

February 26, 2016

Advanced Manufacturing Supply Chain Study

Prepared for:

Imperial County Community and Economic Development

**Funded by U.S. Department of Commerce
Economic Development Administration**

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1. INTRODUCTION

This study examines the overall trends in advanced manufacturing and industry cluster grouping in Imperial County. The County has identified six clusters of interest – aerospace, automotive and machinery, water technologies, biofuels, agriculture, and medical services – that it would like to potentially pursue as future industry targets. Most of these clusters do not have an existing concentration of jobs and industries within the Imperial Valley. Because of this, the analysis was expanded to include information on statewide trends and employment centers across the international border in Mexicali.

The analysis looks at advanced manufacturing in terms of industry employment, occupational employment, staffing needs, job training requirements, and supply chain needs. These indicators are weighed against what currently exists in the Imperial Valley.

In addition, the study conducted a literature review of site requirements for advanced manufacturing activities, and includes an overview of existing resources available in Imperial County to help expand advanced manufacturing related clusters. These resources include job training and incentives.

The baseline information, along with stakeholder interviews, was used to develop an analysis of strengths, weaknesses, opportunities, and threats. The framework from the SWOT was used to develop the implementation recommendations.

2. ECONOMIC BASE AND CLUSTER ANALYSIS

2.1 ECONOMIC BASE EMPLOYMENT BY INDUSTRY

The economic base for Imperial County has shown rapid expansion since 2001, with over 26 percent growth and a 2014 job total of 62,780. As shown in Table 1, the long-term, job growth has occurred across nearly all industry groups. The largest job growth has occurred in health care and social assistance, retail trade, and government. Government also constitutes the largest industry group in Imperial County with 17,124 jobs. The largest growth between 2001 and 2014 occurred in health care and social assistance, which saw the employment more than triple during this period with over 6,000 new jobs. Retail trade also showed a very strong growth trend of over 54.2 percent and over 3,300 new jobs as a result of population growth and expanded market trade with residents from across the international border in Mexicali. The only sectors that lost employment were crop and animal production, information, and other services.

Over the shorter term between 2009 and 2014, Imperial County has seen similarly positive growth trends across a wide range of industries. During this period, retail trade, and health care and social assistance also accounted for most of the job growth. In addition, crop and animal production jobs also saw a healthy recovery of 1,000 new jobs, even though the sector as a whole still shows a loss of jobs going back to 2001. Other services accounted for the majority of job losses. Other sectors that lost employment include manufacturing, information, professional services, management services, education, and government. Manufacturing in particular lost over 700 jobs after 2009, even though the longer-term trend since 2001 shows that the 2014 job count is slightly larger.

By comparison, San Diego County showed a notable shift away from information services, manufacturing, and construction sectors towards professional services, health care, and hospitality. The overall employment base grew by 9.3 percent between 2001 and 2014. In addition, the growth rate between 2009 and 2014 was 6.8 percent. This indicates that San Diego County has had a substantial recovery from the Great Recession. It should be noted that both manufacturing and construction have shown job growth in more recent years, compared to the larger job losses over the longer term dating back to 2001.

