

FRESNO COUNTY LABOR FORCE ANALYSIS

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Prepared for:

FRESNO COUNTY WORKFORCE INVESTMENT BOARD

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INTRODUCTION AND SUMMARY

INTRODUCTION

This report presents information on growing industry clusters in Fresno County and related business demand for selected occupational skills. The report describes characteristics of the labor force and in particular focuses on the skills and employment needs of key population segments such as unemployed and underemployed workers, veterans, the disabled and workers in major ethnic groups.

The industry cluster analysis updates the recent work completed by the CSU Fresno Office of Community and Economic Development, in the report, "San Joaquin Valley Regional Industry Cluster Analysis and Action Plan," published in September 2012. In that report, six major industry clusters were identified and evaluated, including:

- Agriculture
- Energy
- Logistics
- Health Care
- Manufacturing
- Water Technology

The present report updates the analysis of the cluster beyond 2010 and provides projection of job growth and occupational demand to the year 2017, based on data provided by Employment Management Systems Inc. (EMSI).

In addition, the report provides a detailed demographic analysis of the workforce using the Public UMS data, which permits cross-tabulations of survey data collected through the American Community Survey (ACS). The resulting analysis is consistent with published ACS population totals for Fresno County, but provides greater detail on the employment status and skills levels of selected demographic groups.

SUMMARY

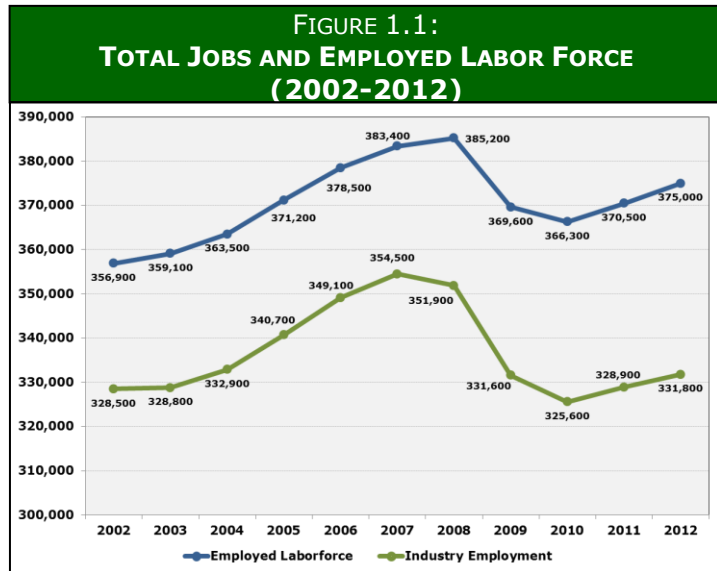
Economic Conditions. The Fresno County unemployment rate improved to 8.0% just prior to the recession in 2006, but reached a high of 16.9% by 2010. It has since declined to an annual average level of about 15.2% in 2012.

Industry Clusters. Agriculture is the largest industry cluster in Fresno County, with more than 71,454 jobs and a concentration 3.9 times the statewide average. Agricultural related jobs have decreased over the past decade but are projected to grow over the next five years. Health care was the second largest cluster with close to 35,000 jobs. Health care increased employment by 16 percent since 2000 and is projected to add another 3,484 jobs between 2012 and 2017. Logistics was the third largest cluster in Fresno County, at 17,480 jobs in 2010. EMSI projects an increase of 1,271 jobs by 2017. Manufacturing was the fourth largest cluster in Fresno with 7,062 jobs in 2010. Energy and Water Technology were the smaller clusters in Fresno County with 3,836 and 2,663 jobs in 2010. Retail, tourism, and professional, scientific, and technical jobs are projected to grow between 2012 and 2017.

1. LOCAL ECONOMIC CONDITIONS

EMPLOYMENT TRENDS

Employment growth in Fresno County was on upward trend until 2007, when it started to shrink. Between 2002 and 2007, the County added 17,000 jobs, reaching a peak of 354,500 wage and salary jobs (Figure 1.1). Job losses from the recession began to occur in 2008 and continued to accelerate in 2009 and 2010, when employment declined to less than 325,600 jobs. The employed labor force, which includes self-employed and out-commuters, followed a very similar pattern with the exception that it started to decline in 2009.



Source: ADE, Inc., California Economic Development Department

The county had 385,200 employed residents in 2008 but during the recession, employment dropped and the number of employed residents declined by 18,900 reaching of 366,300 people in 2010. However, between 2010 and 2012 about 8,700 residents found employment (Figure 1.1).

**TABLE 1.1:
DEMOGRAPHIC AND LABOR FORCE TRENDS**

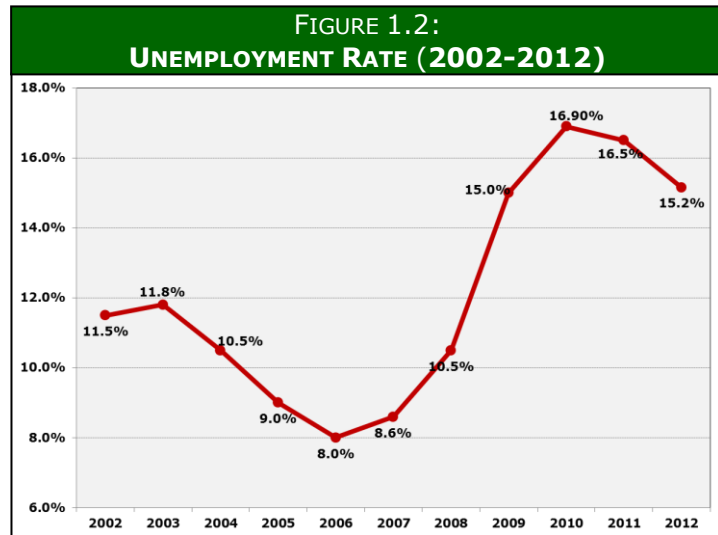
	2002	2012	2002-2012
Population estimates	828,637	946,823	14.3%
Labor Force	403,500	442,500	9.7%
Employed Labor Force	356,900	375,000	5.1%
Employment	328,500	331,800	1.0%

Source: ADE, Inc., Department of Finance, California Economic Development Department

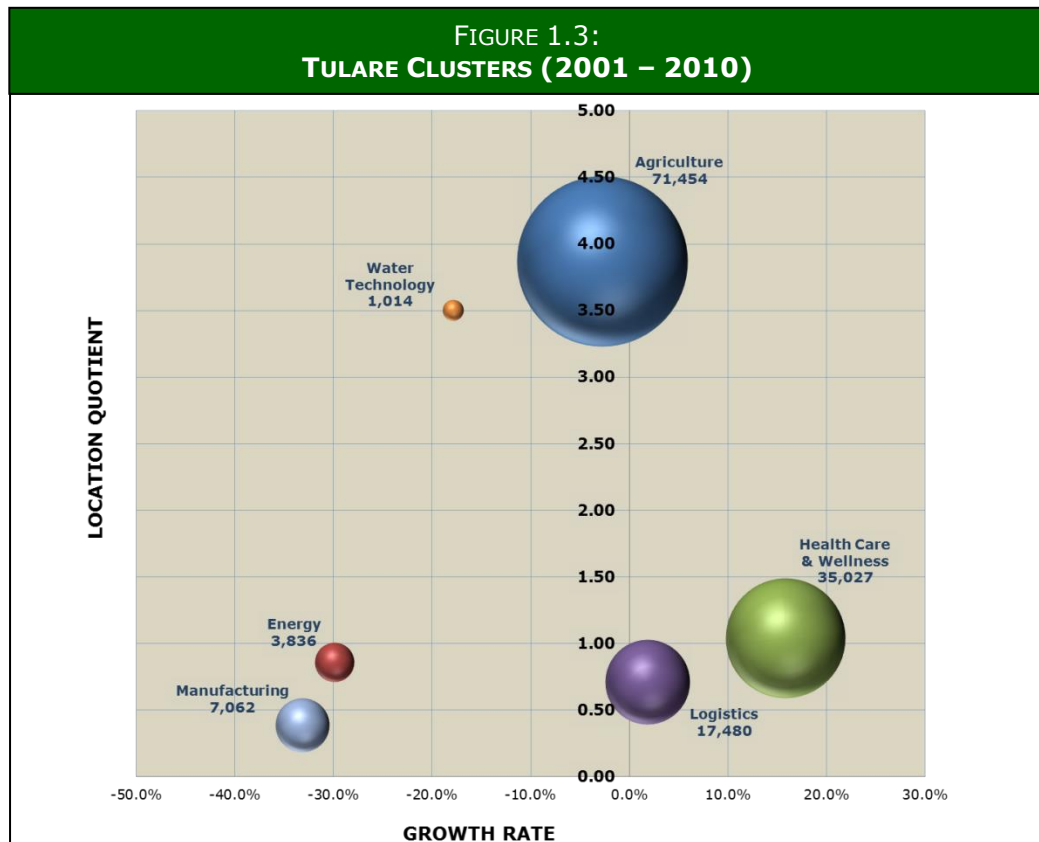
According to the DOF and EDD, population and people over 16 years of age included in the county's labor force increased from 2002 to 2012. Population increased by 14.3 percent, while labor force had a lower increase of 9.7 percent (Table 1.1). It is Important to note that although 442,500 residents were ready to enter the workforce in 2012 only 375,000 found employment (Table 1.1). Additionally, the increase in unemployment rate is highly correlated to the increasing labor force and decreasing job opportunities. The unemployment rate was as low as 8 percent in 2006 but increased to 10.5 percent in 2008 and 16.9 percent in 2010 (Figure 1.2).

The number of wage and salary jobs is close to 25 percent below the size of the labor force in Fresno County. Some of this difference would be due to self-employment, but it is also clear there is a large out-commute for workers from the county to employment centers elsewhere in the Central Valley.

Agriculture was the largest cluster with 71,454 employees in 2010 (Figure 1.3). Health Care with 35,027 employees and Logistics with 17,480 employees were the second and third largest clusters in Fresno. Manufacturing and Energy had 7,062 jobs and 3,836 jobs in 2010, respectively. Water Technology was the smallest cluster with 2,663 employees. Logistics and Health Care were the only clusters with a positive growth rate over the past ten years. On the contrary, Agriculture, Water Technology, Energy, and Manufacturing declined within the last decade. Agriculture is not only the largest cluster but also the highest concentrated cluster at 4 times the State average. Water Technology, although the smallest cluster in the county, is also highly concentrated. Health Care concentration matches the State average in Fresno. Other clusters are all below average (see Appendix A for industry cluster definitions by NAICS code).



