fitters	480503	Machine Shop Technology/Assistant
Fabricated Metals and Equipment	514011	Computer-Controlled Machine Tool Operators, Metal and Plastic	480503	Machine Shop Technology/Assistant
Fabricated Metals and Equipment	514012	Numerical Tool and Process Control Programmers	110201	Computer Programming/Programmer, General
Fabricated Metals and Equipment	514012	Numerical Tool and Process Control Programmers	110301	Data Processing and Data Processing Technology/Technician
Fabricated Metals and Equipment	514021	Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic	480501	Machine Tool Technology/Machinist

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Fabricated Metals and Equipment	514022	Forging Machine Setters, Operators, and Tenders, Metal and Plastic	480501	Machine Tool Technology/Machinist
Fabricated Metals and Equipment	514023	Rolling Machine Setters, Operators, and Tenders, Metal and Plastic	480501	Machine Tool Technology/Machinist
Fabricated Metals and Equipment	514023	Rolling Machine Setters, Operators, and Tenders, Metal and Plastic	480506	Sheet Metal Technology/Sheetworking
Fabricated Metals and Equipment	514031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	480501	Machine Tool Technology/Machinist
Fabricated Metals and Equipment	514031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	480506	Sheet Metal Technology/Sheetworking
Fabricated Metals and Equipment	514032	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	480501	Machine Tool Technology/Machinist
Fabricated Metals and Equipment	514033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	480501	Machine Tool Technology/Machinist
Fabricated Metals and Equipment	514033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	480503	Machine Shop Technology/Assistant
Fabricated Metals and Equipment	514034	Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic	480501	Machine Tool Technology/Machinist
Fabricated Metals and Equipment	514041	Machinists	480501	Machine Tool Technology/Machinist
Fabricated Metals and Equipment	514041	Machinists	480503	Machine Shop Technology/Assistant
Fabricated Metals and Equipment	514111	Tool and Die Makers	480507	Tool and Die Technology/Technician
Fabricated Metals and Equipment	514121	Welders, Cutters, Solderers, and Brazers	480508	Welding Technology/Welder
Fabricated Metals and Equipment	514122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	480508	Welding Technology/Welder
Fabricated Metals and Equipment	514191	Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic	480501	Machine Tool Technology/Machinist
Fabricated Metals and Equipment	514191	Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic	480503	Machine Shop Technology/Assistant

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Fabricated Metals and Equipment	514192	Lay-Out Workers, Metal and Plastic	480501	Machine Tool Technology/Machinist
Fabricated Metals and Equipment	514192	Lay-Out Workers, Metal and Plastic	480503	Machine Shop Technology/Assistant
Fabricated Metals and Equipment	514199	Metal Workers and Plastic Workers, All Other	480501	Machine Tool Technology/Machinist
Fabricated Metals and Equipment	514199	Metal Workers and Plastic Workers, All Other	480503	Machine Shop Technology/Assistant
Fabricated Metals and Equipment	514199	Metal Workers and Plastic Workers, All Other	480599	Precision Metal Working, Other
Fabricated Metals and Equipment	517041	Sawing Machine Setters, Operators, and Tenders, Wood	480703	Cabinetmaking and Millwork/Millwright
Fabricated Metals and Equipment	518091	Chemical Plant and System Operators	410301	Chemical Technology/Technician
Fabricated Metals and Equipment	519061	Inspectors, Testers, Sorters, Samplers, and Weighers	150702	Quality Control Technology/Technician
Fabricated Metals and Equipment	519122	Painters, Transportation Equipment	470603	Autobody/Collision and Repair Technology/Technician
Fabricated Metals and Equipment	519123	Painting, Coating, and Decorating Workers	500409	Graphic Design
Fabricated Metals and Equipment	533032	Truck Drivers, Heavy and Tractor-Trailer	490205	Truck and Bus Driver/Commercial Vehicle Operation
Fabricated Metals and Equipment	533033	Truck Drivers, Light or Delivery Services	490205	Truck and Bus Driver/Commercial Vehicle Operation
Fabricated Metals and Equipment	537021	Crane and Tower Operators	490202	Construction/Heavy Equipment/Earthmoving Equipment Operation
Fabricated Metals and Equipment	537021	Crane and Tower Operators	490206	Mobil Crane Operation/Operator
Fabricated Metals and Equipment	537041	Hoist and Winch Operators	490202	Construction/Heavy Equipment/Earthmoving Equipment Operation
Fabricated Metals and Equipment	537051	Industrial Truck and Tractor Operators	490299	Ground Transportation, Other
General Manufacturing	111011	Chief Executives	440401	Public Administration
General Manufacturing	111011	Chief Executives	440501	Public Policy Analysis
General Manufacturing	111011	Chief Executives	449999	Public Administration and Social Service Professions, Other
General Manufacturing	111011	Chief Executives	520101	Business/Commerce, General
General Manufacturing	111011	Chief Executives	520201	Business Administration and Management, General

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
General Manufacturing	111011	Chief Executives	520701	Entrepreneurship/Entrepreneurial Studies
General Manufacturing	111011	Chief Executives	521101	International Business/Trade/Commerce
General Manufacturing	111021	General and Operations Managers	440401	Public Administration
General Manufacturing	111021	General and Operations Managers	520101	Business/Commerce, General
General Manufacturing	111021	General and Operations Managers	520201	Business Administration and Management, General
General Manufacturing	111021	General and Operations Managers	520701	Entrepreneurship/Entrepreneurial Studies
General Manufacturing	111021	General and Operations Managers	521101	International Business/Trade/Commerce
General Manufacturing	112021	Marketing Managers	190203	Consumer Merchandising/Retailing Management
General Manufacturing	112021	Marketing Managers	190905	Apparel and Textile Marketing Management
General Manufacturing	112021	Marketing Managers	521401	Marketing/Marketing Management, General
General Manufacturing	112021	Marketing Managers	521402	Marketing Research
General Manufacturing	112021	Marketing Managers	521403	International Marketing
General Manufacturing	112021	Marketing Managers	521499	Marketing, Other
General Manufacturing	112022	Sales Managers	190203	Consumer Merchandising/Retailing Management
General Manufacturing	112022	Sales Managers	520101	Business/Commerce, General
General Manufacturing	112022	Sales Managers	520201	Business Administration and Management, General
General Manufacturing	112022	Sales Managers	521401	Marketing/Marketing Management, General
General Manufacturing	112022	Sales Managers	521499	Marketing, Other
General Manufacturing	113011	Administrative Services Managers	440401	Public Administration
General Manufacturing	113011	Administrative Services Managers	510711	Medical/Health Management and Clinical Assistant/Specialist
General Manufacturing	113011	Administrative Services Managers	520101	Business/Commerce, General
General Manufacturing	113011	Administrative Services Managers	520201	Business Administration and Management, General
General Manufacturing	113011	Administrative Services Managers	520202	Purchasing, Procurement/Acquisitions and Contracts Management
General Manufacturing	113021	Computer and Information Systems Managers	110101	Computer and Information Sciences, General
General Manufacturing	113021	Computer and Information Systems Managers	110401	Information Science/Studies
General Manufacturing	113021	Computer and Information Systems Managers	110701	Computer Science

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
General Manufacturing	113021	Computer and Information Systems Managers	111001	System Administration/Administrator
General Manufacturing	113021	Computer and Information Systems Managers	520205	Operations Management and Supervision
General Manufacturing	113021	Computer and Information Systems Managers	521201	Management Information Systems, General
General Manufacturing	113021	Computer and Information Systems Managers	521206	Information Resources Management/CIO Training
General Manufacturing	113021	Computer and Information Systems Managers	521207	Knowledge Management
General Manufacturing	113031	Financial Managers	520304	Accounting and Finance
General Manufacturing	113031	Financial Managers	520305	Accounting and Business/Management
General Manufacturing	113031	Financial Managers	520801	Finance, General
General Manufacturing	113031	Financial Managers	520806	International Finance
General Manufacturing	113031	Financial Managers	520808	Public Finance
General Manufacturing	113031	Financial Managers	520809	Credit Management
General Manufacturing	113031	Financial Managers	520899	Finance and Financial Management Services, Other
General Manufacturing	113051	Industrial Production Managers	520101	Business/Commerce, General
General Manufacturing	113051	Industrial Production Managers	520201	Business Administration and Management, General
General Manufacturing	113051	Industrial Production Managers	520205	Operations Management and Supervision
General Manufacturing	113061	Purchasing Managers	520202	Purchasing, Procurement/Acquisitions and Contracts Management
General Manufacturing	113071	Transportation, Storage, and Distribution Managers	440401	Public Administration
General Manufacturing	113071	Transportation, Storage, and Distribution Managers	490101	Aeronautics/Aviation/Aerospace Science and Technology, General
General Manufacturing	113071	Transportation, Storage, and Distribution Managers	490104	Aviation/Airway Management and Operations
General Manufacturing	113071	Transportation, Storage, and Distribution Managers	520101	Business/Commerce, General
General Manufacturing	113071	Transportation, Storage, and Distribution Managers	520201	Business Administration and Management, General
General Manufacturing	113071	Transportation, Storage, and Distribution Managers	520203	Logistics and Materials Management
General Manufacturing	119021	Construction Managers	151001	Construction Engineering Technology/Technician

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
General Manufacturing	119021	Construction Managers	520101	Business/Commerce, General
General Manufacturing	119021	Construction Managers	520201	Business Administration and Management, General
General Manufacturing	119021	Construction Managers	520205	Operations Management and Supervision
General Manufacturing	119041	Engineering Managers	040201	Architecture (BArch, BA/BS, MArch, MA/MS, PhD)
General Manufacturing	119041	Engineering Managers	040301	City/Urban, Community and Regional Planning
General Manufacturing	119041	Engineering Managers	040401	Environmental Design/Architecture
General Manufacturing	119041	Engineering Managers	040501	Interior Architecture
General Manufacturing	119041	Engineering Managers	040601	Landscape Architecture (BS, BSLA, BLA, MSLA, MLA, PhD)
General Manufacturing	119041	Engineering Managers	140101	Engineering, General
General Manufacturing	119041	Engineering Managers	140201	Aerospace, Aeronautical and Astronautical Engineering
General Manufacturing	119041	Engineering Managers	140301	Agricultural/Biological Engineering and Bioengineering
General Manufacturing	119041	Engineering Managers	140401	Architectural Engineering
General Manufacturing	119041	Engineering Managers	140501	Biomedical/Medical Engineering
General Manufacturing	119041	Engineering Managers	140601	Ceramic Sciences and Engineering
General Manufacturing	119041	Engineering Managers	140701	Chemical Engineering
General Manufacturing	119041	Engineering Managers	140801	Civil Engineering, General
General Manufacturing	119041	Engineering Managers	140802	Geotechnical Engineering
General Manufacturing	119041	Engineering Managers	140803	Structural Engineering
General Manufacturing	119041	Engineering Managers	140804	Transportation and Highway Engineering
General Manufacturing	119041	Engineering Managers	140805	Water Resources Engineering
General Manufacturing	119041	Engineering Managers	140899	Civil Engineering, Other
General Manufacturing	119041	Engineering Managers	140901	Computer Engineering, General
General Manufacturing	119041	Engineering Managers	140902	Computer Hardware Engineering
General Manufacturing	119041	Engineering Managers	140903	Computer Software Engineering
General Manufacturing	119041	Engineering Managers	140999	Computer Engineering, Other
General Manufacturing	119041	Engineering Managers	141001	Electrical, Electronics and Communications Engineering
General Manufacturing	119041	Engineering Managers	141101	Engineering Mechanics
General Manufacturing	119041	Engineering Managers	141201	Engineering Physics
General Manufacturing	119041	Engineering Managers	141301	Engineering Science