Table 1 — Imperial County Job Trend, 2001 to 2014

NAICS CODE	INDUSTRY DESCRIPTION	2001 JOBS	2009 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	2009 TO 2014 CHANGE	2009 TO 2014 % CHANGE	2014 LOCATION QUOTIENT
11	Crop and Animal Production	11,330	9,644	10,644	-686	-6.1%	1,000	10.4%	6.63
21	Mining, Quarrying, and Oil and Gas Extraction	100	191	312	212	211.8%	120	63.0%	3.15
22	Utilities	265	448	505	240	90.6%	57	12.7%	2.21
23	Construction	1,623	1,236	1,974	351	21.6%	738	59.7%	0.61
31	Manufacturing	1,712	2,449	1,744	32	1.9%	-705	-28.8%	0.23
42	Wholesale Trade	1,678	1,670	1,755	77	4.6%	86	5.1%	0.64
44	Retail Trade	6,146	6,984	9,479	3,333	54.2%	2,495	35.7%	1.44
48	Transportation and Warehousing	1,498	1,335	1,524	26	1.7%	188	14.1%	0.83
51	Information	449	378	324	-125	-27.9%	-55	-14.5%	0.15
52	Finance and Insurance	899	864	873	-26	-2.9%	9	1.1%	0.37
53	Real Estate and Rental and Leasing	582	458	500	-81	-14.0%	42	9.2%	0.45
54	Professional, Scientific, and Technical Services	633	1,014	885	251	39.7%	-129	-12.8%	0.22
55	Management of Companies and Enterprises	282	209	189	-93	-33.0%	-20	-9.5%	0.16
56	Administrative and Support and Waste Management and Remediation Services	787	1,470	1,621	834	106.0%	151	10.3%	0.41
61	Educational Services	213	281	252	39	18.3%	-30	-10.5%	0.28
62	Health Care and Social Assistance	2,001	3,493	8,099	6,099	304.9%	4,607	131.9%	1.61
71	Arts, Entertainment, and Recreation	101	191	236	135	133.9%	46	23.9%	0.25
72	Accommodation and Food Services	2,703	3,165	3,835	1,132	41.9%	669	21.1%	0.81
81	Other Services (except Public Administration)	2,082	4,034	803	-1,279	-61.4%	-3,231	-80.1%	0.33
90	Government	14,757	17,662	17,124	2,367	16.0%	-538	-3.0%	1.77
99	Unclassified Industry	2	62	104	102	5104.0%	42	68.2%	0.47
	Total	49,839	57,237	62,780	12,941	26.0%	5,544	9.7%	

Source: ADE, Inc.; data from EMSI, EDA, and US Cluster Mapping Project.

Notes: Traded clusters represent interrelated groupings of industries that serve external and/or global markets. Traded clusters generally include industries that do not primarily rely on local business trade and household spending.

The traded clusters shown in this table include all of the cluster definitions used by the US Economic Development Administration and the Harvard Business School Institute for Strategy and Competitiveness as part of the US Cluster Mapping project that they jointly administer.

The clusters identified among the Leading County Clusters represent those groupings that were identified by the US Cluster Mapping project as a strong cluster with high employment specialization.

The employment trend data comes from EMSI.

The location quotient represents the relative concentration of employment, compared to the rest of California. A location quotient higher than 1.0 would indicate a concentration of employment higher than the statewide average for a particular cluster.

Table 2 — San Diego County Job Trend, 2001 to 2014

INDUSTRY DESCRIPTION	2001 JOBS	2009 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	2009 TO 2014 CHANGE	2009 TO 2014 % CHANGE	2014 LOCATION QUOTIENT
Crop and Animal Production	11,388	9,283	9,790	-1,598	-14.0%	507	5.5%	0.29
Mining, Quarrying, and Oil and Gas Extraction	284	363	436	152	53.5%	74	20.3%	0.21
Utilities	5,320	7,161	5,743	423	8.0%	-1,418	-19.8%	1.19
Construction	74,889	61,027	63,203	-11,686	-15.6%	2,176	3.6%	0.92
Manufacturing	120,479	95,420	96,449	-24,030	-19.9%	1,028	1.1%	0.61
Wholesale Trade	39,036	40,757	43,309	4,273	10.9%	2,553	6.3%	0.75
Retail Trade	135,939	131,779	143,406	7,467	5.5%	11,628	8.8%	1.03
Transportation and Warehousing	24,734	19,820	20,785	-3,949	-16.0%	964	4.9%	0.53
Information	38,727	37,007	24,294	-14,433	-37.3%	-12,714	-34.4%	0.52
Finance and Insurance	44,940	43,895	42,724	-2,216	-4.9%	-1,171	-2.7%	0.85
Real Estate and Rental and Leasing	27,227	26,534	27,328	101	0.4%	794	3.0%	1.15
Professional, Scientific, and Technical Services	98,691	108,104	126,880	28,189	28.6%	18,776	17.4%	1.48
Management of Companies and Enterprises	17,932	15,334	21,324	3,392	18.9%	5,990	39.1%	0.83
Administrative and Support and Waste Management and Remediation Services	80,343	74,192	78,354	-1,989	-2.5%	4,162	5.6%	0.92
Educational Services	15,173	24,566	30,998	15,825	104.3%	6,432	26.2%	1.65
Health Care and Social Assistance	98,978	117,230	151,519	52,541	53.1%	34,290	29.2%	1.42
Arts, Entertainment, and Recreation	18,380	24,248	26,547	8,167	44.4%	2,299	9.5%	1.32
Accommodation and Food Services	113,407	129,545	149,077	35,670	31.5%	19,532	15.1%	1.47
Other Services (except Public Administration)	45,254	57,063	48,342	3,088	6.8%	-8,721	-15.3%	0.93
Government	207,736	221,157	217,506	9,770	4.7%	-3,651	-1.7%	1.06
Unclassified Industry	141	3,378	4,681	4,540	3219.9%	1,303	38.6%	0.99
Total	1,218,997	1,247,863	1,332,695	113,698	9.3%	84,832	6.8%	