Source: ADE, Inc., California Economic Development Department



Source: IMPLAN CEW

2. EMPLOYMENT AND OCCUPATION PROJECTIONS

This section of the report provides the employment projections by cluster for the 2012 to 2017 period, as well as the related occupational demand by employers. The employment and occupational projections have been prepared by EMSI. The industry cluster definitions follow the Regional San Joaquin Valley analysis completed in 2012 (see Appendix B).¹

- Agriculture
- Energy
- Health and Wellness
- Logistics
- Manufacturing
- Water Technology

The value of industry clusters is that they generally represent the economic base of the region, in which products and services are exported out of the county and draw income into the county. In this way, they create worker incomes that then support local serving industries such as retail and services businesses, which may also see employment growth. In the case of health and wellness, this cluster is not an export sector, but it is a growing industry with many high paid jobs and warrants attention on that basis.

EMPLOYMENT PROJECTIONS

Fresno County had a job total of 338,710 in 2012. EMSI projects an additional 17,931 new jobs by 2017, with the total employment count reaching 356,641 during the 2012 to 2017 projection period (Table 3.1). While Table 3.1 presents the jobs projections in major NAICS sectors, the following points highlight the cluster projections which are provided in later tables of this chapter.

- Agriculture and Health and Wellness in Fresno County are the top growing clusters with a considerable projected employment growth between 2012 and 2017.
- Agriculture had 85,658 employees in total by 2012 and EMSI foresees an additional 4,150 net new jobs by the end of the projection period in 2017. The top growing sub-clusters for Agriculture are Distribution and Support. While the Production and Processing sub-clusters show changes ranging from about 70 to over 200 jobs, Distribution and Support will provide 2,080 and 1,780 new jobs, respectively.
- The Health and Wellness cluster and the Energy cluster are the second and third growing clusters with 3,840 jobs and 2,580 jobs respectively. The Health and Wellness cluster does not include the Social Assistance jobs (Table 3.1).

¹ Applied Development Economics. San Joaquin Valley Regional Industry Cluster Analysis and Action Plan. CSU Fresno Office of Community and Economic Development. September 2012.

- EMSI estimates 1,260 new jobs for the Logistics cluster mainly related to the Air, Rail, Water Transportation and Freight and Warehousing (Table 2.1).
- The Manufacturing cluster in Fresno County is projected to decline with 569 jobs.
- Non-cluster related employment with projected gains include retail, other services, tourism (accommodations, food services, arts and entertainment), and professional, scientific, and technical services.

**TABLE 2.1:
EMPLOYMENT PROJECTIONS BY MAJOR INDUSTRIES, FRESNO COUNTY**

NAICS Code	Description	2012 Jobs	2017 Jobs	Change	% Change
62	Health Care and Social Assistance	37,148	40,378	3,230	8.7%
56	Administrative and Support and Waste Management and Remediation Services	16,308	18,899	2,591	15.9%
44	Retail Trade	33,677	35,914	2,237	6.6%
72	Accommodation and Food Services	24,524	26,671	2,147	8.8%
54	Professional, Scientific, and Technical Services	9,782	11,438	1,656	16.9%
42	Wholesale Trade	12,682	14,217	1,535	12.1%
81	Other Services (except Public Administration)	18,990	20,434	1,444	7.6%
48	Transportation and Warehousing	9,188	10,485	1,297	14.1%
71	Arts, Entertainment, and Recreation	3,147	3,744	597	19.0%
90	Government	62,574	63,072	498	0.8%
22	Utilities	2,039	2,519	480	23.5%
53	Real Estate and Rental and Leasing	4,031	4,496	465	11.5%
61	Educational Services (Private)	4,395	4,785	390	8.9%
23	Construction	12,104	12,427	323	2.7%
52	Finance and Insurance	8,739	9,002	263	3.0%
99	Un classified Industry	689	783	94	13.6%
51	Information	3,750	3,739	(11)	(0.3%)
21	Mining, Quarrying, and Oil and Gas Extraction	208	185	(23)	(11.1%)
11	Agriculture, Forestry, Fishing and Hunting	49,263	49,220	(43)	(0.1%)
55	Management of Companies and Enterprises	1,980	1,575	(405)	(20.5%)
31	Manufacturing	23,492	22,658	(834)	(3.6%)
TOTAL		338,710	356,641	17,931	5.3%

Source: EMSI 2013.2 Class of Worker Dataset QCEW Employees

AGRICULTURE CLUSTER

Agriculture oriented jobs include activities such as farm production, food processing, distribution, and support services. We have grouped the agriculture related industries into four sub-clusters based on the significant role they play in the agriculture economy.

Food and farm product-related wholesale trade activities, transportation services, and warehousing jobs are grouped as Distribution. Retail related jobs in grocery and supermarkets establishments are also part

of the Distribution group. The Distribution sub-sector will add 2,086 new positions by 2017 with 17 percent growth rate. In this group, Other Grocery and Related Products Merchant Wholesalers (NAICS 424490) industry will add 663 net new jobs by 2017. In addition, EMSI reports Supermarkets and Other Grocery Stores except Convenience stores (NAICS 445110) are expected to increase employment by 489 jobs. Convenience stores, on the other hand, will lose 47 employees by 2017. On the Contrary, General Line Grocery Merchant Wholesalers (NAICS 42441) are also estimated to decline by 81 employees (Table 2.2).

**TABLE 2.2:
JOB PROJECTIONS BY AGRICULTURE CLUSTER – DISTRIBUTION**

NAICS Code	Description	2012 Jobs	2017 Jobs	Change	% Change
424490	Other Grocery and Related Products Merchant Wholesalers	1,655	2,318	663	40%
445110	Supermarkets and Other Grocery (except Convenience) Stores	5,287	5,776	489	9%
424480	Fresh Fruit and Vegetable Merchant Wholesalers	1,218	1,557	339	28%
424910	Farm Supplies Merchant Wholesalers	1,029	1,225	196	19%
424420	Packaged Frozen Food Merchant Wholesalers	207	339	132	64%
424810	Beer and Ale Merchant Wholesalers	447	508	61	14%
445299	All Other Specialty Food Stores	213	269	56	26%
445291	Baked Goods Stores	79	117	38	48%
445292	Confectionery and Nut Stores	110	145	35	32%
424820	Wine/Distilled Alcoholic Bev. Merchant Wholesalers	127	160	33	26%
424510	Grain and Field Bean Merchant Wholesalers	131	163	32	24%
445210	Meat Markets	191	222	31	16%
445310	Beer, Wine, and Liquor Stores	301	329	28	9%
488991	Packing and Crating	293	316	23	8%
424430	Dairy Product (except Dried or Canned) Merchant Wholesalers	73	94	21	29%
424450	Confectionery Merchant Wholesalers	210	230	20	10%
424470	Meat and Meat Product Merchant Wholesalers	144	161	17	12%
445120	Convenience Stores	393	346	(47)	(12%)
424410	General Line Grocery Merchant Wholesalers	337	256	(81)	(24%)
TOTAL		12,445	14,531	2,086	17%

Source: EMSI 2013.2 Class of Worker Dataset QCEW Employees

In the Processing group we have included activities related to manufacturing, packaging, and food and beverage processing. Food Manufacturing (NAICS 311) will add 39 jobs in total; however, the Animal Slaughtering and Processing sector (NAICS 3116) is estimated to have the highest employment change of 819 by 2017. These industries are comprised of establishments that engage in cutting and packing of meats. EMSI also estimates a large job loss of 467 employees in Dried and Dehydrated Food Manufacturing (NAICS 311423) industry (Table 2.3).

**TABLE 2.3:
JOB PROJECTIONS BY AGRICULTURE CLUSTER – PROCESSING**

NAICS Code	Description	2012 Jobs	2017 Jobs	Change	% Change
311615	Poultry Processing	3,435	3,795	360	10%
311611	Animal (except Poultry) Slaughtering	1,745	2,042	297	17%
311612	Meat Processed from Carcasses	375	537	162	43%
321920	Wood Container and Pallet Manufacturing	347	437	90	26%
326111	Plastics Bag and Pouch Manufacturing	94	155	61	65%
313230	Nonwoven Fabric Mills	39	88	49	126%
322212	Folding Paperboard Box Manufacturing	292	340	48	16%
312130	Wineries	450	485	35	8%
311911	Roasted Nuts and Peanut Butter Manufacturing	124	153	29	23%
312140	Distilleries	184	196	12	7%
321113	Sawmills	11	23	12	109%
311821	Cookie and Cracker Manufacturing	128	139	11	9%
311111	Dog and Cat Food Manufacturing	110	100	(10)	(9%)
311211	Flour Milling	57	46	(11)	(19%)
311514	Dry, Condensed, & Evaporated Dairy Product Mfg	88	76	(12)	(14%)
311830	Tortilla Manufacturing	592	573	(19)	(3%)
311823	Dry Pasta Manufacturing	56	32	(24)	(43%)
311119	Other Animal Food Manufacturing	79	34	(45)	(57%)
311812	Commercial Bakeries	320	270	(50)	(16%)
311811	Retail Bakeries	174	116	(58)	(33%)
311511	Fluid Milk Manufacturing	222	98	(124)	(56%)
312111	Soft Drink Manufacturing	475	343	(132)	(28%)
311423	Dried and Dehydrated Food Manufacturing	1,155	688	(467)	(40%)
TOTAL		10,552	10,766	214	2%

Source: EMSI 2013.2 Class of Worker Dataset QCEW Employees

The Production sub-cluster includes animal and crop production activities. EMSI expects significantly lower employment change of 73 jobs for this sub-cluster. Crop production with a loss of 355 jobs and crop harvesting, farm management, and soil preparation and planting with a loss of 481 jobs are the reason for this sub-cluster's shrinking size (Table 2.4).

**TABLE 2.4:
JOB PROJECTIONS BY AGRICULTURE CLUSTER – PRODUCTION**

NAICS Code	Description	2012 Jobs	2017 Jobs	Change	% Change
115115	Farm Labor Contractors and Crew Leaders	19,920	22,383	678	3%
115114	Postharvest Crop Activities (except Cotton Ginning)	5,883	6,689	344	5%
113210	Forest Nurseries & Gathering of Forest Product	37	121	25	26%
115210	Support Activities for Animal Production	102	100	(21)	(17%)
112	Animal Production	2,050	2,104	(56)	(3%)
115111	Cotton Ginning	65	37	(61)	(62%)
115113	Crop Harvesting, Primarily by Machine	222	102	(117)	(53%)
115116	Farm Management Services	582	723	(129)	(15%)
115112	Soil Preparation, Planting, and Cultivating	1,056	897	(235)	(21%)
111	Crop Production	15,977	16,603	(355)	(2%)
TOTAL		45,894	49,759	73	0%

Source: EMSI 2013.2 Class of Worker Dataset QCEW Employees

The final group of industries under the Agriculture cluster includes all establishments that support agriculture related activities. A diverse set of services from water utilities, construction, business support services, professional services, fertilizer and chemicals, and repair services are all included under the supporting services group. EMSI anticipates a 1,780 increase in jobs between 2012 and 2017. Temporary Help Services (NAICS 561320) with 1,183 net new jobs is the top hiring industry (Table 2.5).