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
General Manufacturing	119041	Engineering Managers	141401	Environmental/Environmental Health Engineering
General Manufacturing	119041	Engineering Managers	141801	Materials Engineering
General Manufacturing	119041	Engineering Managers	141901	Mechanical Engineering
General Manufacturing	119041	Engineering Managers	142001	Metallurgical Engineering
General Manufacturing	119041	Engineering Managers	142101	Mining and Mineral Engineering
General Manufacturing	119041	Engineering Managers	142201	Naval Architecture and Marine Engineering
General Manufacturing	119041	Engineering Managers	142301	Nuclear Engineering
General Manufacturing	119041	Engineering Managers	142401	Ocean Engineering
General Manufacturing	119041	Engineering Managers	142501	Petroleum Engineering
General Manufacturing	119041	Engineering Managers	142701	Systems Engineering
General Manufacturing	119041	Engineering Managers	142801	Textile Sciences and Engineering
General Manufacturing	119041	Engineering Managers	143101	Materials Science
General Manufacturing	119041	Engineering Managers	143201	Polymer/Plastics Engineering
General Manufacturing	119041	Engineering Managers	143301	Construction Engineering
General Manufacturing	119041	Engineering Managers	143401	Forest Engineering
General Manufacturing	119041	Engineering Managers	143501	Industrial Engineering
General Manufacturing	119041	Engineering Managers	143601	Manufacturing Engineering
General Manufacturing	119041	Engineering Managers	143801	Surveying Engineering
General Manufacturing	119041	Engineering Managers	143901	Geological/Geophysical Engineering
General Manufacturing	119041	Engineering Managers	149999	Engineering, Other
General Manufacturing	119199	Managers, All Other	440401	Public Administration
General Manufacturing	119199	Managers, All Other	449999	Public Administration and Social Service Professions, Other
General Manufacturing	119199	Managers, All Other	500508	Theatre/Theatre Arts Management
General Manufacturing	119199	Managers, All Other	500704	Arts Management
General Manufacturing	119199	Managers, All Other	520101	Business/Commerce, General
General Manufacturing	119199	Managers, All Other	520201	Business Administration and Management, General
General Manufacturing	119199	Managers, All Other	520206	Non-Profit/Public/Organizational Management
General Manufacturing	119199	Managers, All Other	520299	Business Administration, Management and Operations, Other

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
General Manufacturing	119199	Managers, All Other	520701	Entrepreneurship/Entrepreneurial Studies
General Manufacturing	119199	Managers, All Other	520702	Franchising and Franchise Operations
General Manufacturing	119199	Managers, All Other	520703	Small Business Administration/Management
General Manufacturing	119199	Managers, All Other	520799	Entrepreneurial and Small Business Operations, Other
General Manufacturing	119199	Managers, All Other	520903	Tourism and Travel Services Management
General Manufacturing	119199	Managers, All Other	520999	Hospitality Administration/Management, Other
General Manufacturing	119199	Managers, All Other	529999	Business, Management, Marketing, and Related Support Services, Other
General Manufacturing	131023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	521801	Sales, Distribution, and Marketing Operations, General
General Manufacturing	131051	Cost Estimators	141801	Materials Engineering
General Manufacturing	131051	Cost Estimators	141901	Mechanical Engineering
General Manufacturing	131051	Cost Estimators	143301	Construction Engineering
General Manufacturing	131051	Cost Estimators	143601	Manufacturing Engineering
General Manufacturing	131051	Cost Estimators	151001	Construction Engineering Technology/Technician
General Manufacturing	131051	Cost Estimators	520101	Business/Commerce, General
General Manufacturing	131051	Cost Estimators	520201	Business Administration and Management, General
General Manufacturing	131071	Employment, Recruitment, and Placement Specialists	521001	Human Resources Management/Personnel Administration, General
General Manufacturing	131071	Employment, Recruitment, and Placement Specialists	521002	Labor and Industrial Relations
General Manufacturing	131072	Compensation, Benefits, and Job Analysis Specialists	521001	Human Resources Management/Personnel Administration, General
General Manufacturing	131072	Compensation, Benefits, and Job Analysis Specialists	521002	Labor and Industrial Relations
General Manufacturing	131073	Training and Development Specialists	521001	Human Resources Management/Personnel Administration, General
General Manufacturing	131073	Training and Development Specialists	521003	Organizational Behavior Studies
General Manufacturing	131199	Business Operations Specialists, All Other	529999	Business, Management, Marketing, and Related Support Services, Other
General Manufacturing	132011	Accountants and Auditors	301601	Accounting and Computer Science
General Manufacturing	132011	Accountants and Auditors	520301	Accounting

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
General Manufacturing	132011	Accountants and Auditors	520303	Auditing
General Manufacturing	132011	Accountants and Auditors	520304	Accounting and Finance
General Manufacturing	132011	Accountants and Auditors	520305	Accounting and Business/Management
General Manufacturing	132011	Accountants and Auditors	521601	Taxation
General Manufacturing	151021	Computer Programmers	110102	Artificial Intelligence and Robotics
General Manufacturing	151021	Computer Programmers	110201	Computer Programming/Programmer, General
General Manufacturing	151021	Computer Programmers	110202	Computer Programming, Specific Applications
General Manufacturing	151021	Computer Programmers	110203	Computer Programming, Vendor/Product Certification
General Manufacturing	151021	Computer Programmers	110801	Web Page, Digital/Multimedia and Information Resources Design
General Manufacturing	151021	Computer Programmers	110803	Computer Graphics
General Manufacturing	151021	Computer Programmers	111004	Web/Multimedia Management and Webmaster
General Manufacturing	151021	Computer Programmers	261103	Bioinformatics
General Manufacturing	151021	Computer Programmers	510709	Medical Office Computer Specialist/Assistant
General Manufacturing	151021	Computer Programmers	512706	Medical Informatics
General Manufacturing	151021	Computer Programmers	520208	E-Commerce/Electronic Commerce
General Manufacturing	151021	Computer Programmers	521201	Management Information Systems, General
General Manufacturing	151031	Computer Software Engineers, Applications	110102	Artificial Intelligence and Robotics
General Manufacturing	151031	Computer Software Engineers, Applications	110103	Information Technology
General Manufacturing	151031	Computer Software Engineers, Applications	110701	Computer Science
General Manufacturing	151031	Computer Software Engineers, Applications	140901	Computer Engineering, General
General Manufacturing	151031	Computer Software Engineers, Applications	140903	Computer Software Engineering
General Manufacturing	151031	Computer Software Engineers, Applications	151299	Computer Engineering Technologies/Technicians, Other
General Manufacturing	151031	Computer Software Engineers, Applications	261103	Bioinformatics
General Manufacturing	151031	Computer Software Engineers, Applications	512706	Medical Informatics
General Manufacturing	151031	Computer Software Engineers, Applications	512799	Medical Illustration and Informatics, Other
General Manufacturing	151041	Computer Support Specialists	010106	Agricultural Business Technology
General Manufacturing	151041	Computer Support Specialists	110301	Data Processing and Data Processing Technology/Technician
General Manufacturing	151041	Computer Support Specialists	151203	Computer Hardware Technology/Technician

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
General Manufacturing	151041	Computer Support Specialists	151204	Computer Software Technology/Technician
General Manufacturing	151041	Computer Support Specialists	301601	Accounting and Computer Science
General Manufacturing	151041	Computer Support Specialists	510709	Medical Office Computer Specialist/Assistant
General Manufacturing	151051	Computer Systems Analysts	110101	Computer and Information Sciences, General
General Manufacturing	151051	Computer Systems Analysts	110103	Information Technology
General Manufacturing	151051	Computer Systems Analysts	110501	Computer Systems Analysis/Analyst
General Manufacturing	151051	Computer Systems Analysts	111004	Web/Multimedia Management and Webmaster
General Manufacturing	151061	Database Administrators	110101	Computer and Information Sciences, General
General Manufacturing	151061	Database Administrators	110501	Computer Systems Analysis/Analyst
General Manufacturing	151061	Database Administrators	110802	Data Modeling/Warehousing and Database Administration
General Manufacturing	151061	Database Administrators	111003	Computer and Information Systems Security
General Manufacturing	151061	Database Administrators	521201	Management Information Systems, General
General Manufacturing	151071	Network and Computer Systems Administrators	110101	Computer and Information Sciences, General
General Manufacturing	151071	Network and Computer Systems Administrators	110401	Information Science/Studies
General Manufacturing	151071	Network and Computer Systems Administrators	110501	Computer Systems Analysis/Analyst
General Manufacturing	151071	Network and Computer Systems Administrators	110901	Computer Systems Networking and Telecommunications
General Manufacturing	151071	Network and Computer Systems Administrators	111001	System Administration/Administrator
General Manufacturing	151071	Network and Computer Systems Administrators	111002	System, Networking, and LAN/WAN Management/Manager
General Manufacturing	151071	Network and Computer Systems Administrators	111003	Computer and Information Systems Security
General Manufacturing	151071	Network and Computer Systems Administrators	119999	Computer and Information Sciences and Support Services, Other
General Manufacturing	172041	Chemical Engineers	140701	Chemical Engineering
General Manufacturing	172051	Civil Engineers	140801	Civil Engineering, General
General Manufacturing	172051	Civil Engineers	140804	Transportation and Highway Engineering
General Manufacturing	172051	Civil Engineers	140805	Water Resources Engineering
General Manufacturing	172051	Civil Engineers	140899	Civil Engineering, Other
General Manufacturing	172071	Electrical Engineers	141001	Electrical, Electronics and Communications Engineering
General Manufacturing	172081	Environmental Engineers	141401	Environmental/Environmental Health Engineering