Source: ADE, Inc.; data from EMSI, EDA, and US Cluster Mapping Project.

Notes: Traded clusters represent interrelated groupings of industries that serve external and/or global markets. Traded clusters generally include industries that do not primarily rely on local business trade and household spending.

The traded clusters shown in this table include all of the cluster definitions used by the US Economic Development Administration and the Harvard Business School Institute for Strategy and Competitiveness as part of the US Cluster Mapping project that they jointly administer.

The clusters identified among the Leading County Clusters represent those groupings that were identified by the US Cluster Mapping project as a strong cluster with high employment specialization.

The employment trend data comes from EMSI.

The location quotient represents the relative concentration of employment, compared to the rest of California. A location quotient higher than 1.0 would indicate a concentration of employment higher than the statewide average for a particular cluster.

Projected employment from EMSI for Imperial County shows an increase of over 11,300 jobs (17.7 percent) between 2015 and 2025. Most of the projected employment growth will occur in construction, retail trade, health care and social assistance, and government. Construction in particular will have the highest percentage growth (46.6 percent) among all industry groups in Imperial County. Sectors with projected job losses include crop and animal production, management, and other services.

Job projections for San Diego County show an increase of over 206,000 jobs (15.0 percent) between 2015 and 2025. The largest projected growth will occur in health care, hospitality, professional services, and retail trade. The projections also show a job recovery in construction and over 10,000 new jobs each in wholesale trade, administrative services, and government. Manufacturing and crop production are expected to show job losses.

Table 3 — Imperial County Job Projection, 2015 to 2025

NAICS CODE	INDUSTRY DESCRIPTION	2015 PROJECTED JOBS	2025 PROJECTED JOBS	2015 TO 2025 CHANGE	2015 TO 2025 % CHANGE	2025 PROJECTED LOCATION QUOTIENT
11	Crop and Animal Production	10,574	9,418	-1,156	-10.9%	5.33
21	Mining, Quarrying, and Oil and Gas Extraction	389	463	75	19.2%	4.25
22	Utilities	594	784	190	32.1%	3.12
23	Construction	2,401	3,519	1,118	46.6%	0.99
31	Manufacturing	1,006	1,093	87	8.7%	0.13
42	Wholesale Trade	1,758	2,184	426	24.2%	0.73
44	Retail Trade	9,965	12,184	2,219	22.3%	1.68
48	Transportation and Warehousing	1,693	2,006	312	18.4%	0.99
51	Information	325	342	17	5.1%	0.14
52	Finance and Insurance	879	1,056	177	20.1%	0.40
53	Real Estate and Rental and Leasing	502	558	55	11.0%	0.45
54	Professional, Scientific, and Technical Services	803	991	188	23.4%	0.22
55	Management of Companies and Enterprises	148	35	-113	-76.4%	0.03
56	Administrative and Support and Waste Management and Remediation Services	1,473	1,965	491	33.4%	0.45
61	Educational Services	258	276	18	7.0%	0.28
62	Health Care and Social Assistance	8,714	12,682	3,968	45.5%	2.29
71	Arts, Entertainment, and Recreation	237	325	89	37.4%	0.31
72	Accommodation and Food Services	3,828	4,678	850	22.2%	0.89
81	Other Services (except Public Administration)	778	729	-49	-6.3%	0.27
90	Government	17,376	19,724	2,348	13.5%	1.85
99	Unclassified Industry	108	118	10	9.7%	0.48
	Total	63,811	75,131	11,320	17.7%	

Source: ADE, Inc.; data from EMSI.

Notes: The employment projections data comes from EMSI, which uses multiple sources to project the future employment, including the California EDD and Bureau of Labor Statistics NIOEM projections.