**TABLE 2.5:
JOB PROJECTIONS BY AGRICULTURE CLUSTER – SUPPORT**

NAICS Code	Description	2012 Jobs	2017 Jobs	Change	% Change
561320	Temporary Help Services	4,290	5,473	1,183	28%
237110	Water and Sewer Line and Related Structures Construction	770	951	181	24%
561110	Office Administrative Services	1,147	1,263	116	10%
541613	Marketing Consulting Services	149	246	97	65%
811310	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	520	611	91	18%
541940	Veterinary Services	457	542	85	19%
221310	Water Supply and Irrigation Systems	132	191	59	45%
541890	Other Services Related to Advertising	381	430	49	13%
333111	Farm Machinery and Equipment Manufacturing	535	583	48	9%
541380	Testing Laboratories	344	383	39	11%
333993	Packaging Machinery Manufacturing	431	468	37	9%
562219	Other Nonhazardous Waste Treatment and Disposal	71	105	34	48%
423840	Industrial Supplies Merchant Wholesalers	204	234	30	15%
541614	Process, Physical Distribution, and Logistics Consulting Services	58	86	28	48%
561710	Exterminating and Pest Control Services	415	442	27	7%
541840	Media Representatives	52	75	23	44%
423850	Service Establishment Equipment and Supplies Merchant Wholesalers	106	125	19	18%
551112	Offices of Other Holding Companies	28	38	10	36%
333924	Industrial Truck, Tractor, Trailer, and Stacker Machinery Manufacturing	50	36	(14)	(28%)
423830	Industrial Machinery and Equipment Merchant Wholesalers	647	628	(19)	(3%)
325320	Pesticide and Other Agricultural Chemical Manufacturing	96	60	(36)	(38%)
444220	Nursery, Garden Center, and Farm Supply Stores	196	151	(45)	(23%)
444210	Outdoor Power Equipment Stores	118	64	(54)	(46%)
561730	Landscaping Services	1,282	1,225	(57)	(4%)
325311	Nitrogenous Fertilizer Manufacturing	75	14	(61)	(81%)
333911	Pump and Pumping Equipment Manufacturing	449	369	(80)	(18%)
TOTAL		12,975	14,755	1,780	14%

Source: EMSI 2013.2 Class of Worker Dataset QCEW Employees

THE ENERGY CLUSTER

The Energy cluster will add 2,587 new job opportunities by 2017. This cluster is comprised of establishments engaged in alternative energy generation, production, and distribution, energy efficiency, equipment manufacturing, petroleum production and distribution, and power generation and transmission. EMSI estimates a large improvement in jobs in the Professional, Scientific, and Technical Services (NAICS 541). This industry will hire 1,216 persons by 2017. Establishments related to this industry provide legal services, accounting, engineering, computer system design, management, scientific research and other professional services. Other industries with a considerable positive or negative change are primarily related to the Utilities and Construction sectors (NAICS 22 and NAICS 23) (Table 2.6).

**TABLE 2.6:
JOB PROJECTIONS BY CLUSTER – ENERGY**

NAICS Code	Description	2012 Jobs	2017 Jobs	Change	% Change	Sub-Cluster
221112	Fossil Fuel Electric Power Generation	1,500	2,186	686	46%	6
23821	Electrical Contractors and Other Wiring Installation Contractors	1,467	1,855	388	26%	3
237110	Water and Sewer Line and Related Structures Construction	770	951	181	24%	1
23822	Plumbing, Heating, and Air-Conditioning Contractors	1,552	1,727	175	11%	3
811310	Commercial and Industrial Machinery & Equip. (except Automotive and Electronic) Repair and Maintenance	520	611	91	18%	7
541	Professional, Scientific, and Technical Services	296	377	81	27%	7
533110	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	50	78	28	56%	7
811219	Other Electronic and Precision Equipment Repair and Maintenance	62	86	24	39%	7
424710	Petroleum Bulk Stations and Terminals	113	135	22	19%	5
211111	Crude Petroleum and Natural Gas Extraction	87	103	16	18%	5
238160	Roofing Contractors	376	389	13	3%	1
334512	Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	18	29	11	61%	4
423720	Plumbing and Heating Equipment and Supplies (Hydronics) Merchant Wholesalers	223	230	7	3%	2
423610	Electrical Apparatus and Equipment, Wiring Supplies, and Related Equipment Merchant Wholesalers	211	208	(3)	(1%)	2
423690	Other Electronic Parts and Equipment Merchant Wholesalers	46	38	(8)	(17%)	2
311223	Other Oilseed Processing	25	16	(9)	(36%)	1
221210	Natural Gas Distribution	355	273	(82)	(23%)	6
23831	Drywall and Insulation Contractors	821	458	(363)	(44%)	3
TOTAL		18,032	20,610	2,578	14%	
Energy Sub-Clusters						
1 - Alternative Energy Generation/Production		5 - Petroleum Production & Petroleum Distribution				
2 - Alternative Energy Distribution		6 - Power Generation and Transmission				
3 - Energy Efficiency		7 - Research & Services				
4 - Equipment Manufacturing						

Source: EMSI 2013.2 Class of Worker Dataset QCEW Employees

HEALTH AND WELLNESS CLUSTER

This cluster is projected to have a positive increase in its employment by adding 3,484 additional employees. Ambulatory and health care services (NAICS 621), Hospitals (NAICS 622), Nursing and Residential Care Facilities (NAICS 623), and Health and Personal Care Stores (NAICS 446) are covered under this cluster. Other sectors such as medical device manufacturing, pharmaceuticals, supplies and services, and wellness and fitness services are part of this cluster. In Fresno County, Offices of Physicians (NAICS 621111) and Health Maintenance Organization (HMO) medical centers (NAICS 621491) provide 966 jobs and 575 employment opportunities respectively. Workers in the latter industry comprise of physicians and health practitioners who provide outpatient medical services to HMOs. In total, the Health Care Delivery sub-cluster adds 3,141 jobs by 2017 (Table 2.7).

TABLE 2.7:
JOB PROJECTIONS BY CLUSTER – HEALTH AND WELLNESS

NAICS Code	Description	2012 Jobs	2017 Jobs	Change	% Change	Sub-Cluster
621111	Offices of Physicians (except Mental Health Specialists)	7,044	8,010	966	14%	1
621491	HMO Medical Centers	1,078	1,653	575	53%	1
622110	General Medical and Surgical Hospitals (Private)	10,437	10,918	481	5%	1
623110	Nursing Care Facilities	3,596	3,872	276	8%	1
446110	Pharmacies and Drug Stores	1,961	2,160	199	10%	5
621610	Home Health Care Services	880	1,077	197	22%	1
623311	Continuing Care Retirement Communities	635	801	166	26%	1
623220	Residential Mental Health & Substance Abuse Facilities	518	665	147	28%	1
424210	Drugs and Druggists' Sundries Merchant Wholesalers	193	302	109	56%	4
623312	Homes for the Elderly	901	1,009	108	12%	1
621512	Diagnostic Imaging Centers	254	352	98	39%	1
621340	Physical, Occupational Speech Therapists & Audiologist	438	518	80	18%	1
621910	Ambulance Services	566	631	65	11%	1
621492	Kidney Dialysis Centers	238	282	44	18%	1
621410	Family Planning Centers	165	207	42	25%	1
624310	Vocational Rehabilitation Services	895	934	39	4%	1
446191	Food (Health) Supplement Stores	93	126	33	35%	5
446199	All Other Health and Personal Care Stores	171	197	26	15%	5
621330	Offices of Mental Health Practitioners (except Physician)	174	199	25	14%	1
621498	All Other Outpatient Care Centers	152	168	16	11%	1
621493	Freestanding Ambulatory Surgical & Emergency Ctrs	127	138	11	9%	1
339113	Surgical Appliance and Supplies Manufacturing	429	439	10	2%	2
813212	Voluntary Health Organizations	138	148	10	7%	4
325411	Medicinal and Botanical Manufacturing	26	33	7	27%	3
621511	Medical Laboratories	163	149	(14)	(9%)	1
339116	Dental Laboratories	70	46	(24)	(34%)	2
423450	Medical, Dental, Hospital Equip. Merchant Wholesalers	46	19	(27)	(59%)	4
621210	Offices of Dentists	2,186	2,147	(39)	(2%)	1
621420	Outpatient Mental Health & Substance Abuse Centers	248	198	(50)	(20%)	1
623990	Other Residential Care Facilities	597	505	(92)	(15%)	1
TOTAL		34,419	37,903	3,484	10%	

Health and Wellness Sub-Clusters

- | | |
|---|----------------------------------|
| 1 - Health Care Delivery | 4 - Supplies and Services |
| 2 - Medical Device Manufacturing | 5 - Wellness and Fitness |
| 3 - Pharmaceuticals | |

Source: EMSI 2013.2 Class of Worker Dataset QCEW Employees

LOGISTICS CLUSTER

Other Support Activities for Air Transportation (NAICS 488190) will add 394 jobs. This industry shows the highest growth since 2012 compared to other logistics related sectors. Activities that support long distance or local freight or trucking services show positive change by 2017. General or Specialized Freight and Trucking (NAICS 484110 and NAICS 484220 and NAICS 484121) will add a total of 569 new jobs. Transit and Ground Passenger Transportation (NAICS 485) promise an encouraging employment forecast of 102 new jobs (Table 2.8).