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
General Manufacturing	172111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	141401	Environmental/Environmental Health Engineering
General Manufacturing	172112	Industrial Engineers	143501	Industrial Engineering
General Manufacturing	172131	Materials Engineers	140601	Ceramic Sciences and Engineering
General Manufacturing	172131	Materials Engineers	141801	Materials Engineering
General Manufacturing	172131	Materials Engineers	142001	Metallurgical Engineering
General Manufacturing	172141	Mechanical Engineers	141901	Mechanical Engineering
General Manufacturing	172199	Engineers, All Other	140101	Engineering, General
General Manufacturing	172199	Engineers, All Other	140401	Architectural Engineering
General Manufacturing	172199	Engineers, All Other	141101	Engineering Mechanics
General Manufacturing	172199	Engineers, All Other	141201	Engineering Physics
General Manufacturing	172199	Engineers, All Other	141301	Engineering Science
General Manufacturing	172199	Engineers, All Other	142401	Ocean Engineering
General Manufacturing	172199	Engineers, All Other	142701	Systems Engineering
General Manufacturing	172199	Engineers, All Other	142801	Textile Sciences and Engineering
General Manufacturing	172199	Engineers, All Other	143201	Polymer/Plastics Engineering
General Manufacturing	172199	Engineers, All Other	143301	Construction Engineering
General Manufacturing	172199	Engineers, All Other	143401	Forest Engineering
General Manufacturing	172199	Engineers, All Other	143601	Manufacturing Engineering
General Manufacturing	172199	Engineers, All Other	143801	Surveying Engineering
General Manufacturing	172199	Engineers, All Other	143901	Geological/Geophysical Engineering
General Manufacturing	172199	Engineers, All Other	149999	Engineering, Other
General Manufacturing	172199	Engineers, All Other	512312	Assistive/Augmentative Technology and Rehabilitation Engineering
General Manufacturing	173011	Architectural and Civil Drafters	040901	Architectural Technology/Technician
General Manufacturing	173011	Architectural and Civil Drafters	151301	Drafting and Design Technology/Technician, General
General Manufacturing	173011	Architectural and Civil Drafters	151302	CAD/CADD Drafting and/or Design Technology/Technician
General Manufacturing	173011	Architectural and Civil Drafters	151303	Architectural Drafting and Architectural CAD/CADD
General Manufacturing	173011	Architectural and Civil Drafters	151304	Civil Drafting and Civil Engineering CAD/CADD

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
General Manufacturing	173013	Mechanical Drafters	151306	Mechanical Drafting and Mechanical Drafting CAD/CADD
General Manufacturing	173023	Electrical and Electronic Engineering Technicians	150303	Electrical, Electronic and Communications Engineering Technology/Technician
General Manufacturing	173023	Electrical and Electronic Engineering Technicians	150305	Telecommunications Technology/Technician
General Manufacturing	173023	Electrical and Electronic Engineering Technicians	150399	Electrical and Electronic Engineering Technologies/Technicians, Other
General Manufacturing	173023	Electrical and Electronic Engineering Technicians	151201	Computer Engineering Technology/Technician
General Manufacturing	173023	Electrical and Electronic Engineering Technicians	151202	Computer Technology/Computer Systems Technology
General Manufacturing	173024	Electro-Mechanical Technicians	159999	Engineering Technologies/Technicians, Other
General Manufacturing	173026	Industrial Engineering Technicians	150612	Industrial Technology/Technician
General Manufacturing	173026	Industrial Engineering Technicians	150613	Manufacturing Technology/Technician
General Manufacturing	173026	Industrial Engineering Technicians	150699	Industrial Production Technologies/Technicians, Other
General Manufacturing	173026	Industrial Engineering Technicians	151501	Engineering/Industrial Management
General Manufacturing	191022	Microbiologists	011203	Soil Microbiology
General Manufacturing	191022	Microbiologists	260207	Structural Biology
General Manufacturing	191022	Microbiologists	260210	Biochemistry/Biophysics and Molecular Biology
General Manufacturing	191022	Microbiologists	260405	Neuroanatomy
General Manufacturing	191022	Microbiologists	260499	Cell/Cellular Biology and Anatomical Sciences, Other
General Manufacturing	191022	Microbiologists	260502	Microbiology, General
General Manufacturing	192031	Chemists	400501	Chemistry, General
General Manufacturing	192031	Chemists	400502	Analytical Chemistry
General Manufacturing	192031	Chemists	400503	Inorganic Chemistry
General Manufacturing	192031	Chemists	400504	Organic Chemistry
General Manufacturing	192031	Chemists	400506	Physical and Theoretical Chemistry
General Manufacturing	192031	Chemists	400507	Polymer Chemistry
General Manufacturing	192031	Chemists	400508	Chemical Physics
General Manufacturing	192031	Chemists	400599	Chemistry, Other
General Manufacturing	192041	Environmental Scientists and Specialists, Including Health	030103	Environmental Studies
General Manufacturing	192041	Environmental Scientists and Specialists, Including Health	030104	Environmental Science

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
General Manufacturing	193021	Market Research Analysts	450601	Economics, General
General Manufacturing	193021	Market Research Analysts	450602	Applied Economics
General Manufacturing	193021	Market Research Analysts	450603	Econometrics and Quantitative Economics
General Manufacturing	193021	Market Research Analysts	450605	International Economics
General Manufacturing	193021	Market Research Analysts	520601	Business/Managerial Economics
General Manufacturing	193021	Market Research Analysts	521402	Marketing Research
General Manufacturing	194031	Chemical Technicians	011001	Food Science
General Manufacturing	194031	Chemical Technicians	410301	Chemical Technology/Technician
General Manufacturing	271021	Commercial and Industrial Designers	500401	Design and Visual Communications, General
General Manufacturing	271021	Commercial and Industrial Designers	500402	Commercial and Advertising Art
General Manufacturing	271021	Commercial and Industrial Designers	500404	Industrial Design
General Manufacturing	271021	Commercial and Industrial Designers	500499	Design and Applied Arts, Other
General Manufacturing	271024	Graphic Designers	010802	Agricultural Communication/Journalism
General Manufacturing	271024	Graphic Designers	110801	Web Page, Digital/Multimedia and Information Resources Design
General Manufacturing	271024	Graphic Designers	110803	Computer Graphics
General Manufacturing	271024	Graphic Designers	500401	Design and Visual Communications, General
General Manufacturing	271024	Graphic Designers	500402	Commercial and Advertising Art
General Manufacturing	271024	Graphic Designers	500404	Industrial Design
General Manufacturing	271024	Graphic Designers	500409	Graphic Design
General Manufacturing	291111	Registered Nurses	511601	Nursing - Registered Nurse Training (RN, ASN, BSN, MSN)
General Manufacturing	291111	Registered Nurses	511603	Adult Health Nurse/Nursing
General Manufacturing	291111	Registered Nurses	511604	Nurse Anesthetist
General Manufacturing	291111	Registered Nurses	511605	Family Practice Nurse/Nurse Practitioner
General Manufacturing	291111	Registered Nurses	511606	Maternal/Child Health and Neonatal Nurse/Nursing
General Manufacturing	291111	Registered Nurses	511607	Nurse Midwife/Nursing Midwifery
General Manufacturing	291111	Registered Nurses	511608	Nursing Science (MS, PhD)
General Manufacturing	291111	Registered Nurses	511609	Pediatric Nurse/Nursing
General Manufacturing	291111	Registered Nurses	511610	Psychiatric/Mental Health Nurse/Nursing
General Manufacturing	291111	Registered Nurses	511611	Public Health/Community Nurse/Nursing

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
General Manufacturing	291111	Registered Nurses	511612	Perioperative/Operating Room and Surgical Nurse/Nursing
General Manufacturing	291111	Registered Nurses	511616	Clinical Nurse Specialist
General Manufacturing	291111	Registered Nurses	511617	Critical Care Nursing
General Manufacturing	291111	Registered Nurses	511618	Occupational and Environmental Health Nursing
General Manufacturing	291111	Registered Nurses	511699	Nursing, Other
General Manufacturing	292091	Orthotists and Prosthetists	512307	Orthotist/Prosthetist
General Manufacturing	292091	Orthotists and Prosthetists	512312	Assistive/Augmentative Technology and Rehabilitation Engineering
General Manufacturing	339032	Security Guards	430109	Security and Loss Prevention Services
General Manufacturing	339032	Security Guards	430112	Securities Services Administration/Management
General Manufacturing	373011	Landscaping and Groundskeeping Workers	010605	Landscaping and Groundskeeping
General Manufacturing	373011	Landscaping and Groundskeeping Workers	010607	Turf and Turfgrass Management
General Manufacturing	411011	First-Line Supervisors/Managers of Retail Sales Workers	010608	Floriculture/Floristry Operations and Management
General Manufacturing	411011	First-Line Supervisors/Managers of Retail Sales Workers	190203	Consumer Merchandising/Retailing Management
General Manufacturing	411011	First-Line Supervisors/Managers of Retail Sales Workers	520208	E-Commerce/Electronic Commerce
General Manufacturing	411011	First-Line Supervisors/Managers of Retail Sales Workers	521803	Retailing and Retail Operations
General Manufacturing	411011	First-Line Supervisors/Managers of Retail Sales Workers	521804	Selling Skills and Sales Operations
General Manufacturing	411011	First-Line Supervisors/Managers of Retail Sales Workers	521909	Special Products Marketing Operations
General Manufacturing	411011	First-Line Supervisors/Managers of Retail Sales Workers	521999	Specialized Merchandising, Sales, and Related Marketing Operations, Other
General Manufacturing	411011	First-Line Supervisors/Managers of Retail Sales Workers	529999	Business, Management, Marketing, and Related Support Services, Other
General Manufacturing	411012	First-Line Supervisors/Managers of Non-Retail Sales Workers	521899	General Merchandising, Sales, and Related Marketing Operations, Other
General Manufacturing	411012	First-Line Supervisors/Managers of Non-Retail Sales Workers	521909	Special Products Marketing Operations