The location quotient represents the relative concentration of employment, compared to the rest of California. A location quotient higher than 1.0 would indicate a concentration of employment higher than the statewide average for a particular industry.

Table 4 — San Diego County Job Projection, 2015 to 2025

NAICS CODE	INDUSTRY DESCRIPTION	2015 PROJECTED JOBS	2025 PROJECTED JOBS	2015 TO 2025 CHANGE	2015 TO 2025 % CHANGE	2025 PROJECTED LOCATION QUOTIENT
11	Crop and Animal Production	9,679	8,684	-995	-6.6%	0.23
21	Mining, Quarrying, and Oil and Gas Extraction	437	410	-26	39.4%	0.18
22	Utilities	5,490	5,348	Insf. Data	Insf. Data	Insf. Data
23	Construction	68,288	80,733	12,445	20.0%	1.07
31	Manufacturing	97,945	97,537	-408	-8.6%	0.56
42	Wholesale Trade	45,354	55,538	10,183	32.1%	0.88
44	Retail Trade	147,047	171,378	24,332	20.2%	1.12
48	Transportation and Warehousing	20,602	22,865	2,263	23.0%	0.53
51	Information	25,260	25,227	-33	-1.4%	0.49
52	Finance and Insurance	43,030	49,118	6,088	23.3%	0.89
53	Real Estate and Rental and Leasing	29,017	32,057	3,041	1.6%	1.24
54	Professional, Scientific, and Technical Services	136,588	168,788	32,200	20.9%	1.80
55	Management of Companies and Enterprises	21,968	24,475	2,507	11.8%	0.87
56	Administrative and Support and Waste Management and Remediation Services	81,316	92,363	11,047	3.5%	1.00
61	Educational Services	31,990	40,909	8,919	19.8%	2.00
62	Health Care and Social Assistance	157,783	197,728	39,946	20.9%	1.69
71	Arts, Entertainment, and Recreation	27,067	32,989	5,922	13.0%	1.51
72	Accommodation and Food Services	154,700	184,608	29,908	21.3%	1.67
81	Other Services (except Public Administration)	47,645	53,566	5,921	10.0%	0.94
90	Government	220,156	232,833	12,677	4.2%	1.04
99	Unclassified Industry	4,781	5,064	283	5.8%	0.98
	Total	1,376,141	1,582,219	206,078	15.0%	

Source: ADE, Inc.; data from EMSI.

Notes: The employment projections data comes from EMSI, which uses multiple sources to project the future employment, including the California EDD and Bureau of Labor Statistics NIOEM projections.

The location quotient represents the relative concentration of employment, compared to the rest of California. A location quotient higher than 1.0 would indicate a concentration of employment higher than the statewide average for a particular industry.

OCCUPATIONS

Imperial County's occupational trends show that much of the job growth between 2001 and 2014 occurred in the protective service, food preparation, personal care, sales, and office occupations. Coinciding with Imperial

County's broad employment growth across industry groups, the occupational trends show similarly widespread job expansion. Among the broad occupational groups, only arts/design/entertainment occupations showed any job loss between 2001 and 2014. Over the shorter-term, most occupations also gained jobs between 2009 and 2014. However, some professional and technical occupations showed small jobs losses when looking at the shorter-term trends. In addition, building and grounds cleaning and maintenance, and personal care occupations showed much larger job losses.

By comparison, the occupational trends for San Diego County occupational trends show that much of the job growth between 2001 and 2014 occurred in the health care, food preparation, and personal care occupations. The occupational distribution also showed a substantial shift away from production, transportation, and construction occupations. Over the shorter-term, most occupations gained jobs between 2009 and 2014. Only building maintenance and grounds cleaning occupations lost jobs during this time.

Projected occupational job growth shows continued gains across nearly all occupational categories in Imperial County between 2015 and 2025, with only farming occupations expected to show job losses. The largest projected gains will occur in the personal care and service, sales, and office occupations, with each of those categories gaining over 1,200 new jobs through 2025. Neighboring San Diego County is projected to have a similar occupational job growth, with all occupational groups adding jobs with the exception of farming occupations.