**TABLE 2.8:
JOB PROJECTIONS BY CLUSTER – LOGISTICS**

NAICS Code	Description	2012 Jobs	2017 Jobs	Change	% Change	Sub-Cluster
488190	Other Support Activities for Air Transportation	858	1,252	394	46%	1
484110	General Freight Trucking, Local	1,478	1,711	233	16%	2
484220	Specialized Freight (except Used Goods) Trucking, Local	1,055	1,287	232	22%	2
484121	General Freight Trucking, Long-Distance, Truckload	751	855	104	14%	2
485991	Special Needs Transportation	193	295	102	53%	4
488119	Other Airport Operations	140	211	71	51%	1
484122	General Freight Trucking, Long-Distance, Less Than Truckload	561	615	54	10%	2
488410	Motor Vehicle Towing	243	292	49	20%	3
493120	Refrigerated Warehousing and Storage	194	238	44	23%	2
492110	Couriers and Express Delivery Services	937	970	33	4%	3
541614	Process, Physical Distribution, and Logistics Consulting Services	58	86	28	48%	2
484210	Used Household and Office Goods Moving	118	142	24	20%	2
488490	Other Support Activities for Road Transportation	69	93	24	35%	3
488991	Packing and Crating	293	316	23	8%	3
481111	Scheduled Passenger Air Transportation	598	609	11	2%	1
485210	Interurban and Rural Bus Transportation	74	63	(11)	(15%)	2
485510	Charter Bus Industry	32	16	(16)	(50%)	2
541910	Marketing Research and Public Opinion Polling	125	91	(34)	(27%)	2
484230	Specialized Freight (except Used Goods) Trucking, Long-Distance	64	26	(38)	(59%)	2
485410	School and Employee Bus Transportation	158	102	(56)	(35%)	2
TOTAL		7,999	9,270	1,271	16%	
Logistics Sub-Clusters						
1 - Air, Rail, Water Transportation		3 - Other Services				
2 - Freight & Warehousing		4 - Transit				

Source: EMSI 2013.2 Class of Worker Dataset QCEW Employees

WATER TECHNOLOGY CLUSTER

In Fresno County, industries under the Water Technology cluster that are expected to change are related to manufacturing and wholesalers of farm machinery, farm supplies, industrial machinery, plastic pipes, and pumping equipment (Table 2.9).

**TABLE 2.9:
JOB PROJECTIONS BY CLUSTER – WATER TECHNOLOGY**

NAICS Code	Description	2012 Jobs	2017 Jobs	Change	% Change
333911	Pump and Pumping Equipment Manufacturing	150	124	26	17%
423830	Industrial Machinery and Equipment Merchant Wholesalers	216	211	5	2%
326122	Plastics Pipe and Pipe Fitting Manufacturing	27	42	(15)	(57%)
333111	Farm Machinery and Equipment Manufacturing	179	196	(17)	(10%)
424910	Farm Supplies Merchant Wholesalers	343	412	(68)	(20%)
TOTAL		915	985	(70)	(8%)

Source: QCEW Employees - EMSI 2013.2 Class of Worker

MANUFACTURING CLUSTER

With an anticipated large job loss, establishments included as part of the Manufacturing cluster show a total 667 employment decline between 2012 and 2017. (Industries that would grow or decline by less than 10 employees are not listed.) (Table 2.10)

**TABLE 2.10:
JOB PROJECTIONS BY CLUSTER – MANUFACTURING**

NAICS Code	Description	2012 Jobs	2017 Jobs	Change	% Change
332312	Fabricated Structural Metal Manufacturing	402	484	82	20.4%
325120	Industrial Gas Manufacturing	179	257	78	43.6%
326150	Urethane and Other Foam Product (except Polystyrene) Manufacturing	123	184	61	49.6%
333298	All Other Industrial Machinery Manufacturing	36	75	39	108.3%
333923	Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	84	121	37	44.0%
333993	Packaging Machinery Manufacturing	431	468	37	8.6%
333999	All Other Miscellaneous General Purpose Machinery Manufacturing	146	183	37	25.3%
332710	Machine Shops	313	344	31	9.9%
314999	All Other Miscellaneous Textile Product Mills	44	71	27	61.4%
314912	Canvas and Related Product Mills	90	111	21	23.3%
327331	Concrete Block and Brick Manufacturing	22	38	16	72.7%
332812	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	61	76	15	24.6%
336311	Carburetor, Piston, Piston Ring, and Valve Manufacturing	42	57	15	35.7%
339920	Sporting and Athletic Goods Manufacturing	87	102	15	17.2%
334513	Instruments and Related Products Manufacturing for Measuring, Displaying, and Controlling Industrial Process Variables	53	67	14	26.4%
334419	Other Electronic Component Manufacturing	19	31	12	63.2%
336399	All Other Motor Vehicle Parts Manufacturing	32	42	10	31.3%
331524	Aluminum Foundries (except Die-Casting)	55	45	(10)	(18.2%)
333613	Mechanical Power Transmission Equipment Manufacturing	35	24	(11)	(31.4%)
337920	Blind and Shade Manufacturing	46	34	(12)	(26.1%)
333924	Industrial Truck, Tractor, Trailer, and Stacker Machinery Manufacturing	50	36	(14)	(28.0%)
314129	Other Household Textile Product Mills	25	10	(15)	(60.0%)

NAICS Code	Description	2012 Jobs	2017 Jobs	Change	% Change
332313	Plate Work Manufacturing	73	58	(15)	(20.5%)
339950	Sign Manufacturing	71	56	(15)	(21.1%)
323112	Commercial Flexographic Printing	54	37	(17)	(31.5%)
332116	Metal Stamping	51	34	(17)	(33.3%)
336312	Gasoline Engine and Engine Parts Manufacturing	36	19	(17)	(47.2%)
332919	Other Metal Valve and Pipe Fitting Manufacturing	34	15	(19)	(55.9%)
322130	Paperboard Mills	33	12	(21)	(63.6%)
339999	All Other Miscellaneous Manufacturing	76	55	(21)	(27.6%)
333120	Construction Machinery Manufacturing	52	29	(23)	(44.2%)
323114	Quick Printing	42	16	(26)	(61.9%)
323113	Commercial Screen Printing	59	31	(28)	(47.5%)
336214	Travel Trailer and Camper Manufacturing	59	27	(32)	(54.2%)
325320	Pesticide and Other Agricultural Chemical Manufacturing	96	60	(36)	(37.5%)
336211	Motor Vehicle Body Manufacturing	201	160	(41)	(20.4%)
327320	Ready-Mix Concrete Manufacturing	176	127	(49)	(27.8%)
334220	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	1,308	1,254	(54)	(4.1%)
332813	Electroplating, Plating, Polishing, Anodizing, and Coloring	132	77	(55)	(41.7%)
326199	All Other Plastics Product Manufacturing	247	191	(56)	(22.7%)
325311	Nitrogenous Fertilizer Manufacturing	75	14	(61)	(81.3%)
324122	Asphalt Shingle and Coating Materials Manufacturing	151	68	(83)	(55.0%)
337110	Wood Kitchen Cabinet and Countertop Manufacturing	104	15	(89)	(85.6%)
321911	Wood Window and Door Manufacturing	205	104	(101)	(49.3%)
323110	Commercial Lithographic Printing	247	109	(138)	(55.9%)
327211	Flat Glass Manufacturing	164	26	(138)	(84.1%)
TOTAL		6,121	5,454	(667)	(10.9%)

Source: EMSI 2013.2 Class of Worker Dataset QCEW Employees

OCCUPATIONAL DEMAND BY CLUSTER

To assess the projected occupational demand created by employment increase in any of the above clusters, we tabulated the occupational staffing patterns for each of clusters. EMSI gives us the ability to identify specific occupations that will create the highest number of jobs between 2012 and 2017.

Analyzing the staffing pattern for the county provides knowledge of the future demand for workforce training and educational requirements. Please note that at this stage of the report we are gathering a list of growing occupations at the cluster level and not at the sub-groups level under each cluster.

AGRICULTURE CLUSTER

Heavy & Tractor-Trailer Truck Drivers (SOC 53-3032) is the largest growing agriculture related occupation in the county with 369 new persons by 2017. Laborers & Freight, Stock & Material Movers (SOC 53-7062) is the second largest occupation to employ 355 anticipated persons. The third occupational category with 219 new employees is the Meat, Poultry, and Fish Cutters and Trimmers (SOC 51-3022). This table shows that occupational estimates are corresponding to the employment projection tables presented in the previous section. As mentioned before, distribution is the top growing sub-cluster under Agriculture and the growing occupational trend responds to this projection as well (Table 2.11).

**TABLE 2.11:
AGRICULTURE CLUSTER**

SOC	OCCUPATION	EMPLOYED IN INDUSTRY GROUP (2012)	EMPLOYED IN INDUSTRY GROUP (2017)	CHANGE	% CHANGE	MEDIAN HOURLY EARNINGS	EDUCATION LEVEL*
53-3033	Heavy and Tractor-Trailer Truck Drivers	2,066	2,450	384	19%	\$17.44	1
53-7063	Laborers and Freight, Stock, and Material Movers, Hand	2,104	2,459	355	17%	\$11.74	1
51-3023	Meat, Poultry, and Fish Cutters and Trimmers	1,208	1,448	240	20%	\$10.20	1
41-2012	Cashiers	2,590	2,829	239	9%	\$9.56	1
41-4012	Sales Reps, Wholesale and Manufacturing, Except Technical and Scientific Products	628	810	182	29%	\$26.05	2
43-9062	Office Clerks, General	1,260	1,442	182	14%	\$14.08	1
51-3023	Slaughterers and Meat Packers	1,849	2,029	180	10%	10.39	2
53-3032	Driver/Sales Workers	699	831	132	19%	\$12.43	1
53-7065	Packers and Packagers, Hand	1,725	1,852	127	7%	\$9.07	1
43-4052	Customer Service Representatives	903	1,028	125	14%	\$48.06	1
49-3011	Aircraft Mechanics & Srvc Techs	462	578	116	25%	\$23.04	5
43-5081	Stock Clerks and Order Fillers	1,094	1,189	95	9%	\$10.76	1
47-2061	Construction Laborers	273	341	68	25%	\$16.75	1
53-3033	Light Truck or Delivery Services Drivers	365	431	66	18%	\$13.57	1
51-3021	Butchers and Meat Cutters	595	660	65	11%	\$12.10	3
51-2093	Team Assemblers	344	408	64	19%	\$11.80	2
49-9042	Industrial Machinery Mechanics	463	462	53	11%	\$21.69	3
41-2031	Retail Salespersons	252	297	45	18%	\$10.09	1
13-1078	H/R, Training, and Labor Relations Specialists, All Other	140	182	42	30%	\$28.89	7
35-2021	Food Preparation Workers	395	434	39	10%	\$9.09	1
41-1011	First-Line Supervisors of Retail Sales Workers	318	356	38	12%	\$18.17	4