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
General Manufacturing	411012	First-Line Supervisors/Managers of Non-Retail Sales Workers	521999	Specialized Merchandising, Sales, and Related Marketing Operations, Other
General Manufacturing	411012	First-Line Supervisors/Managers of Non-Retail Sales Workers	529999	Business, Management, Marketing, and Related Support Services, Other
General Manufacturing	412031	Retail Salespersons	010608	Floriculture/Floristry Operations and Management
General Manufacturing	412031	Retail Salespersons	521801	Sales, Distribution, and Marketing Operations, General
General Manufacturing	412031	Retail Salespersons	521803	Retailing and Retail Operations
General Manufacturing	412031	Retail Salespersons	521804	Selling Skills and Sales Operations
General Manufacturing	414011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	521804	Selling Skills and Sales Operations
General Manufacturing	414011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	529999	Business, Management, Marketing, and Related Support Services, Other
General Manufacturing	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521801	Sales, Distribution, and Marketing Operations, General
General Manufacturing	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521899	General Merchandising, Sales, and Related Marketing Operations, Other
General Manufacturing	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521902	Fashion Merchandising
General Manufacturing	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521904	Apparel and Accessories Marketing Operations
General Manufacturing	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521909	Special Products Marketing Operations
General Manufacturing	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521999	Specialized Merchandising, Sales, and Related Marketing Operations, Other
General Manufacturing	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	529999	Business, Management, Marketing, and Related Support Services, Other

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
General Manufacturing	419031	Sales Engineers	521804	Selling Skills and Sales Operations
General Manufacturing	419099	Sales and Related Workers, All Other	521803	Retailing and Retail Operations
General Manufacturing	419099	Sales and Related Workers, All Other	521804	Selling Skills and Sales Operations
General Manufacturing	419099	Sales and Related Workers, All Other	521899	General Merchandising, Sales, and Related Marketing Operations, Other
General Manufacturing	419099	Sales and Related Workers, All Other	521901	Auctioneering
General Manufacturing	419099	Sales and Related Workers, All Other	521909	Special Products Marketing Operations
General Manufacturing	419099	Sales and Related Workers, All Other	521999	Specialized Merchandising, Sales, and Related Marketing Operations, Other
General Manufacturing	419099	Sales and Related Workers, All Other	529999	Business, Management, Marketing, and Related Support Services, Other
General Manufacturing	431011	First-Line Supervisors/Managers of Office and Administrative Support Workers	010106	Agricultural Business Technology
General Manufacturing	431011	First-Line Supervisors/Managers of Office and Administrative Support Workers	510711	Medical/Health Management and Clinical Assistant/Specialist
General Manufacturing	431011	First-Line Supervisors/Managers of Office and Administrative Support Workers	520204	Office Management and Supervision
General Manufacturing	431011	First-Line Supervisors/Managers of Office and Administrative Support Workers	520207	Customer Service Management
General Manufacturing	432011	Switchboard Operators, Including Answering Service	520406	Receptionist
General Manufacturing	433011	Bill and Account Collectors	520803	Banking and Financial Support Services
General Manufacturing	433021	Billing and Posting Clerks and Machine Operators	520302	Accounting Technology/Technician and Bookkeeping
General Manufacturing	433031	Bookkeeping, Accounting, and Auditing Clerks	520302	Accounting Technology/Technician and Bookkeeping
General Manufacturing	433031	Bookkeeping, Accounting, and Auditing Clerks	520399	Accounting and Related Services, Other
General Manufacturing	433051	Payroll and Timekeeping Clerks	520302	Accounting Technology/Technician and Bookkeeping
General Manufacturing	433061	Procurement Clerks	520408	General Office Occupations and Clerical Services
General Manufacturing	434021	Correspondence Clerks	520408	General Office Occupations and Clerical Services
General Manufacturing	434051	Customer Service Representatives	520406	Receptionist
General Manufacturing	434051	Customer Service Representatives	520411	Customer Service Support/Call Center/Teleservice Operation

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
General Manufacturing	434071	File Clerks	520408	General Office Occupations and Clerical Services
General Manufacturing	434151	Order Clerks	520408	General Office Occupations and Clerical Services
General Manufacturing	434161	Human Resources Assistants, Except Payroll and Timekeeping	520408	General Office Occupations and Clerical Services
General Manufacturing	434171	Receptionists and Information Clerks	510703	Health Unit Coordinator/Ward Clerk
General Manufacturing	434171	Receptionists and Information Clerks	510712	Medical Reception/Receptionist
General Manufacturing	434171	Receptionists and Information Clerks	520406	Receptionist
General Manufacturing	434171	Receptionists and Information Clerks	520408	General Office Occupations and Clerical Services
General Manufacturing	435061	Production, Planning, and Expediting Clerks	520409	Parts, Warehousing, and Inventory Management Operations
General Manufacturing	435071	Shipping, Receiving, and Traffic Clerks	520408	General Office Occupations and Clerical Services
General Manufacturing	435071	Shipping, Receiving, and Traffic Clerks	520410	Traffic, Customs, and Transportation Clerk/Technician
General Manufacturing	435081	Stock Clerks and Order Fillers	521803	Retailing and Retail Operations
General Manufacturing	435111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	520408	General Office Occupations and Clerical Services
General Manufacturing	436011	Executive Secretaries and Administrative Assistants	510716	Medical Administrative/Executive Assistant and Medical Secretary
General Manufacturing	436011	Executive Secretaries and Administrative Assistants	520401	Administrative Assistant and Secretarial Science, General
General Manufacturing	436011	Executive Secretaries and Administrative Assistants	520402	Executive Assistant/Executive Secretary
General Manufacturing	436014	Secretaries, Except Legal, Medical, and Executive	520401	Administrative Assistant and Secretarial Science, General
General Manufacturing	436014	Secretaries, Except Legal, Medical, and Executive	520402	Executive Assistant/Executive Secretary
General Manufacturing	439021	Data Entry Keyers	100305	Graphic and Printing Equipment Operator, General Production
General Manufacturing	439021	Data Entry Keyers	110601	Data Entry/Microcomputer Applications, General
General Manufacturing	439021	Data Entry Keyers	520407	Business/Office Automation/Technology/Data Entry
General Manufacturing	439051	Mail Clerks and Mail Machine Operators, Except Postal Service	520408	General Office Occupations and Clerical Services
General Manufacturing	439061	Office Clerks, General	520408	General Office Occupations and Clerical Services
General Manufacturing	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460101	Mason/Masonry

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
General Manufacturing	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460201	Carpentry/Carpenter
General Manufacturing	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460301	Electrical and Power Transmission Installation/Installer, General
General Manufacturing	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460302	Electrician
General Manufacturing	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460303	Lineworker
General Manufacturing	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460399	Electrical and Power Transmission Installers, Other
General Manufacturing	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460401	Building/Property Maintenance and Management
General Manufacturing	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460402	Concrete Finishing/Concrete Finisher
General Manufacturing	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460403	Building/Home/Construction Inspection/Inspector
General Manufacturing	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460404	Drywall Installation/Drywaller
General Manufacturing	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460406	Glazier
General Manufacturing	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460408	Painting/Painter and Wall Coverer
General Manufacturing	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460410	Roofer
General Manufacturing	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460412	Building/Construction Site Management/Manager
General Manufacturing	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460499	Building/Construction Finishing, Management, and Inspection, Other

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
General Manufacturing	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460503	Plumbing Technology/Plumber
General Manufacturing	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460504	Well Drilling/Driller
General Manufacturing	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460505	Blasting/Blaster
General Manufacturing	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	469999	Construction Trades, Other
General Manufacturing	472031	Carpenters	460201	Carpentry/Carpenter
General Manufacturing	472051	Cement Masons and Concrete Finishers	460402	Concrete Finishing/Concrete Finisher
General Manufacturing	472073	Operating Engineers and Other Construction Equipment Operators	490202	Construction/Heavy Equipment/Earthmoving Equipment Operation
General Manufacturing	472073	Operating Engineers and Other Construction Equipment Operators	490206	Mobil Crane Operation/Operator
General Manufacturing	472111	Electricians	460302	Electrician
General Manufacturing	472141	Painters, Construction and Maintenance	460408	Painting/Painter and Wall Coverer
General Manufacturing	472152	Plumbers, Pipefitters, and Steamfitters	460502	Pipefitting/Pipefitter and Sprinkler Fitter
General Manufacturing	472152	Plumbers, Pipefitters, and Steamfitters	460503	Plumbing Technology/Plumber
General Manufacturing	472152	Plumbers, Pipefitters, and Steamfitters	460599	Plumbing and Related Water Supply Services, Other
General Manufacturing	472211	Sheet Metal Workers	480506	Sheet Metal Technology/Sheetworking
General Manufacturing	472221	Structural Iron and Steel Workers	460411	Metal Building Assembly/Assembler
General Manufacturing	472221	Structural Iron and Steel Workers	469999	Construction Trades, Other
General Manufacturing	474031	Fence Erectors	469999	Construction Trades, Other
General Manufacturing	491011	First-Line Supervisors/Managers of Mechanics, Installers, and Repairers	520205	Operations Management and Supervision
General Manufacturing	492094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	470104	Computer Installation and Repair Technology/Technician
General Manufacturing	492094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	470105	Industrial Electronics Technology/Technician
General Manufacturing	493031	Bus and Truck Mechanics and Diesel Engine Specialists	470605	Diesel Mechanics Technology/Technician

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
General Manufacturing	493031	Bus and Truck Mechanics and Diesel Engine Specialists	470613	Medium/Heavy Vehicle and Truck Technology/Technician
General Manufacturing	493042	Mobile Heavy Equipment Mechanics, Except Engines	010205	Agricultural Mechanics and Equipment/Machine Technology
General Manufacturing	493042	Mobile Heavy Equipment Mechanics, Except Engines	470302	Heavy Equipment Maintenance Technology/Technician
General Manufacturing	499021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	150501	Heating, Air Conditioning and Refrigeration Technology/Technician (ACH/ACR/ACHR/HRAC/HVAC/AC Technology)
General Manufacturing	499021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	150505	Solar Energy Technology/Technician
General Manufacturing	499021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	470201	Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician (HAC, HACR, HVAC, HVACR)
General Manufacturing	499041	Industrial Machinery Mechanics	470303	Industrial Mechanics and Maintenance Technology
General Manufacturing	499041	Industrial Machinery Mechanics	470399	Heavy/Industrial Equipment Maintenance Technologies, Other
General Manufacturing	499042	Maintenance and Repair Workers, General	460412	Building/Construction Site Management/Manager
General Manufacturing	499043	Maintenance Workers, Machinery	470303	Industrial Mechanics and Maintenance Technology
General Manufacturing	499043	Maintenance Workers, Machinery	470399	Heavy/Industrial Equipment Maintenance Technologies, Other
General Manufacturing	499044	Millwrights	470303	Industrial Mechanics and Maintenance Technology
General Manufacturing	499044	Millwrights	470399	Heavy/Industrial Equipment Maintenance Technologies, Other
General Manufacturing	499098	Helpers--Installation, Maintenance, and Repair Workers	470303	Industrial Mechanics and Maintenance Technology
General Manufacturing	499099	Installation, Maintenance, and Repair Workers, All Other	470402	Gunsmithing/Gunsmith
General Manufacturing	499099	Installation, Maintenance, and Repair Workers, All Other	470409	Parts and Warehousing Operations and Maintenance Technology/Technician
General Manufacturing	499099	Installation, Maintenance, and Repair Workers, All Other	470499	Precision Systems Maintenance and Repair Technologies, Other
General Manufacturing	511011	First-Line Supervisors/Managers of Production and Operating Workers	520205	Operations Management and Supervision
General Manufacturing	512041	Structural Metal Fabricators and Fitters	480503	Machine Shop Technology/Assistant
General Manufacturing	514011	Computer-Controlled Machine Tool Operators, Metal and Plastic	480503	Machine Shop Technology/Assistant