Table 5 — Imperial County Occupational Trend, 2015 to 2025

SOC CODE	OCCUPATION DESCRIPTION	2001 JOBS	2009 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	2009 TO 2014 CHANGE	2009 TO 2014 % CHANGE
11-0000	Management Occupations	2,072	2,169	2,405	333	16.1%	236	10.9%
13-0000	Business and Financial Operations Occupations	1,624	2,029	2,093	470	28.9%	64	3.2%
15-0000	Computer and Mathematical Occupations	370	395	379	10	2.7%	-15	-3.9%
17-0000	Architecture and Engineering Occupations	327	369	341	14	4.4%	-28	-7.5%
19-0000	Life, Physical, and Social Science Occupations	292	373	364	72	24.5%	-9	-2.4%
21-0000	Community and Social Service Occupations	452	584	970	518	114.6%	386	66.1%
23-0000	Legal Occupations	185	227	207	21	11.5%	-20	-9.0%
25-0000	Education, Training, and Library Occupations	3,831	3,938	4,167	336	8.8%	229	5.8%
27-0000	Arts, Design, Entertainment, Sports, and Media Occupations	301	311	296	-5	-1.6%	-15	-4.8%
29-0000	Healthcare Practitioners and Technical Occupations	1,370	1,957	2,069	699	51.0%	112	5.7%
31-0000	Healthcare Support Occupations	600	1,056	1,018	417	69.5%	-38	-3.6%
33-0000	Protective Service Occupations	2,902	4,181	4,195	1,293	44.5%	14	0.3%
35-0000	Food Preparation and Serving Related Occupations	2,848	3,435	4,233	1,385	48.6%	798	23.2%
37-0000	Building and Grounds Cleaning and Maintenance Occupations	1,660	2,495	1,826	166	10.0%	-668	-26.8%
39-0000	Personal Care and Service Occupations	1,638	3,034	2,758	1,120	68.3%	-276	-9.1%
41-0000	Sales and Related Occupations	5,438	6,315	7,894	2,456	45.2%	1,579	25.0%
43-0000	Office and Administrative Support Occupations	6,060	6,833	7,728	1,668	27.5%	895	13.1%
45-0000	Farming, Fishing, and Forestry Occupations	9,513	8,409	10,151	638	6.7%	1,743	20.7%
47-0000	Construction and Extraction Occupations	1,630	1,512	1,982	352	21.6%	470	31.1%
49-0000	Installation, Maintenance, and Repair Occupations	1,755	1,892	2,129	374	21.3%	237	12.5%
51-0000	Production Occupations	1,775	2,480	2,133	358	20.1%	-347	-14.0%
53-0000	Transportation and Material Moving Occupations	3,194	3,244	3,441	247	7.7%	197	6.1%
	Total	49,839	57,237	62,780	12,941	26.0%	5,544	9.7%

Source:

Table 6 — San Diego County Occupational Trend, 2001 to 2014

SOC CODE	OCCUPATION DESCRIPTION	2001 JOBS	2009 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	2009 TO 2014 CHANGE	2009 TO 2014 % CHANGE
11-0000	Management Occupations	71,028	72,103	78,433	7,405	10.4%	6,330	8.8%
13-0000	Business and Financial Operations Occupations	71,298	73,333	79,200	7,902	11.1%	5,868	8.0%
15-0000	Computer and Mathematical Occupations	42,763	43,683	46,499	3,736	8.7%	2,816	6.4%
17-0000	Architecture and Engineering Occupations	37,407	37,871	41,100	3,693	9.9%	3,229	8.5%