SOC	OCCUPATION	EMPLOYED IN INDUSTRY GROUP (2012)	EMPLOYED IN INDUSTRY GROUP (2017)	CHANGE	% CHANGE	MEDIAN HOURLY EARNINGS	EDUCATION LEVEL*
43-1011	First-Line Supervisors of Office and Administrative Support Workers	276	312	36	13%	\$23.16	4
35-3021	Combined Food Preparation and Serving Workers, Including Fast Food	290	325	35	12%	\$9.00	1
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	198	241	43	22%	\$22.40	5
41-9011	Demonstrators and Product Promoters	382	416	34	9%	\$11.12	1
29-2056	Veterinary Technologists and Technicians	115	146	31	27%	\$13.24	6
51-9062	Inspectors, Testers, Sorters, Samplers, and Weighers	458	488	30	7%	\$10.62	2
53-1031	First-Line Supervisors of Transport. & Material-Moving Machine & Vehicle Operators	150	180	30	20%	\$24.51	4
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	132	162	30	23%	\$21.00	4
45-2042	Graders and Sorters, Agricultural Products	913	942	29	3%	\$8.92	1
43-5112	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	216	244	28	13%	\$10.41	1
51-2099	Assemblers and Fabricators, All Other	115	140	25	22%	\$10.50	2
49-9071	Maintenance and Repair Workers, General	104	128	24	23%	\$17.44	2
39-6011	Baggage Porters and Bellhops	30	53	23	77%	\$8.76	1
43-9051	Mail Clerks and Mail Machine Operators, Except Postal Service	207	229	22	11%	\$11.99	1
43-5032	Dispatchers, Except Police, Fire, and Ambulance	145	167	22	15%	\$16.16	2
53-6099	Transportation Workers, All Other	53	74	21	40%	\$13.47	1
11-2022	Sales Managers	105	126	21	20%	\$41.87	8
41-1012	First-Line Supervisors of Non-Retail Sales Workers	87	108	21	24%	\$29.15	4
51-8031	Water and Wastewater Treatment Plant and System Operators	44	64	20	45%	\$21.74	3
43-4171	Receptionists and Information Clerks	169	189	20	12%	\$12.35	1
51-9399	Production Workers, All Other	96	116	20	21%	\$10.61	2
43-5072	Shipping, Receiving, and Traffic Clerks	350	369	19	5%	\$12.59	1
37-2021	Pest Control Workers	290	309	19	7%	\$14.28	2
47-2073	Operating Engineers and Other Construction Equip. Operators	65	84	19	29%	\$29.51	2
49-9071	Maintenance and Repair Workers, General	130	149	19	15%	17.44	2
53-7052	Industrial Truck and Tractor Operators	1,191	1,210	19	2%	\$11.77	1
53-7061	Cleaners of Vehicles and Equipment	71	90	19	27%	\$9.14	1
49-2091	Avionics Technicians	59	78	19	32%	\$19.52	5
51-7042	Woodworking Machine Setters, Operators, and Tenders, Except Sawing	55	73	18	33%	12.36	1
29-1131	Veterinarians	79	96	17	22%	\$34.85	9
43-4151	Order Clerks	85	102	17	20%	\$15.00	1

SOC	OCCUPATION	EMPLOYED IN INDUSTRY GROUP (2012)	EMPLOYED IN INDUSTRY GROUP (2017)	CHANGE	% CHANGE	MEDIAN HOURLY EARNINGS	EDUCATION LEVEL*
31-1011	Home Health Aides	53	70	17	32%	\$9.62	1
43-5011	Cargo and Freight Agents	85	102	17	20%	\$17.54	1
41-3099	Sales Representatives, Services, All Other	145	161	16	11%	\$18.47	1
29-2061	Licensed Practical and Licensed Vocational Nurses	47	63	16	34%	\$21.68	5
27-1026	Merchandise Displayers and Window Trimmers	54	69	15	28%	\$14.01	2
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	49	64	15	31%	\$27.00	4
25-3999	Teachers and Instructors, All Other	62	76	14	23%	\$18.30	7
43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	103	117	14	14%	\$19.17	1
47-2152	Plumbers, Pipefitters, and Steamfitters	55	69	14	25%	\$23.94	3
31-1012	Nursing Aides, Orderlies, and Attendants	43	57	14	33%	\$12.17	5
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	174	188	14	8%	\$23.98	3
51-4041	Machinists	135	149	14	10%	\$16.76	3
47-2151	Pipelayers	40	53	13	33%	\$18.06	1
13-1111	Management Analysts	68	81	13	19%	\$33.26	8
49-9071	Maintenance and Repair Workers, General	165	178	13	8%	\$17.44	2
37-1012	First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	15	28	13	87%	17.67	4
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	53	66	13	25%	\$31.20	4
11-3071	Transportation, Storage, and Distribution Managers	68	80	12	18%	\$38.81	4
43-5061	Production, Planning, and Expediting Clerks	71	83	12	17%	\$20.37	2
51-4121	Farm Equipment Mechanics and Service Technicians	159	171	12	8%	\$17.02	5
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	24	36	12	50%	\$12.22	2
13-2011	Accountants and Auditors	50	62	12	24%	\$29.59	7
13-1022	Wholesale and Retail Buyers, Except Farm Products	41	52	11	27%	\$22.82	3
39-9021	Personal Care Aides	32	43	11	34%	\$9.10	1
51-9196	Paper Goods Machine Setters, Operators, and Tenders	226	237	11	5%	18.28	2
51-1011	First-Line Supervisors of Production and Operating Workers	58	69	11	19%	\$22.88	4
43-6011	Executive Secretaries and Executive Administrative Assistants	49	60	11	22%	\$19.71	4
43-9021	Data Entry Keyers	31	42	11	35%	15.7	2
43-3021	Billing and Posting Clerks	58	69	11	19%	\$16.14	1
47-2031	Carpenters	38	48	10	26%	\$19.76	3
41-2031	Retail Salespersons	109	99	(10)	(9%)	\$10.09	1
19-4011	Agricultural and Food Science Technicians	106	96	(10)	(9%)	\$14.03	6

SOC	OCCUPATION	EMPLOYED IN INDUSTRY GROUP (2012)	EMPLOYED IN INDUSTRY GROUP (2017)	CHANGE	% CHANGE	MEDIAN HOURLY EARNINGS	EDUCATION LEVEL*
11-3031	Financial Managers	116	105	(11)	(9%)	\$46.33	8
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	109	97	(12)	(11%)	\$15.38	2
53-7011	Conveyor Operators and Tenders	39	27	(12)	(31%)	10.18	1
43-4131	Loan Interviewers and Clerks	37	23	(14)	(38%)	\$20.42	1
51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	144	129	(15)	(10%)	\$15.89	2
51-3011	Bakers	195	176	(19)	(10%)	\$13.79	3
11-9013	Farmers, Ranchers, and Other Agricultural Managers	1,115	1,091	(24)	(2%)	34.28	4
13-2072	Loan Officers	65	40	(25)	(38%)	\$28.49	2
37-3011	Landscaping and Groundskeeping Workers	1,006	976	(30)	(3%)	\$11.21	1
51-3092	Food Batchmakers	410	375	(35)	(9%)	\$10.75	1
45-2094	Farmworkers, Farm, Ranch, and Aquacultural Animals	1,358	1,321	(37)	(3%)	\$8.87	1
51-9112	Packaging and Filling Machine Operators and Tenders	1,208	1,149	(59)	(5%)	\$10.75	2

1 - Short-term on-the-job training **6** - Associate's degree
2 - Moderate-term on-the-job training **7** - Bachelor's degree
3 - Long-term on-the-job training **8** - Bachelor's or higher degree, plus work
4 - Work experience in a related occupation **9** - First professional degree
5 - Postsecondary non-degree award **10** - Masters

Source: EMSI 2013.2 Class of Worker Dataset-QCEW Employees

ENERGY CLUSTER

173 new electricians (SOC 47-2111) are estimated to be hired 173 by 2017. Occupations related to installation, maintenance, and repair also increases between 2012 and 2017. In General, the Energy cluster includes a modest occupation growth of 630 persons. (Table 2.12)

TABLE 2.12:
ENERGY CLUSTER

SOC	OCCUPATION	EMPLOYED IN INDUSTRY GROUP (2012)	EMPLOYED IN INDUSTRY GROUP (2017)	2012-2017 CHANGE	% CHANGE	MEDIAN HOURLY EARNINGS	EDUCATION LEVEL*
47-2111	Electricians	635	808	173	27.2%	\$30.00	3
49-9051	Electrical Power-Line Installers and Repairers	215	307	92	42.8%	\$38.84	3
49-9021	Heating, A/C, & Refrigeration Mechanics and Installers	379	443	64	16.9%	\$19.57	5
51-8013	Power Plant Operators	90	139	49	54.4%	\$37.02	3
47-2152	Plumbers, Pipefitters, and Steamfitters	455	502	47	10.3%	\$23.94	3
49-2022	Telecomm. Equipment Installers and Repairers, Except Line Installers	175	219	44	25.1%	\$28.54	5
47-2061	Construction Laborers	170	208	38	22.4%	\$16.75	1
49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	46	76	30	65.2%	\$25.36	5

SOC	OCCUPATION	EMPLOYED IN INDUSTRY GROUP (2012)	EMPLOYED IN INDUSTRY GROUP (2017)	2012-2017 CHANGE	% CHANGE	MEDIAN HOURLY EARNINGS	EDUCATION LEVEL*
49-9041	Industrial Machinery Mechanics	87	112	25	28.7%	\$21.69	3
47-3013	Helpers--Electricians	54	75	21	38.9%	\$14.44	1
43-9061	Office Clerks, General	145	159	14	9.7%	\$14.08	1
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	107	119	12	11.2%	\$27.00	4
49-2098	Security and Fire Alarm Systems Installers	52	63	11	21.2%	\$17.15	2
13-1051	Cost Estimators	88	98	10	11.4%	\$26.36	7
1 - Short-term on-the-job training		6 - Associate's degree					
2 - Moderate-term on-the-job training		7 - Bachelor's degree					
3 - Long-term on-the-job training		8 - Bachelor's or higher degree, plus work experience					
4 - Work experience in a related occupation		9 - First professional degree					
5 - Postsecondary non-degree award		10 - Masters					

Source: EMSI 2013.2 Class of Worker Dataset-QCEW Employees

HEALTH AND WELLNESS CLUSTER

The occupations under Health and Wellness cluster show the highest change in workers being hired between 2012 and 2017. Registered nurses occupation (SOC 29-1111) is estimated to grow by 549 persons. The second largest growing occupation is the medical assistants (SOC 31-1012) by 245 new employees (Table 3.13).