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
General Manufacturing	514012	Numerical Tool and Process Control Programmers	110201	Computer Programming/Programmer, General
General Manufacturing	514012	Numerical Tool and Process Control Programmers	110301	Data Processing and Data Processing Technology/Technician
General Manufacturing	514021	Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic	480501	Machine Tool Technology/Machinist
General Manufacturing	514023	Rolling Machine Setters, Operators, and Tenders, Metal and Plastic	480501	Machine Tool Technology/Machinist
General Manufacturing	514023	Rolling Machine Setters, Operators, and Tenders, Metal and Plastic	480506	Sheet Metal Technology/Sheetworking
General Manufacturing	514031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	480501	Machine Tool Technology/Machinist
General Manufacturing	514031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	480506	Sheet Metal Technology/Sheetworking
General Manufacturing	514032	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	480501	Machine Tool Technology/Machinist
General Manufacturing	514033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	480501	Machine Tool Technology/Machinist
General Manufacturing	514033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	480503	Machine Shop Technology/Assistant
General Manufacturing	514034	Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic	480501	Machine Tool Technology/Machinist
General Manufacturing	514041	Machinists	480501	Machine Tool Technology/Machinist
General Manufacturing	514041	Machinists	480503	Machine Shop Technology/Assistant
General Manufacturing	514081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	480501	Machine Tool Technology/Machinist
General Manufacturing	514081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	480503	Machine Shop Technology/Assistant
General Manufacturing	514111	Tool and Die Makers	480507	Tool and Die Technology/Technician
General Manufacturing	514121	Welders, Cutters, Solderers, and Brazers	480508	Welding Technology/Welder

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
General Manufacturing	514122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	480508	Welding Technology/Welder
General Manufacturing	514191	Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic	480501	Machine Tool Technology/Machinist
General Manufacturing	514191	Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic	480503	Machine Shop Technology/Assistant
General Manufacturing	514192	Lay-Out Workers, Metal and Plastic	480501	Machine Tool Technology/Machinist
General Manufacturing	514192	Lay-Out Workers, Metal and Plastic	480503	Machine Shop Technology/Assistant
General Manufacturing	514199	Metal Workers and Plastic Workers, All Other	480501	Machine Tool Technology/Machinist
General Manufacturing	514199	Metal Workers and Plastic Workers, All Other	480503	Machine Shop Technology/Assistant
General Manufacturing	514199	Metal Workers and Plastic Workers, All Other	480599	Precision Metal Working, Other
General Manufacturing	515023	Printing Machine Operators	100302	Printing Management
General Manufacturing	515023	Printing Machine Operators	100305	Graphic and Printing Equipment Operator, General Production
General Manufacturing	515023	Printing Machine Operators	100307	Printing Press Operator
General Manufacturing	515023	Printing Machine Operators	100399	Graphic Communications, Other
General Manufacturing	516062	Textile Cutting Machine Setters, Operators, and Tenders	470303	Industrial Mechanics and Maintenance Technology
General Manufacturing	516093	Upholsterers	480303	Upholstery/Upholsterer
General Manufacturing	517011	Cabinetmakers and Bench Carpenters	480703	Cabinetmaking and Millwork/Millwright
General Manufacturing	517021	Furniture Finishers	480702	Furniture Design and Manufacturing
General Manufacturing	517031	Model Makers, Wood	480703	Cabinetmaking and Millwork/Millwright
General Manufacturing	517041	Sawing Machine Setters, Operators, and Tenders, Wood	480703	Cabinetmaking and Millwork/Millwright
General Manufacturing	517042	Woodworking Machine Setters, Operators, and Tenders, Except Sawing	480701	Woodworking, General
General Manufacturing	517042	Woodworking Machine Setters, Operators, and Tenders, Except Sawing	480703	Cabinetmaking and Millwork/Millwright
General Manufacturing	518031	Water and Liquid Waste Treatment Plant and System Operators	150506	Water Quality and Wastewater Treatment Management and Recycling Technology/Technician
General Manufacturing	518091	Chemical Plant and System Operators	410301	Chemical Technology/Technician

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
General Manufacturing	519011	Chemical Equipment Operators and Tenders	410301	Chemical Technology/Technician
General Manufacturing	519023	Mixing and Blending Machine Setters, Operators, and Tenders	010401	Agricultural and Food Products Processing
General Manufacturing	519061	Inspectors, Testers, Sorters, Samplers, and Weighers	150702	Quality Control Technology/Technician
General Manufacturing	519071	Jewelers and Precious Stone and Metal Workers	470408	Watchmaking and Jewelrymaking
General Manufacturing	519081	Dental Laboratory Technicians	510603	Dental Laboratory Technology/Technician
General Manufacturing	519082	Medical Appliance Technicians	512307	Orthotist/Prosthetist
General Manufacturing	519082	Medical Appliance Technicians	512312	Assistive/Augmentative Technology and Rehabilitation Engineering
General Manufacturing	519083	Ophthalmic Laboratory Technicians	511006	Ophthalmic Laboratory Technology/Technician
General Manufacturing	519123	Painting, Coating, and Decorating Workers	500409	Graphic Design
General Manufacturing	519194	Etchers and Engravers	100399	Graphic Communications, Other
General Manufacturing	533031	Driver/Sales Workers	521803	Retailing and Retail Operations
General Manufacturing	533032	Truck Drivers, Heavy and Tractor-Trailer	490205	Truck and Bus Driver/Commercial Vehicle Operation
General Manufacturing	533033	Truck Drivers, Light or Delivery Services	490205	Truck and Bus Driver/Commercial Vehicle Operation
General Manufacturing	537011	Conveyor Operators and Tenders	490299	Ground Transportation, Other
General Manufacturing	537021	Crane and Tower Operators	490202	Construction/Heavy Equipment/Earthmoving Equipment Operation
General Manufacturing	537021	Crane and Tower Operators	490206	Mobil Crane Operation/Operator
General Manufacturing	537041	Hoist and Winch Operators	490202	Construction/Heavy Equipment/Earthmoving Equipment Operation
General Manufacturing	537051	Industrial Truck and Tractor Operators	490299	Ground Transportation, Other
Textiles	111011	Chief Executives	440401	Public Administration
Textiles	111011	Chief Executives	440501	Public Policy Analysis
Textiles	111011	Chief Executives	449999	Public Administration and Social Service Professions, Other
Textiles	111011	Chief Executives	520101	Business/Commerce, General
Textiles	111011	Chief Executives	520201	Business Administration and Management, General
Textiles	111011	Chief Executives	520701	Entrepreneurship/Entrepreneurial Studies
Textiles	111011	Chief Executives	521101	International Business/Trade/Commerce
Textiles	111021	General and Operations Managers	440401	Public Administration
Textiles	111021	General and Operations Managers	520101	Business/Commerce, General

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Textiles	111021	General and Operations Managers	520201	Business Administration and Management, General
Textiles	111021	General and Operations Managers	520701	Entrepreneurship/Entrepreneurial Studies
Textiles	111021	General and Operations Managers	521101	International Business/Trade/Commerce
Textiles	113051	Industrial Production Managers	520101	Business/Commerce, General
Textiles	113051	Industrial Production Managers	520201	Business Administration and Management, General
Textiles	113051	Industrial Production Managers	520205	Operations Management and Supervision
Textiles	113061	Purchasing Managers	520202	Purchasing, Procurement/Acquisitions and Contracts Management
Textiles	131023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	521801	Sales, Distribution, and Marketing Operations, General
Textiles	131072	Compensation, Benefits, and Job Analysis Specialists	521001	Human Resources Management/Personnel Administration, General
Textiles	131072	Compensation, Benefits, and Job Analysis Specialists	521002	Labor and Industrial Relations
Textiles	131073	Training and Development Specialists	521001	Human Resources Management/Personnel Administration, General
Textiles	131073	Training and Development Specialists	521003	Organizational Behavior Studies
Textiles	131199	Business Operations Specialists, All Other	529999	Business, Management, Marketing, and Related Support Services, Other
Textiles	132011	Accountants and Auditors	301601	Accounting and Computer Science
Textiles	132011	Accountants and Auditors	520301	Accounting
Textiles	132011	Accountants and Auditors	520303	Auditing
Textiles	132011	Accountants and Auditors	520304	Accounting and Finance
Textiles	132011	Accountants and Auditors	520305	Accounting and Business/Management
Textiles	132011	Accountants and Auditors	521601	Taxation
Textiles	172141	Mechanical Engineers	141901	Mechanical Engineering
Textiles	271024	Graphic Designers	010802	Agricultural Communication/Journalism
Textiles	271024	Graphic Designers	110801	Web Page, Digital/Multimedia and Information Resources Design
Textiles	271024	Graphic Designers	110803	Computer Graphics
Textiles	271024	Graphic Designers	500401	Design and Visual Communications, General
Textiles	271024	Graphic Designers	500402	Commercial and Advertising Art
Textiles	271024	Graphic Designers	500404	Industrial Design
Textiles	271024	Graphic Designers	500409	Graphic Design