**TABLE 3.13:
HEALTH AND WELLNESS CLUSTER**

SOC	OCCUPATION	EMPLOYED IN INDUSTRY GROUP (2012)	EMPLOYED IN INDUSTRY GROUP (2017)	2012-2017 CHANGE	% CHANGE	MEDIAN HOURLY EARNINGS	EDUCATION LEVEL*
29-1111	Registered Nurses	4,431	4,980	549	12%	\$35.74	6
31-9092	Medical Assistants	2,262	2,507	245	11%	\$12.66	2
31-1011	Home Health Aides	1,286	1,490	204	16%	\$9.62	1
43-6013	Medical Secretaries	1,487	1,690	203	14%	\$13.30	2
31-1012	Nursing Aides, Orderlies, and Attendants	2,262	2,461	199	9%	\$12.17	5
43-4171	Receptionists & Info. Clerks	1,056	1,198	142	13%	\$12.35	1
29-2061	Licensed Practical and Licensed Vocational Nurses	983	1,093	110	11%	\$21.68	5
39-9021	Personal Care Aides	407	489	82	20%	\$9.10	1
29-1069	Physicians & Surgeons	337	400	63	19%	\$100.49	9
43-9061	Office Clerks, General	821	880	59	7%	\$14.08	1
29-2037	Radiologic Technologists and Technicians	348	400	52	15%	\$34.39	6
29-2041	Emergency Medical Technicians and Paramedics	391	442	51	13%	\$12.42	5
43-1011	First-Line Supervisors of Office & Admin. Support Workers	600	647	47	8%	\$23.16	4
11-9111	Medical & Health Services Mgr	480	526	46	10%	\$45.89	7
29-2799	Health Technologists & Techs	197	237	40	20%	\$17.73	5
43-3021	Billing and Posting Clerks	529	567	38	7%	\$16.14	1
29-1062	Family & General Practitioners	294	332	38	13%	\$77.76	9
29-1123	Physical Therapists	310	344	34	11%	\$36.76	9

SOC	OCCUPATION	EMPLOYED IN INDUSTRY GROUP (2012)	EMPLOYED IN INDUSTRY GROUP (2017)	2012-2017 CHANGE	% CHANGE	MEDIAN HOURLY EARNINGS	EDUCATION LEVEL*
29-2071	Med. Records & Health Info. Technicians	325	357	32	10%	\$14.12	5
29-1071	Physician Assistants	199	231	32	16%	\$50.78	10
31-9799	Healthcare Support Workers	383	410	27	7%	\$16.12	1
37-2012	Maids/Housekeeping Cleaners	437	462	25	6%	\$9.13	1
29-1126	Respiratory Therapists	293	317	24	8%	\$32.97	6
21-1022	Healthcare Social Workers	140	164	24	17%	\$29.14	10
29-2012	Medical & Clinical Lab. Techs	310	333	23	7%	\$17.13	6
43-4051	Customer Service Reps	190	213	23	12%	\$16.02	1
35-3041	Food Servers, Nonrestaurant	134	157	23	17%	\$9.12	1
19-1042	Medical Scientists, Except Epidemiologists	127	149	22	17%	\$41.24	11
43-3011	Bill and Account Collectors	183	204	21	11%	\$15.53	2
29-2032	Diagnostic Medical Sonographers	98	119	21	21%	\$38.57	6
43-3031	Bookkeeping, Accounting	265	285	20	8%	\$17.27	2
35-2012	Cooks, Institution & Cafeteria	152	172	20	13%	\$12.27	1
29-2055	Surgical Technologists	166	184	18	11%	\$23.54	5
29-1063	Internists, General	160	178	18	11%	\$95.85	9
41-4011	Sales Reps, Wholesale & Mfg, Technical & Scientific Products	37	55	18	49%	\$33.05	7
37-2011	Janitor/Cleaners, Except Maids and Housekeeping Cleaners	266	283	17	6%	\$10.71	1
43-4111	Interviewers, Except Eligibility and Loan	280	296	16	6%	\$16.54	1
31-2022	Physical Therapist Aides	166	182	16	10%	\$10.91	2
29-1067	Surgeons	138	154	16	12%	\$100.85	9
39-9032	Recreation Workers	92	107	15	16%	\$10.63	7
21-1093	Social & Human Service Assists	368	382	14	4%	\$16.71	1
49-9071	Maint. & Repair Workers	193	207	14	7%	\$17.44	2
29-1061	Anesthesiologists	127	141	14	11%	\$112.29	9
29-1122	Occupational Therapists	105	119	14	13%	\$40.88	10
29-2011	Medical and Clinical Laboratory Technologists	182	195	13	7%	\$37.66	7
31-2021	Physical Therapist Assistants	78	91	13	17%	\$29.33	6
21-1014	Mental Health Counselors	63	76	13	21%	\$18.31	10
43-6014	Secretaries & Admin. Assist., Except Legal, Medical, & Exec.	335	347	12	4%	\$14.92	1
29-1065	Pediatricians, General	91	103	12	13%	\$81.07	9
43-6011	Executive Secretaries and Executive Admin. Assistants	184	195	11	6%	\$19.71	4
29-1031	Dietitians and Nutritionists	98	109	11	11%	\$30.81	7
31-9093	Medical Equipment Preparers	221	231	10	5%	\$9.62	2
21-1023	Mental Health and Substance Abuse Social Workers	158	168	10	6%	\$19.77	10
29-2031	Cardiovascular Technologists and Technicians	54	64	10	19%	\$28.71	6
21-1013	Marriage & Family Therapists	46	56	10	22%	\$30.91	10
1 - Short-term on-the-job training 2 - Moderate-term on-the-job training 3 - Long-term on-the-job training 4 - Work experience in a related occupation 5 - Postsecondary non-degree award 6 - Associate's degree		7 - Bachelor's degree 8 - Bachelor's or higher degree, plus work experience 9 - First professional degree 10 - Masters 11 - Doctoral degree					

Source: EMSI 2013.2 Class of Worker Dataset-QCEW Employees

LOGISTICS CLUSTER

Similar to other counties with occupational demand in Logistics, in Fresno County, the heavy tractor trailer drivers (SOC 53-3032) and Laborers and freight, stock, and material movers (SOC 53-7062) with 359 person and 115 person, respectively, have the highest demand (Table 3.14).

TABLE 3.14: LOGISTICS CLUSTER							
SOC	OCCUPATION	EMPLOYED IN INDUSTRY GROUP (2012)	EMPLOYED IN INDUSTRY GROUP (2017)	2012- 2017 CHANGE	% CHANGE	MEDIAN HOURLY EARNINGS	EDU- CATION LEVEL*
53-3033	Heavy and Tractor-Trailer Truck Drivers	2,471	2,596	2,862	391	16%	\$17.44
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	1,027	1,040	1,152	125	12%	\$11.74
49-3011	Aircraft Mechanics and Service Technicians	462	472	577	115	25%	\$23.04
53-3041	Taxi Drivers and Chauffeurs	52	58	80	28	54%	\$12.25
39-6011	Baggage Porters and Bellhops	29	32	52	23	79%	\$8.76
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	145	153	167	22	15%	\$22.40
53-6099	Transportation Workers, All Other	49	51	70	21	43%	\$13.47
43-5032	Dispatchers, Except Police, Fire, and Ambulance	166	173	187	21	13%	\$16.16
49-2091	Avionics Technicians	59	61	78	19	32%	\$19.52
53-3033	Light Truck or Delivery Services Drivers	172	179	188	16	9%	\$13.57
43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	103	102	117	14	14%	\$19.17
43-4051	Customer Service Representatives	57	58	71	14	25%	\$16.02
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	104	108	118	14	13%	\$24.51
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	24	26	36	12	50%	\$12.22
53-7061	Cleaners of Vehicles and Equipment	32	33	43	11	34%	\$9.14
43-5011	Cargo and Freight Agents	30	31	41	11	37%	\$17.54
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	26	27	37	11	42%	\$27.00
53-7051	Industrial Truck and Tractor Operators	227	226	238	11	5%	\$11.77
1 - Short-term on-the-job training		6 - Associate's degree					
2 - Moderate-term on-the-job training		7 - Bachelor's degree					
3 - Long-term on-the-job training		8 - Bachelor's or higher degree, plus work experience					
4 - Work experience in a related occupation		9 - First professional degree					
5 - Postsecondary non-degree award		10 - Masters					

Source: EMSI 2013.2 Class of Worker Dataset-QCEW Employees

MANUFACTURING CLUSTER

As indicated previously, very few manufacturing industries are projected to grow, in fact the manufacturing cluster is expected to decline by 667 employees. Manufacturing related occupations also show the same amount of decline (Table 3.15).

**TABLE 3.15:
MANUFACTURING CLUSTER**

SOC	OCCUPATION	EMPLOYED IN INDUSTRY GROUP (2012)	EMPLOYED IN INDUSTRY GROUP (2017)	2012-2017 CHANGE	% CHANGE	MEDIAN HOURLY EARNINGS	EDUCATION LEVEL*
51-4041	Machinists	191	201	10	5%	\$16.76	3
11-3051	Industrial Production Managers	114	104	(10)	(9%)	\$35.67	8
43-1011	First-Line Supervisors of Office & Admin. Support Workers	64	54	(10)	(16%)	\$23.16	4
51-9195	Molders, Shapers, & Casters, Except Metal and Plastic	32	22	(10)	(31%)	\$12.52	3
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	77	66	(11)	(14%)	\$14.34	2
51-9023	Mixing and Blending Machine Setters, Operators, & Tenders	56	45	(11)	(20%)	\$15.38	2
51-5113	Print Binding and Finishing Workers	28	17	(11)	(39%)	\$13.42	1
51-9111	Packaging and Filling Machine Operators and Tenders	57	45	(12)	(21%)	\$10.75	2
51-9196	Paper Goods Machine Setters, Operators, and Tenders	42	30	(12)	(29%)	\$18.28	2
51-5111	Prepress Techs & Workers	24	12	(12)	(50%)	\$15.40	5
51-2041	Structural Metal Fabricators and Fitters	55	42	(13)	(24%)	\$18.29	2
43-5061	Production, Planning, and Expediting Clerks	103	89	(14)	(14%)	\$20.37	2
43-3031	Bookkeeping, Accounting, and Auditing Clerks	98	84	(14)	(14%)	\$17.27	2
51-9399	Production Workers, All Other	68	53	(15)	(22%)	\$10.61	2
51-8093	Petroleum Pump System Operators, Refinery Operators, and Gaugers	32	17	(15)	(47%)	\$27.03	3
51-4121	Welders, Cutters, Solderers, and Brazers	144	128	(16)	(11%)	\$17.02	5
43-5071	Shipping, Receiving, and Traffic Clerks	105	89	(16)	(15%)	\$12.59	1
49-9071	Maintenance and Repair Workers, General	109	92	(17)	(16%)	\$17.44	2
51-2099	Assemblers and Fabricators, All Other	99	81	(18)	(18%)	\$10.50	2
53-7064	Packers and Packagers, Hand	85	67	(18)	(21%)	\$9.07	1
43-9061	Office Clerks, General	126	106	(20)	(16%)	\$14.08	1
43-4051	Customer Service Representatives	115	95	(20)	(17%)	\$16.02	1
41-4012	Sales Reps, Wholesale and Mfg, Except Technical and Scientific Products	141	120	(21)	(15%)	\$26.05	2
53-3032	Heavy and Tractor-Trailer Truck Drivers	103	82	(21)	(20%)	\$17.44	1
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	186	162	(24)	(13%)	\$10.62	2
51-7042	Woodworking Machine Setters, Operators, and Tenders, Except Sawing	52	25	(27)	(52%)	\$12.36	1
53-7051	Industrial Truck and Tractor Operators	113	84	(29)	(26%)	\$11.77	1

SOC	OCCUPATION	EMPLOYED IN INDUSTRY GROUP (2012)	EMPLOYED IN INDUSTRY GROUP (2017)	2012-2017 CHANGE	% CHANGE	MEDIAN HOURLY EARNINGS	EDUCATION LEVEL*
51-9198	Helpers--Production Workers	153	123	(30)	(20%)	\$8.94	1
11-1021	General and Operations Managers	180	149	(31)	(17%)	\$42.61	8
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	164	132	(32)	(20%)	\$11.74	1
51-1011	First-Line Supervisors of Production and Operating Workers	252	215	(37)	(15%)	\$22.88	4
51-2092	Team Assemblers	347	302	(45)	(13%)	\$11.80	2
51-5112	Printing Press Operators	117	65	(52)	(44%)	\$20.61	2
51-7011	Cabinetmakers and Bench Carpenters	77	22	(55)	(71%)	\$13.46	2
1 - Short-term on-the-job training 2 - Moderate-term on-the-job training 3 - Long-term on-the-job training 4 - Work experience in a related occupation 5 - Postsecondary non-degree award		6 - Associate's degree 7 - Bachelor's degree 8 - Bachelor's or higher degree, plus work experience 9 - First professional degree 10 - Masters					

Source: EMSI 2013.2 Class of Worker Dataset-QCEW Employees

APPENDIX A: CLUSTER DEFINITIONS

AGRICULTURE CLUSTER

CLUSTER COMPONENTS BY NAICS CODE	
Agriculture Cluster - Production	
111	Crop Production
112	Animal Production
1141	Fishing
115112	Soil Preparation, Planting, Cultivating
115113	Crop Harvesting, Primarily by Machine
115114	Postharvest Crop Activities
115115	Farm Labor Contractors and Crew Leaders
115116	Farm Mgmt Svcs
115210	Support Activities for Animal Production
Agriculture Cluster - Processing	
311	Food Manufacturing
312	Beverage and Tobacco Product Manufacturing
321920	Wood Container and Pallet Mfg
322211	Corrugated and Solid Fiber Box Mfg
Agriculture Cluster - Distribution	
424410	General Line Grocery Merchant Wholesalers
424430	Dairy Product Wholesalers
424450	Confectionery Wholesalers
424470	Meat & Meat Product Wholesalers
424480	Fresh Fruit/Veg Wholesalers
424490	Other Grocery Wholesalers
424820	Wine, Alcoholic Beverage Wholesalers
424910	Farm Supplies Wholesalers
424930	Flower, Nursery Stock, and Florists' Supplies Merchant Wholesalers
445110	Supermarkets, Other Grocery
445120	Convenience Stores
445210	Meat Markets
445230	Fruit and Vegetable Markets
445291	Baked Goods Stores
445292	Confectionery and Nut Stores
445299	All Other Specialty Food Stores
445310	Beer, Wine, and Liquor Stores
481111	Scheduled Passenger Air Transportation
481211	Nonscheduled Chartered Passenger Air Trans
482	Rail Transportation
484110	General Freight Trucking, Local
484121	General Freight Trucking, Long-Distance, Truckload
484122	General Freight Trucking, Long-Distance, Less Than Truckload
484220	Specialized Freight Trucking, Local
484230	Specialized Freight Trucking, Long-Dist.
488119	Other Airport Operations
488190	Other Support Activities for Air Transportation
488510	Freight Transportation Arrangement
493110	General Warehousing & Storage
493120	Refrigerated Warehousing and Storage

APPENDIX A: CONTINUED

AGRICULTURE CLUSTER (CONTINUED)

CLUSTER COMPONENTS BY NAICS CODE	
Agriculture Cluster - Support	
221310	Water Supply and Irrigation Systems
237110	Water & Sewer Line & Related Construction
325314	Fertilizer (Mixing Only) Manufacturing
325320	Pesticide and Other Agricultural Chemical Manufacturing
333111	Farm Machinery, Equip Mfg
423820	Farm, Garden Machinery, Equip Wholesalers
423830	Industrial Machinery and Equipment Merchant Wholesalers
423840	Industrial Supplies Merchant Wholesalers
423850	Service Establishment Equipment and Supplies Merchant Wholesalers
444220	Nursery, Garden Ctr, Farm Supply Stores
522292	Real Estate Credit
532490	Other Commercial and Industrial Machinery and Equipment Rental and Leasing
541380	Testing Laboratories
541613	Marketing Consulting Services
541840	Media Representatives
541870	Advertising Material Distribution Services
541890	Other Services Related to Advertising
541940	Veterinary Services
551114	Corporate, Subsidiary, Regional Offices
561110	Office Administrative Services
561311	Employment Placement Agencies
561320	Temporary Help Services
561710	Exterminating and Pest Control Services
561730	Landscaping Services
562920	Materials Recovery Facilities
811310	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance

Source: ADE, Inc.; data from EMSI.

Notes: Industries included in the cluster each account for a minimum of 10 jobs.

APPENDIX A: CONTINUED

ENERGY CLUSTER

CLUSTER COMPONENTS BY NAICS CODE			
ALTERNATIVE ENERGY GENERATION/PRODUCTION			
23711	Water and Sewer Line and Related Structures Construction	311223	Other Oilseed Processing
23816	Roofing Contractors	325193	Ethyl Alcohol Manufacturing
ALTERNATIVE ENERGY DISTRIBUTION			
423610	Electrical Apparatus and Equipment, Wiring Supplies, and Related Equipment Merchant Wholesalers	423720	Plumbing and Heating Equipment and Supplies (Hydronics) Merchant Wholesalers
423690	Other Electronic Parts and Equipment Merchant Wholesalers		
ENERGY EFFICIENCY			
23821	Electrical Contractors and Other Wiring Installation Contractors	23831	Drywall and Insulation Contractors
23822	Plumbing, Heating, and Air-Conditioning Contractors		
EQUIPMENT MANUFACTURING			
333132	Oil and Gas Field Machinery and Equipment Manufacturing	335110	Electric Lamp Bulb and Part Manufacturing
333414	Heating Equipment (except Warm Air Furnaces) Manufacturing	335121	Residential Electric Lighting Fixture Manufacturing
333611	Turbine and Turbine Generator Set Units Manufacturing	335122	Commercial, Industrial, and Institutional Electric Lighting Fixture Manufacturing
334512	Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	335129	Other Lighting Equipment Manufacturing
334515	Instrument Manufacturing for Measuring and Testing Electricity and Electrical Signals	335311	Power, Distribution, and Specialty Transformer Manufacturing
334517	Irradiation Apparatus Manufacturing		
PETROLEUM PRODUCTION & PETROLEUM DISTRIBUTION			
211111	Crude Petroleum and Natural Gas Extraction	424710	Petroleum Bulk Stations and Terminals
211112	Natural Gas Liquid Extraction	424720	Petroleum and Petroleum Products Merchant Wholesalers (except Bulk Stations and Terminals)
212399	All Other Nonmetallic Mineral Mining	486110	Pipeline Transportation of Crude Oil
213111	Drilling Oil and Gas Wells	486210	Pipeline Transportation of Natural Gas
324110	Petroleum Refineries	486910	Pipeline Transportation of Refined Petroleum Products
324199	All Other Petroleum and Coal Products Manufacturing		
POWER GENERATION AND TRANSMISSION			
221111	Hydroelectric Power Generation	221122	Electric Power Distribution
221112	Fossil Fuel Electric Power Generation	221210	Natural Gas Distribution
221113	Nuclear Electric Power Generation	237120	Oil and Gas Pipeline and Related Structures Construction
221119	Other Electric Power Generation	237130	Power and Communication Line and Related Structures Construction
221121	Electric Bulk Power Transmission and Control		
RESEARCH & SERVICES			
541	Professional, Scientific, and Technical Services	533110	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)
523910	Miscellaneous Intermediation	811219	Other Electronic and Precision Equipment Repair and Maintenance
523999	Miscellaneous Financial Investment Activities	811310	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance

APPENDIX A: CONTINUED

HEALTH AND WELLNESS CLUSTER

CLUSTER COMPONENTS BY NAICS CODE			
HEALTH CARE DELIVERY			
621111	Offices of Physicians (except Mental Health Specialists)	621512	Diagnostic Imaging Centers
621112	Offices of Physicians, Mental Health Specialists	621512	Diagnostic Imaging Centers
621210	Offices of Dentists	621610	Home Health Care Services
621310	Offices of Chiropractors	621910	Ambulance Services
621320	Offices of Optometrists	621991	Blood and Organ Banks
621330	Offices of Mental Health Practitioners (except Physicians)	622110	General Medical and Surgical Hospitals
621340	Offices of Physical, Occupational and Speech Therapists, and Audiologists	622210	Psychiatric and Substance Abuse Hospitals
621391	Offices of Podiatrists	622310	Specialty (except Psychiatric and Substance Abuse) Hospitals
621410	Family Planning Centers	623110	Nursing Care Facilities
621420	Outpatient Mental Health and Substance Abuse Centers	623210	Residential Mental Retardation Facilities
621491	HMO Medical Centers	623220	Residential Mental Health and Substance Abuse Facilities
621492	Kidney Dialysis Centers	623311	Continuing Care Retirement Communities
621493	Freestanding Ambulatory Surgical and Emergency Centers	623312	Homes for the Elderly
621498	All Other Outpatient Care Centers	623990	Other Residential Care Facilities
621511	Medical Laboratories	624310	Vocational Rehabilitation Services
MEDICAL DEVICE MANUFACTURING			
339112	Surgical and Medical Instrument Manufacturing	339115	Ophthalmic Goods Manufacturing
339113	Surgical Appliance and Supplies Manufacturing	339116	Dental Laboratories
339114	Dental Equipment and Supplies Manufacturing		
PHARMACEUTICALS			
325411	Medicinal and Botanical Manufacturing	325413	In-Vitro Diagnostic Substance Manufacturing
325412	Pharmaceutical Preparation Manufacturing	325414	Biological Product (except Diagnostic) Manufacturing
SUPPLIES AND SERVICES			
423450	Medical, Dental, and Hospital Equipment and Supplies Merchant Wholesalers	424210	Drugs and Druggists' Sundries Merchant Wholesalers
423460	Ophthalmic Goods Merchant Wholesalers	813212	Voluntary Health Organizations
423490	Other Professional Equipment and Supplies Merchant Wholesalers		
WELLNESS AND FITNESS			
446110	Pharmacies and Drug Stores	532291	Home Health Equipment Rental
446130	Optical Goods Stores	621399	Offices of All Other Miscellaneous Health Practitioners
446191	Food (Health) Supplement Stores	621999	All Other Miscellaneous Ambulatory Health Care Services
446199	All Other Health and Personal Care Stores	812191	Diet and Weight Reducing Centers