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Textiles	339032	Security Guards	430109	Security and Loss Prevention Services
Textiles	339032	Security Guards	430112	Securities Services Administration/Management
Textiles	412031	Retail Salespersons	010608	Floriculture/Floristry Operations and Management
Textiles	412031	Retail Salespersons	521801	Sales, Distribution, and Marketing Operations, General
Textiles	412031	Retail Salespersons	521803	Retailing and Retail Operations
Textiles	412031	Retail Salespersons	521804	Selling Skills and Sales Operations
Textiles	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521801	Sales, Distribution, and Marketing Operations, General
Textiles	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521899	General Merchandising, Sales, and Related Marketing Operations, Other
Textiles	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521902	Fashion Merchandising
Textiles	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521904	Apparel and Accessories Marketing Operations
Textiles	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521909	Special Products Marketing Operations
Textiles	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521999	Specialized Merchandising, Sales, and Related Marketing Operations, Other
Textiles	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	529999	Business, Management, Marketing, and Related Support Services, Other
Textiles	431011	First-Line Supervisors/Managers of Office and Administrative Support Workers	010106	Agricultural Business Technology
Textiles	431011	First-Line Supervisors/Managers of Office and Administrative Support Workers	510711	Medical/Health Management and Clinical Assistant/Specialist
Textiles	431011	First-Line Supervisors/Managers of Office and Administrative Support Workers	520204	Office Management and Supervision

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Textiles	431011	First-Line Supervisors/Managers of Office and Administrative Support Workers	520207	Customer Service Management
Textiles	433021	Billing and Posting Clerks and Machine Operators	520302	Accounting Technology/Technician and Bookkeeping
Textiles	433031	Bookkeeping, Accounting, and Auditing Clerks	520302	Accounting Technology/Technician and Bookkeeping
Textiles	433031	Bookkeeping, Accounting, and Auditing Clerks	520399	Accounting and Related Services, Other
Textiles	433051	Payroll and Timekeeping Clerks	520302	Accounting Technology/Technician and Bookkeeping
Textiles	434051	Customer Service Representatives	520406	Receptionist
Textiles	434051	Customer Service Representatives	520411	Customer Service Support/Call Center/Teleservice Operation
Textiles	434151	Order Clerks	520408	General Office Occupations and Clerical Services
Textiles	434161	Human Resources Assistants, Except Payroll and Timekeeping	520408	General Office Occupations and Clerical Services
Textiles	435061	Production, Planning, and Expediting Clerks	520409	Parts, Warehousing, and Inventory Management Operations
Textiles	435071	Shipping, Receiving, and Traffic Clerks	520408	General Office Occupations and Clerical Services
Textiles	435071	Shipping, Receiving, and Traffic Clerks	520410	Traffic, Customs, and Transportation Clerk/Technician
Textiles	435081	Stock Clerks and Order Fillers	521803	Retailing and Retail Operations
Textiles	436011	Executive Secretaries and Administrative Assistants	510716	Medical Administrative/Executive Assistant and Medical Secretary
Textiles	436011	Executive Secretaries and Administrative Assistants	520401	Administrative Assistant and Secretarial Science, General
Textiles	436011	Executive Secretaries and Administrative Assistants	520402	Executive Assistant/Executive Secretary
Textiles	436014	Secretaries, Except Legal, Medical, and Executive	520401	Administrative Assistant and Secretarial Science, General
Textiles	436014	Secretaries, Except Legal, Medical, and Executive	520402	Executive Assistant/Executive Secretary
Textiles	439021	Data Entry Keyers	100305	Graphic and Printing Equipment Operator, General Production
Textiles	439021	Data Entry Keyers	110601	Data Entry/Microcomputer Applications, General
Textiles	439021	Data Entry Keyers	520407	Business/Office Automation/Technology/Data Entry
Textiles	439061	Office Clerks, General	520408	General Office Occupations and Clerical Services
Textiles	472111	Electricians	460302	Electrician

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Textiles	491011	First-Line Supervisors/Managers of Mechanics, Installers, and Repairers	520205	Operations Management and Supervision
Textiles	492092	Electric Motor, Power Tool, and Related Repairers	470101	Electrical/Electronics Equipment Installation and Repair, General
Textiles	492094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	470104	Computer Installation and Repair Technology/Technician
Textiles	492094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	470105	Industrial Electronics Technology/Technician
Textiles	499021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	150501	Heating, Air Conditioning and Refrigeration Technology/Technician (ACH/ACR/ACHR/HRAC/HVAC/AC Technology)
Textiles	499021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	150505	Solar Energy Technology/Technician
Textiles	499021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	470201	Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician (HAC, HACR, HVAC, HVACR)
Textiles	499041	Industrial Machinery Mechanics	470303	Industrial Mechanics and Maintenance Technology
Textiles	499041	Industrial Machinery Mechanics	470399	Heavy/Industrial Equipment Maintenance Technologies, Other
Textiles	499042	Maintenance and Repair Workers, General	460412	Building/Construction Site Management/Manager
Textiles	499043	Maintenance Workers, Machinery	470303	Industrial Mechanics and Maintenance Technology
Textiles	499043	Maintenance Workers, Machinery	470399	Heavy/Industrial Equipment Maintenance Technologies, Other
Textiles	499098	Helpers--Installation, Maintenance, and Repair Workers	470303	Industrial Mechanics and Maintenance Technology
Textiles	499099	Installation, Maintenance, and Repair Workers, All Other	470402	Gunsmithing/Gunsmith
Textiles	499099	Installation, Maintenance, and Repair Workers, All Other	470409	Parts and Warehousing Operations and Maintenance Technology/Technician
Textiles	499099	Installation, Maintenance, and Repair Workers, All Other	470499	Precision Systems Maintenance and Repair Technologies, Other
Textiles	511011	First-Line Supervisors/Managers of Production and Operating Workers	520205	Operations Management and Supervision
Textiles	516062	Textile Cutting Machine Setters, Operators, and Tenders	470303	Industrial Mechanics and Maintenance Technology
Textiles	516063	Textile Knitting and Weaving Machine Setters, Operators, and Tenders	470303	Industrial Mechanics and Maintenance Technology

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Textiles	516064	Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders	470303	Industrial Mechanics and Maintenance Technology
Textiles	516092	Fabric and Apparel Patternmakers	190902	Apparel and Textile Manufacture
Textiles	519061	Inspectors, Testers, Sorters, Samplers, and Weighers	150702	Quality Control Technology/Technician
Textiles	533032	Truck Drivers, Heavy and Tractor-Trailer	490205	Truck and Bus Driver/Commercial Vehicle Operation
Textiles	537051	Industrial Truck and Tractor Operators	490299	Ground Transportation, Other
Wood Products	111011	Chief Executives	440401	Public Administration
Wood Products	111011	Chief Executives	440501	Public Policy Analysis
Wood Products	111011	Chief Executives	449999	Public Administration and Social Service Professions, Other
Wood Products	111011	Chief Executives	520101	Business/Commerce, General
Wood Products	111011	Chief Executives	520201	Business Administration and Management, General
Wood Products	111011	Chief Executives	520701	Entrepreneurship/Entrepreneurial Studies
Wood Products	111011	Chief Executives	521101	International Business/Trade/Commerce
Wood Products	111021	General and Operations Managers	440401	Public Administration
Wood Products	111021	General and Operations Managers	520101	Business/Commerce, General
Wood Products	111021	General and Operations Managers	520201	Business Administration and Management, General
Wood Products	111021	General and Operations Managers	520701	Entrepreneurship/Entrepreneurial Studies
Wood Products	111021	General and Operations Managers	521101	International Business/Trade/Commerce
Wood Products	112021	Marketing Managers	190203	Consumer Merchandising/Retailing Management
Wood Products	112021	Marketing Managers	190905	Apparel and Textile Marketing Management
Wood Products	112021	Marketing Managers	521401	Marketing/Marketing Management, General
Wood Products	112021	Marketing Managers	521402	Marketing Research
Wood Products	112021	Marketing Managers	521403	International Marketing
Wood Products	112021	Marketing Managers	521499	Marketing, Other
Wood Products	112022	Sales Managers	190203	Consumer Merchandising/Retailing Management
Wood Products	112022	Sales Managers	520101	Business/Commerce, General
Wood Products	112022	Sales Managers	520201	Business Administration and Management, General
Wood Products	112022	Sales Managers	521401	Marketing/Marketing Management, General

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Wood Products	112022	Sales Managers	521499	Marketing, Other
Wood Products	113011	Administrative Services Managers	440401	Public Administration
Wood Products	113011	Administrative Services Managers	510711	Medical/Health Management and Clinical Assistant/Specialist
Wood Products	113011	Administrative Services Managers	520101	Business/Commerce, General
Wood Products	113011	Administrative Services Managers	520201	Business Administration and Management, General
Wood Products	113011	Administrative Services Managers	520202	Purchasing, Procurement/Acquisitions and Contracts Management
Wood Products	113021	Computer and Information Systems Managers	110101	Computer and Information Sciences, General
Wood Products	113021	Computer and Information Systems Managers	110401	Information Science/Studies
Wood Products	113021	Computer and Information Systems Managers	110701	Computer Science
Wood Products	113021	Computer and Information Systems Managers	111001	System Administration/Administrator
Wood Products	113021	Computer and Information Systems Managers	520205	Operations Management and Supervision
Wood Products	113021	Computer and Information Systems Managers	521201	Management Information Systems, General
Wood Products	113021	Computer and Information Systems Managers	521206	Information Resources Management/CIO Training
Wood Products	113021	Computer and Information Systems Managers	521207	Knowledge Management
Wood Products	113031	Financial Managers	520304	Accounting and Finance
Wood Products	113031	Financial Managers	520305	Accounting and Business/Management
Wood Products	113031	Financial Managers	520801	Finance, General
Wood Products	113031	Financial Managers	520806	International Finance
Wood Products	113031	Financial Managers	520808	Public Finance
Wood Products	113031	Financial Managers	520809	Credit Management
Wood Products	113031	Financial Managers	520899	Finance and Financial Management Services, Other
Wood Products	113051	Industrial Production Managers	520101	Business/Commerce, General
Wood Products	113051	Industrial Production Managers	520201	Business Administration and Management, General
Wood Products	113051	Industrial Production Managers	520205	Operations Management and Supervision

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Wood Products	113061	Purchasing Managers	520202	Purchasing, Procurement/Acquisitions and Contracts Management
Wood Products	113071	Transportation, Storage, and Distribution Managers	440401	Public Administration
Wood Products	113071	Transportation, Storage, and Distribution Managers	490101	Aeronautics/Aviation/Aerospace Science and Technology, General
Wood Products	113071	Transportation, Storage, and Distribution Managers	490104	Aviation/Airway Management and Operations
Wood Products	113071	Transportation, Storage, and Distribution Managers	520101	Business/Commerce, General
Wood Products	113071	Transportation, Storage, and Distribution Managers	520201	Business Administration and Management, General
Wood Products	113071	Transportation, Storage, and Distribution Managers	520203	Logistics and Materials Management
Wood Products	119041	Engineering Managers	040201	Architecture (BArch, BA/BS, MArch, MA/MS, PhD)
Wood Products	119041	Engineering Managers	040301	City/Urban, Community and Regional Planning
Wood Products	119041	Engineering Managers	040401	Environmental Design/Architecture
Wood Products	119041	Engineering Managers	040501	Interior Architecture
Wood Products	119041	Engineering Managers	040601	Landscape Architecture (BS, BSLA, BLA, MSLA, MLA, PhD)
Wood Products	119041	Engineering Managers	140101	Engineering, General
Wood Products	119041	Engineering Managers	140201	Aerospace, Aeronautical and Astronautical Engineering
Wood Products	119041	Engineering Managers	140301	Agricultural/Biological Engineering and Bioengineering
Wood Products	119041	Engineering Managers	140401	Architectural Engineering
Wood Products	119041	Engineering Managers	140501	Biomedical/Medical Engineering
Wood Products	119041	Engineering Managers	140601	Ceramic Sciences and Engineering
Wood Products	119041	Engineering Managers	140701	Chemical Engineering
Wood Products	119041	Engineering Managers	140801	Civil Engineering, General
Wood Products	119041	Engineering Managers	140802	Geotechnical Engineering
Wood Products	119041	Engineering Managers	140803	Structural Engineering
Wood Products	119041	Engineering Managers	140804	Transportation and Highway Engineering
Wood Products	119041	Engineering Managers	140805	Water Resources Engineering
Wood Products	119041	Engineering Managers	140899	Civil Engineering, Other

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Wood Products	119041	Engineering Managers	140901	Computer Engineering, General
Wood Products	119041	Engineering Managers	140902	Computer Hardware Engineering
Wood Products	119041	Engineering Managers	140903	Computer Software Engineering
Wood Products	119041	Engineering Managers	140999	Computer Engineering, Other
Wood Products	119041	Engineering Managers	141001	Electrical, Electronics and Communications Engineering
Wood Products	119041	Engineering Managers	141101	Engineering Mechanics
Wood Products	119041	Engineering Managers	141201	Engineering Physics
Wood Products	119041	Engineering Managers	141301	Engineering Science
Wood Products	119041	Engineering Managers	141401	Environmental/Environmental Health Engineering
Wood Products	119041	Engineering Managers	141801	Materials Engineering
Wood Products	119041	Engineering Managers	141901	Mechanical Engineering
Wood Products	119041	Engineering Managers	142001	Metallurgical Engineering
Wood Products	119041	Engineering Managers	142101	Mining and Mineral Engineering
Wood Products	119041	Engineering Managers	142201	Naval Architecture and Marine Engineering
Wood Products	119041	Engineering Managers	142301	Nuclear Engineering
Wood Products	119041	Engineering Managers	142401	Ocean Engineering
Wood Products	119041	Engineering Managers	142501	Petroleum Engineering
Wood Products	119041	Engineering Managers	142701	Systems Engineering
Wood Products	119041	Engineering Managers	142801	Textile Sciences and Engineering
Wood Products	119041	Engineering Managers	143101	Materials Science
Wood Products	119041	Engineering Managers	143201	Polymer/Plastics Engineering
Wood Products	119041	Engineering Managers	143301	Construction Engineering
Wood Products	119041	Engineering Managers	143401	Forest Engineering
Wood Products	119041	Engineering Managers	143501	Industrial Engineering
Wood Products	119041	Engineering Managers	143601	Manufacturing Engineering
Wood Products	119041	Engineering Managers	143801	Surveying Engineering
Wood Products	119041	Engineering Managers	143901	Geological/Geophysical Engineering
Wood Products	119041	Engineering Managers	149999	Engineering, Other
Wood Products	119199	Managers, All Other	440401	Public Administration

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Wood Products	119199	Managers, All Other	449999	Public Administration and Social Service Professions, Other
Wood Products	119199	Managers, All Other	500508	Theatre/Theatre Arts Management
Wood Products	119199	Managers, All Other	500704	Arts Management
Wood Products	119199	Managers, All Other	520101	Business/Commerce, General
Wood Products	119199	Managers, All Other	520201	Business Administration and Management, General
Wood Products	119199	Managers, All Other	520206	Non-Profit/Public/Organizational Management
Wood Products	119199	Managers, All Other	520299	Business Administration, Management and Operations, Other
Wood Products	119199	Managers, All Other	520701	Entrepreneurship/Entrepreneurial Studies
Wood Products	119199	Managers, All Other	520702	Franchising and Franchise Operations
Wood Products	119199	Managers, All Other	520703	Small Business Administration/Management
Wood Products	119199	Managers, All Other	520799	Entrepreneurial and Small Business Operations, Other
Wood Products	119199	Managers, All Other	520903	Tourism and Travel Services Management
Wood Products	119199	Managers, All Other	520999	Hospitality Administration/Management, Other
Wood Products	119199	Managers, All Other	529999	Business, Management, Marketing, and Related Support Services, Other
Wood Products	131023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	521801	Sales, Distribution, and Marketing Operations, General
Wood Products	131051	Cost Estimators	141801	Materials Engineering
Wood Products	131051	Cost Estimators	141901	Mechanical Engineering
Wood Products	131051	Cost Estimators	143301	Construction Engineering
Wood Products	131051	Cost Estimators	143601	Manufacturing Engineering
Wood Products	131051	Cost Estimators	151001	Construction Engineering Technology/Technician
Wood Products	131051	Cost Estimators	520101	Business/Commerce, General
Wood Products	131051	Cost Estimators	520201	Business Administration and Management, General
Wood Products	131199	Business Operations Specialists, All Other	529999	Business, Management, Marketing, and Related Support Services, Other
Wood Products	132011	Accountants and Auditors	301601	Accounting and Computer Science
Wood Products	132011	Accountants and Auditors	520301	Accounting
Wood Products	132011	Accountants and Auditors	520303	Auditing

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Wood Products	132011	Accountants and Auditors	520304	Accounting and Finance
Wood Products	132011	Accountants and Auditors	520305	Accounting and Business/Management
Wood Products	132011	Accountants and Auditors	521601	Taxation
Wood Products	151041	Computer Support Specialists	010106	Agricultural Business Technology
Wood Products	151041	Computer Support Specialists	110301	Data Processing and Data Processing Technology/Technician
Wood Products	151041	Computer Support Specialists	151203	Computer Hardware Technology/Technician
Wood Products	151041	Computer Support Specialists	151204	Computer Software Technology/Technician
Wood Products	151041	Computer Support Specialists	301601	Accounting and Computer Science
Wood Products	151041	Computer Support Specialists	510709	Medical Office Computer Specialist/Assistant
Wood Products	172112	Industrial Engineers	143501	Industrial Engineering
Wood Products	173026	Industrial Engineering Technicians	150612	Industrial Technology/Technician
Wood Products	173026	Industrial Engineering Technicians	150613	Manufacturing Technology/Technician
Wood Products	173026	Industrial Engineering Technicians	150699	Industrial Production Technologies/Technicians, Other
Wood Products	173026	Industrial Engineering Technicians	151501	Engineering/Industrial Management
Wood Products	339032	Security Guards	430109	Security and Loss Prevention Services
Wood Products	339032	Security Guards	430112	Securities Services Administration/Management
Wood Products	411012	First-Line Supervisors/Managers of Non-Retail Sales Workers	521899	General Merchandising, Sales, and Related Marketing Operations, Other
Wood Products	411012	First-Line Supervisors/Managers of Non-Retail Sales Workers	521909	Special Products Marketing Operations
Wood Products	411012	First-Line Supervisors/Managers of Non-Retail Sales Workers	521999	Specialized Merchandising, Sales, and Related Marketing Operations, Other
Wood Products	411012	First-Line Supervisors/Managers of Non-Retail Sales Workers	529999	Business, Management, Marketing, and Related Support Services, Other
Wood Products	412031	Retail Salespersons	010608	Floriculture/Floristry Operations and Management
Wood Products	412031	Retail Salespersons	521801	Sales, Distribution, and Marketing Operations, General
Wood Products	412031	Retail Salespersons	521803	Retailing and Retail Operations
Wood Products	412031	Retail Salespersons	521804	Selling Skills and Sales Operations

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Wood Products	414011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	521804	Selling Skills and Sales Operations
Wood Products	414011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	529999	Business, Management, Marketing, and Related Support Services, Other
Wood Products	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521801	Sales, Distribution, and Marketing Operations, General
Wood Products	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521899	General Merchandising, Sales, and Related Marketing Operations, Other
Wood Products	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521902	Fashion Merchandising
Wood Products	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521904	Apparel and Accessories Marketing Operations
Wood Products	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521909	Special Products Marketing Operations
Wood Products	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	521999	Specialized Merchandising, Sales, and Related Marketing Operations, Other
Wood Products	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	529999	Business, Management, Marketing, and Related Support Services, Other
Wood Products	431011	First-Line Supervisors/Managers of Office and Administrative Support Workers	010106	Agricultural Business Technology
Wood Products	431011	First-Line Supervisors/Managers of Office and Administrative Support Workers	510711	Medical/Health Management and Clinical Assistant/Specialist
Wood Products	431011	First-Line Supervisors/Managers of Office and Administrative Support Workers	520204	Office Management and Supervision
Wood Products	431011	First-Line Supervisors/Managers of Office and Administrative Support Workers	520207	Customer Service Management