APPENDIX A: CONTINUED

LOGISTICS CLUSTER

CLUSTER COMPONENTS BY NAICS CODE			
AIR, RAIL, WATER TRANSPORTATION			
481111	Scheduled Passenger Air Transportation	483211	Inland Water Freight Transportation
481112	Scheduled Freight Air Transportation	483212	Inland Water Passenger Transportation
481211	Nonscheduled Chartered Passenger Air Transportation	488111	Air Traffic Control
481212	Nonscheduled Chartered Freight Air Transportation	488119	Other Airport Operations
481219	Other Nonscheduled Air Transportation	488190	Other Support Activities for Air Transportation
482	Rail Transportation	488210	Support Activities for Rail Transportation
483111	Deep Sea Freight Transportation	488310	Port and Harbor Operations
483112	Deep Sea Passenger Transportation	488320	Marine Cargo Handling
483113	Coastal and Great Lakes Freight Transportation	488330	Navigational Services to Shipping
483114	Coastal and Great Lakes Passenger Transportation	488390	Other Support Activities for Water Transportation
FREIGHT & WAREHOUSING			
484110	General Freight Trucking, Local	493110	General Warehousing and Storage
484121	General Freight Trucking, Long-Distance, Truckload	493120	Refrigerated Warehousing and Storage
484122	General Freight Trucking, Long-Distance, Less Than Truckload	493130	Farm Product Warehousing and Storage
484210	Used Household and Office Goods Moving	493190	Other Warehousing and Storage
484220	Specialized Freight (except Used Goods) Trucking, Local	541614	Process, Physical Distribution, and Logistics Consulting Services
484230	Specialized Freight (except Used Goods) Trucking, Long-Distance	561910	Packaging and Labeling Services
OTHER SERVICES			
488410	Motor Vehicle Towing	488999	All Other Support Activities for Transportation
488490	Other Support Activities for Road Transportation	492110	Couriers and Express Delivery Services
488510	Freight Transportation Arrangement	492210	Local Messengers and Local Delivery
488991	Packing and Crating		
RELATED MANUFACTURING			
336120	Heavy Duty Truck Manufacturing	336611	Ship Building and Repairing
336510	Railroad Rolling Stock Manufacturing	336612	Boat Building
TRANSIT			
485111	Mixed Mode Transit Systems	485310	Taxi Service
485112	Commuter Rail Systems	485410	School and Employee Bus Transportation
485113	Bus and Other Motor Vehicle Transit Systems	485510	Charter Bus Industry
485119	Other Urban Transit Systems	485991	Special Needs Transportation
485210	Interurban and Rural Bus Transportation	485999	All Other Transit and Ground Passenger Transportation

APPENDIX A: CONTINUED

MANUFACTURING CLUSTER (CROSS-CLUSTER)

CLUSTER COMPONENTS BY NAICS CODE			
HEALTH & WELLNESS MANUFACTURING			
339112	Surgical and Medical Instrument Manufacturing	325411	Medicinal and Botanical Manufacturing
339113	Surgical Appliance and Supplies Manufacturing	325412	Pharmaceutical Preparation Manufacturing
339114	Dental Equipment and Supplies Manufacturing	325413	In-Vitro Diagnostic Substance Manufacturing
339115	Ophthalmic Goods Manufacturing	325414	Biological Product (except Diagnostic) Manufacturing
339116	Dental Laboratories		
FOOD PROCESSING			
311111	Dog and Cat Food Manufacturing	311920	Coffee and Tea Manufacturing
311119	Other Animal Food Manufacturing	311930	Flavoring Syrup and Concentrate Manufacturing
311211	Flour Milling	311941	Mayonnaise, Dressing, and Other Prepared Sauce Manufacturing
311212	Rice Milling	311942	Spice and Extract Manufacturing
311213	Malt Manufacturing	311991	Perishable Prepared Food Manufacturing
311221	Wet Corn Milling	311999	All Other Miscellaneous Food Manufacturing
311222	Soybean Processing	312111	Soft Drink Manufacturing
311223	Other Oilseed Processing	312112	Bottled Water Manufacturing
311225	Fats and Oils Refining and Blending	312113	Ice Manufacturing
311230	Breakfast Cereal Manufacturing	312120	Breweries
311311	Sugarcane Mills	312130	Wineries
311312	Cane Sugar Refining	312140	Distilleries
311313	Beet Sugar Manufacturing	312210	Tobacco Stemming and Redrying
311320	Chocolate and Confectionery Manufacturing from Cacao Beans	312221	Cigarette Manufacturing
311330	Confectionery Manufacturing from Purchased Chocolate	312229	Other Tobacco Product Manufacturing
311340	Nonchocolate Confectionery Manufacturing	313111	Yarn Spinning Mills
311411	Frozen Fruit, Juice, and Vegetable Manufacturing	313112	Yarn Texturizing, Throwing, and Twisting Mills
311412	Frozen Specialty Food Manufacturing	313113	Thread Mills
311421	Fruit and Vegetable Canning	313210	Broadwoven Fabric Mills
311422	Specialty Canning	313221	Narrow Fabric Mills
311423	Dried and Dehydrated Food Manufacturing	313230	Nonwoven Fabric Mills
311511	Fluid Milk Manufacturing	313241	Weft Knit Fabric Mills
311512	Creamery Butter Manufacturing	313249	Other Knit Fabric and Lace Mills
311513	Cheese Manufacturing	316110	Leather and Hide Tanning and Finishing
311514	Dry, Condensed, and Evaporated Dairy Product Manufacturing	321113	Sawmills
311520	Ice Cream and Frozen Dessert Manufacturing	321920	Wood Container and Pallet Manufacturing
311611	Animal (except Poultry) Slaughtering	322211	Corrugated and Solid Fiber Box Manufacturing
311612	Meat Processed from Carcasses	322212	Folding Paperboard Box Manufacturing
311613	Rendering and Meat Byproduct Processing	322213	Setup Paperboard Box Manufacturing
311615	Poultry Processing	322214	Fiber Can, Tube, Drum, and Similar Products Manufacturing

APPENDIX A: CONTINUED

MANUFACTURING CLUSTER (CROSS-CLUSTER) (CONTINUED)

CLUSTER COMPONENTS BY NAICS CODE			
FOOD PROCESSING (CONTINUED)			
311711	Seafood Canning	322215	Nonfolding Sanitary Food Container Manufacturing
311712	Fresh and Frozen Seafood Processing	322291	Sanitary Paper Product Manufacturing
311811	Retail Bakeries	325411	Medicinal and Botanical Manufacturing
311812	Commercial Bakeries	325414	Biological Product (except Diagnostic) Manufacturing
311813	Frozen Cakes, Pies, and Other Pastries Manufacturing	326111	Plastics Bag and Pouch Manufacturing
311821	Cookie and Cracker Manufacturing	326160	Plastics Bottle Manufacturing
311822	Flour Mixes and Dough Manufacturing from Purchased Flour	327213	Glass Container Manufacturing
311823	Dry Pasta Manufacturing	332115	Crown and Closure Manufacturing
311830	Tortilla Manufacturing	332431	Metal Can Manufacturing
311911	Roasted Nuts and Peanut Butter Manufacturing	332439	Other Metal Container Manufacturing
311919	Other Snack Food Manufacturing	339112	Surgical and Medical Instrument Manufacturing
ENERGY RELATED MANUFACTURING			
333132	Oil and Gas Field Machinery and Equipment Manufacturing	311225	Fats and Oils Refining and Blending
333414	Heating Equipment (except Warm Air Furnaces) Manufacturing	311613	Rendering and Meat Byproduct Processing
333611	Turbine and Turbine Generator Set Units Manufacturing	322299	All Other Converted Paper Product Manufacturing
334512	Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	333298	All Other Industrial Machinery Manufacturing
334515	Instrument Manufacturing for Measuring and Testing Electricity and Electrical Signals	334413	Semiconductor and Related Device Manufacturing
334517	Irradiation Apparatus Manufacturing	334519	Other Measuring and Controlling Device Manufacturing
335110	Electric Lamp Bulb and Part Manufacturing	335312	Motor and Generator Manufacturing
335121	Residential Electric Lighting Fixture Manufacturing	335314	Relay and Industrial Control Manufacturing
335122	Commercial, Industrial, and Institutional Electric Lighting Fixture Manufacturing	335999	All Other Miscellaneous Electrical Equipment and Component Manufacturing
335129	Other Lighting Equipment Manufacturing	311223	Other Oilseed Processing
335311	Power, Distribution, and Specialty Transformer Manufacturing	325193	Ethyl Alcohol Manufacturing
311225	Fats and Oils Refining and Blending	324110	Petroleum Refineries
335311	Power, Distribution, and Specialty Transformer Manufacturing	324199	All Other Petroleum and Coal Products Manufacturing
LOGISTICS MANUFACTURING			
336120	Heavy Duty Truck Manufacturing	336611	Ship Building and Repairing
336510	Railroad Rolling Stock Manufacturing		
WATER TECHNOLOGY MANUFACTURING			
326122	Plastics Pipe and Pipe Fitting Manufacturing	333319	Other Commercial and Service Industry Machinery Manufacturing
333111	Farm Machinery and Equipment Manufacturing	333911	Pump and Pumping Equipment Manufacturing

APPENDIX A: CONTINUED

MANUFACTURING CLUSTER (CROSS-CLUSTER) (CONTINUED)

CLUSTER COMPONENTS BY NAICS CODE			
HEALTH & WELLNESS MANUFACTURING			
339112	Surgical and Medical Instrument Manufacturing	325411	Medicinal and Botanical Manufacturing
339113	Surgical Appliance and Supplies Manufacturing	325412	Pharmaceutical Preparation Manufacturing
339114	Dental Equipment and Supplies Manufacturing	325413	In-Vitro Diagnostic Substance Manufacturing
339115	Ophthalmic Goods Manufacturing	325414	Biological Product (except Diagnostic) Manufacturing
339116	Dental Laboratories		
OTHER			
31-33	All Manufacturing Industries not listed above		

WATER TECHNOLOGY CLUSTER

CLUSTER COMPONENTS BY NAICS CODE			
2007 NAICS U.S. TITLE			
326122	Plastic Pipe and Pipe Fitting Manufacturing	333911	Pump and Pumping Equipment Manufacturing
333111	Farm Machinery and Equipment Manufacturing	423830	Industrial Machinery and Equipment Merchant Wholesalers
333319	Other Commercial and Service Industry Machinery Manufacturing	424910	Farm Supplies Merchant Wholesalers