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Wood Products	432011	Switchboard Operators, Including Answering Service	520406	Receptionist
Wood Products	433011	Bill and Account Collectors	520803	Banking and Financial Support Services
Wood Products	433021	Billing and Posting Clerks and Machine Operators	520302	Accounting Technology/Technician and Bookkeeping
Wood Products	433031	Bookkeeping, Accounting, and Auditing Clerks	520302	Accounting Technology/Technician and Bookkeeping
Wood Products	433031	Bookkeeping, Accounting, and Auditing Clerks	520399	Accounting and Related Services, Other
Wood Products	433051	Payroll and Timekeeping Clerks	520302	Accounting Technology/Technician and Bookkeeping
Wood Products	434051	Customer Service Representatives	520406	Receptionist
Wood Products	434051	Customer Service Representatives	520411	Customer Service Support/Call Center/Teleservice Operation
Wood Products	434151	Order Clerks	520408	General Office Occupations and Clerical Services
Wood Products	434161	Human Resources Assistants, Except Payroll and Timekeeping	520408	General Office Occupations and Clerical Services
Wood Products	434171	Receptionists and Information Clerks	510703	Health Unit Coordinator/Ward Clerk
Wood Products	434171	Receptionists and Information Clerks	510712	Medical Reception/Receptionist
Wood Products	434171	Receptionists and Information Clerks	520406	Receptionist
Wood Products	434171	Receptionists and Information Clerks	520408	General Office Occupations and Clerical Services
Wood Products	435061	Production, Planning, and Expediting Clerks	520409	Parts, Warehousing, and Inventory Management Operations
Wood Products	435071	Shipping, Receiving, and Traffic Clerks	520408	General Office Occupations and Clerical Services
Wood Products	435071	Shipping, Receiving, and Traffic Clerks	520410	Traffic, Customs, and Transportation Clerk/Technician
Wood Products	435081	Stock Clerks and Order Fillers	521803	Retailing and Retail Operations
Wood Products	435111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	520408	General Office Occupations and Clerical Services
Wood Products	436011	Executive Secretaries and Administrative Assistants	510716	Medical Administrative/Executive Assistant and Medical Secretary
Wood Products	436011	Executive Secretaries and Administrative Assistants	520401	Administrative Assistant and Secretarial Science, General
Wood Products	436011	Executive Secretaries and Administrative Assistants	520402	Executive Assistant/Executive Secretary
Wood Products	436014	Secretaries, Except Legal, Medical, and Executive	520401	Administrative Assistant and Secretarial Science, General
Wood Products	436014	Secretaries, Except Legal, Medical, and Executive	520402	Executive Assistant/Executive Secretary

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Wood Products	439021	Data Entry Keyers	100305	Graphic and Printing Equipment Operator, General Production
Wood Products	439021	Data Entry Keyers	110601	Data Entry/Microcomputer Applications, General
Wood Products	439021	Data Entry Keyers	520407	Business/Office Automation/Technology/Data Entry
Wood Products	439061	Office Clerks, General	520408	General Office Occupations and Clerical Services
Wood Products	451011	First-Line Supervisors/Managers of Farming, Fishing, and Forestry Workers	010104	Farm/Farm and Ranch Management
Wood Products	451011	First-Line Supervisors/Managers of Farming, Fishing, and Forestry Workers	010199	Agricultural Business and Management, Other
Wood Products	451011	First-Line Supervisors/Managers of Farming, Fishing, and Forestry Workers	010301	Agricultural Production Operations, General
Wood Products	451011	First-Line Supervisors/Managers of Farming, Fishing, and Forestry Workers	010302	Animal/Livestock Husbandry and Production
Wood Products	451011	First-Line Supervisors/Managers of Farming, Fishing, and Forestry Workers	010303	Aquaculture
Wood Products	451011	First-Line Supervisors/Managers of Farming, Fishing, and Forestry Workers	010304	Crop Production
Wood Products	451011	First-Line Supervisors/Managers of Farming, Fishing, and Forestry Workers	010306	Dairy Husbandry and Production
Wood Products	451011	First-Line Supervisors/Managers of Farming, Fishing, and Forestry Workers	010307	Horse Husbandry/Equine Science and Management
Wood Products	451011	First-Line Supervisors/Managers of Farming, Fishing, and Forestry Workers	010399	Agricultural Production Operations, Other
Wood Products	451011	First-Line Supervisors/Managers of Farming, Fishing, and Forestry Workers	010901	Animal Sciences, General
Wood Products	451011	First-Line Supervisors/Managers of Farming, Fishing, and Forestry Workers	010902	Agricultural Animal Breeding
Wood Products	451011	First-Line Supervisors/Managers of Farming, Fishing, and Forestry Workers	010904	Animal Nutrition

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Wood Products	451011	First-Line Supervisors/Managers of Farming, Fishing, and Forestry Workers	010905	Dairy Science
Wood Products	451011	First-Line Supervisors/Managers of Farming, Fishing, and Forestry Workers	010906	Livestock Management
Wood Products	451011	First-Line Supervisors/Managers of Farming, Fishing, and Forestry Workers	010907	Poultry Science
Wood Products	451011	First-Line Supervisors/Managers of Farming, Fishing, and Forestry Workers	011101	Plant Sciences, General
Wood Products	451011	First-Line Supervisors/Managers of Farming, Fishing, and Forestry Workers	011102	Agronomy and Crop Science
Wood Products	451011	First-Line Supervisors/Managers of Farming, Fishing, and Forestry Workers	011106	Range Science and Management
Wood Products	451011	First-Line Supervisors/Managers of Farming, Fishing, and Forestry Workers	019999	Agriculture, Agriculture Operations, and Related Sciences, Other
Wood Products	451011	First-Line Supervisors/Managers of Farming, Fishing, and Forestry Workers	030301	Fishing and Fisheries Sciences and Management
Wood Products	454022	Logging Equipment Operators	030510	Forest Resources Production and Management
Wood Products	454023	Log Graders and Scalers	030510	Forest Resources Production and Management
Wood Products	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460101	Mason/Masonry
Wood Products	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460201	Carpentry/Carpenter
Wood Products	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460301	Electrical and Power Transmission Installation/Installer, General
Wood Products	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460302	Electrician
Wood Products	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460303	Lineworker

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Wood Products	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460399	Electrical and Power Transmission Installers, Other
Wood Products	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460401	Building/Property Maintenance and Management
Wood Products	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460402	Concrete Finishing/Concrete Finisher
Wood Products	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460403	Building/Home/Construction Inspection/Inspector
Wood Products	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460404	Drywall Installation/Drywaller
Wood Products	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460406	Glazier
Wood Products	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460408	Painting/Painter and Wall Coverer
Wood Products	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460410	Roofer
Wood Products	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460412	Building/Construction Site Management/Manager
Wood Products	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460499	Building/Construction Finishing, Management, and Inspection, Other
Wood Products	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460503	Plumbing Technology/Plumber
Wood Products	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460504	Well Drilling/Driller
Wood Products	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	460505	Blasting/Blaster
Wood Products	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	469999	Construction Trades, Other
Wood Products	472031	Carpenters	460201	Carpentry/Carpenter

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Wood Products	472073	Operating Engineers and Other Construction Equipment Operators	490202	Construction/Heavy Equipment/Earthmoving Equipment Operation
Wood Products	472073	Operating Engineers and Other Construction Equipment Operators	490206	Mobil Crane Operation/Operator
Wood Products	472111	Electricians	460302	Electrician
Wood Products	472141	Painters, Construction and Maintenance	460408	Painting/Painter and Wall Coverer
Wood Products	491011	First-Line Supervisors/Managers of Mechanics, Installers, and Repairers	520205	Operations Management and Supervision
Wood Products	493023	Automotive Service Technicians and Mechanics	150803	Automotive Engineering Technology/Technician
Wood Products	493023	Automotive Service Technicians and Mechanics	470604	Automobile/Automotive Mechanics Technology/Technician
Wood Products	493023	Automotive Service Technicians and Mechanics	470612	Vehicle Emissions Inspection and Maintenance Technology/Technician
Wood Products	493023	Automotive Service Technicians and Mechanics	470613	Medium/Heavy Vehicle and Truck Technology/Technician
Wood Products	493023	Automotive Service Technicians and Mechanics	470614	Alternative Fuel Vehicle Technology/Technician
Wood Products	499041	Industrial Machinery Mechanics	470303	Industrial Mechanics and Maintenance Technology
Wood Products	499041	Industrial Machinery Mechanics	470399	Heavy/Industrial Equipment Maintenance Technologies, Other
Wood Products	499042	Maintenance and Repair Workers, General	460412	Building/Construction Site Management/Manager
Wood Products	499043	Maintenance Workers, Machinery	470303	Industrial Mechanics and Maintenance Technology
Wood Products	499043	Maintenance Workers, Machinery	470399	Heavy/Industrial Equipment Maintenance Technologies, Other
Wood Products	499044	Millwrights	470303	Industrial Mechanics and Maintenance Technology
Wood Products	499044	Millwrights	470399	Heavy/Industrial Equipment Maintenance Technologies, Other
Wood Products	499098	Helpers--Installation, Maintenance, and Repair Workers	470303	Industrial Mechanics and Maintenance Technology
Wood Products	511011	First-Line Supervisors/Managers of Production and Operating Workers	520205	Operations Management and Supervision
Wood Products	514031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	480501	Machine Tool Technology/Machinist
Wood Products	514031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	480506	Sheet Metal Technology/Sheetworking

Cluster	SOC Code	SOC Title	CIP Code	CIP Title
Wood Products	514041	Machinists	480501	Machine Tool Technology/Machinist
Wood Products	514041	Machinists	480503	Machine Shop Technology/Assistant
Wood Products	514194	Tool Grinders, Filers, and Sharpeners	480503	Machine Shop Technology/Assistant
Wood Products	517011	Cabinetmakers and Bench Carpenters	480703	Cabinetmaking and Millwork/Millwright
Wood Products	517021	Furniture Finishers	480702	Furniture Design and Manufacturing
Wood Products	517041	Sawing Machine Setters, Operators, and Tenders, Wood	480703	Cabinetmaking and Millwork/Millwright
Wood Products	517042	Woodworking Machine Setters, Operators, and Tenders, Except Sawing	480701	Woodworking, General
Wood Products	517042	Woodworking Machine Setters, Operators, and Tenders, Except Sawing	480703	Cabinetmaking and Millwork/Millwright
Wood Products	517099	Woodworkers, All Other	480701	Woodworking, General
Wood Products	517099	Woodworkers, All Other	480702	Furniture Design and Manufacturing
Wood Products	517099	Woodworkers, All Other	480799	Woodworking, Other
Wood Products	519023	Mixing and Blending Machine Setters, Operators, and Tenders	010401	Agricultural and Food Products Processing
Wood Products	519061	Inspectors, Testers, Sorters, Samplers, and Weighers	150702	Quality Control Technology/Technician
Wood Products	533032	Truck Drivers, Heavy and Tractor-Trailer	490205	Truck and Bus Driver/Commercial Vehicle Operation
Wood Products	533033	Truck Drivers, Light or Delivery Services	490205	Truck and Bus Driver/Commercial Vehicle Operation
Wood Products	537011	Conveyor Operators and Tenders	490299	Ground Transportation, Other
Wood Products	537041	Hoist and Winch Operators	490202	Construction/Heavy Equipment/Earthmoving Equipment Operation
Wood Products	537051	Industrial Truck and Tractor Operators	490299	Ground Transportation, Other