SOC CODE	OCCUPATION DESCRIPTION	2001 JOBS	2009 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	2009 TO 2014 CHANGE	2009 TO 2014 % CHANGE
19-0000	Life, Physical, and Social Science Occupations	17,024	18,672	22,365	5,341	31.4%	3,693	19.8%
21-0000	Community and Social Service Occupations	14,573	15,750	18,303	3,730	25.6%	2,553	16.2%
23-0000	Legal Occupations	9,762	10,667	11,055	1,293	13.2%	389	3.6%
25-0000	Education, Training, and Library Occupations	68,445	75,252	75,525	7,080	10.3%	273	0.4%
27-0000	Arts, Design, Entertainment, Sports, and Media Occupations	18,053	17,520	17,991	-62	-0.3%	472	2.7%
29-0000	Healthcare Practitioners and Technical Occupations	49,728	59,226	67,270	17,542	35.3%	8,044	13.6%
31-0000	Healthcare Support Occupations	22,099	26,618	32,769	10,670	48.3%	6,151	23.1%
33-0000	Protective Service Occupations	25,219	27,458	30,145	4,926	19.5%	2,686	9.8%
35-0000	Food Preparation and Serving Related Occupations	104,243	121,171	141,072	36,829	35.3%	19,902	16.4%
37-0000	Building and Grounds Cleaning and Maintenance Occupations	44,475	48,498	46,724	2,249	5.1%	-1,774	-3.7%
39-0000	Personal Care and Service Occupations	30,933	42,150	44,025	13,092	42.3%	1,875	4.4%
41-0000	Sales and Related Occupations	136,961	133,592	139,989	3,028	2.2%	6,397	4.8%
43-0000	Office and Administrative Support Occupations	199,919	201,674	208,554	8,635	4.3%	6,880	3.4%
45-0000	Farming, Fishing, and Forestry Occupations	8,918	7,477	7,932	-986	-11.1%	455	6.1%
47-0000	Construction and Extraction Occupations	57,499	48,124	49,856	-7,643	-13.3%	1,732	3.6%
49-0000	Installation, Maintenance, and Repair Occupations	44,126	42,399	43,783	-343	-0.8%	1,384	3.3%
51-0000	Production Occupations	79,900	66,264	67,698	-12,202	-15.3%	1,434	2.2%
53-0000	Transportation and Material Moving Occupations	64,627	58,362	62,405	-2,222	-3.4%	4,043	6.9%
	Total	1,218,997	1,247,863	1,332,695	113,698	9.3%	84,832	6.8%

Source:

Table 7 — Imperial County Occupational Projection, 2015 to 2025

SOC CODE	OCCUPATION DESCRIPTION	2015 JOBS	2025 JOBS	2015 TO 2025 CHANGE	2015 TO 2025 % CHANGE
11-0000	Management Occupations	2,545	2,895	351	13.8%
13-0000	Business and Financial Operations Occupations	2,132	2,502	370	17.3%
15-0000	Computer and Mathematical Occupations	392	490	98	24.9%
17-0000	Architecture and Engineering Occupations	353	420	67	19.1%
19-0000	Life, Physical, and Social Science Occupations	376	423	47	12.6%
21-0000	Community and Social Service Occupations	1,022	1,408	386	37.8%
23-0000	Legal Occupations	206	244	38	18.3%
25-0000	Education, Training, and Library Occupations	4,290	5,023	734	17.1%
27-0000	Arts, Design, Entertainment, Sports, and Media Occupations	308	368	61	19.7%
29-0000	Healthcare Practitioners and Technical Occupations	2,190	2,645	455	20.8%
31-0000	Healthcare Support Occupations	1,110	1,689	579	52.2%
33-0000	Protective Service Occupations	4,234	5,033	800	18.9%
35-0000	Food Preparation and Serving Related Occupations	4,293	5,206	913	21.3%
37-0000	Building and Grounds Cleaning and Maintenance Occupations	1,883	2,255	373	19.8%
39-0000	Personal Care and Service Occupations	2,931	4,700	1,770	60.4%
41-0000	Sales and Related Occupations	8,631	10,375	1,744	20.2%
43-0000	Office and Administrative Support Occupations	8,063	9,328	1,265	15.7%
45-0000	Farming, Fishing, and Forestry Occupations	10,827	10,285	-543	-5.0%
47-0000	Construction and Extraction Occupations	2,221	3,030	809	36.4%
49-0000	Installation, Maintenance, and Repair Occupations	2,273	2,695	422	18.6%
51-0000	Production Occupations	1,936	2,035	99	5.1%
53-0000	Transportation and Material Moving Occupations	3,667	4,175	508	13.8%
	Total	65,881	77,225	11,344	17.2%

Table 8 — San Diego County Occupational Projection, 2015 to 2025

SOC CODE	OCCUPATION DESCRIPTION	2015 JOBS	2025 JOBS	2015 TO 2025 CHANGE	2015 TO 2025 % CHANGE
11-0000	Management Occupations	80,993	91,823	10,830	13.4%
13-0000	Business and Financial Operations Occupations	82,405	94,006	11,601	14.1%
15-0000	Computer and Mathematical Occupations	48,780	57,156	8,376	17.2%
17-0000	Architecture and Engineering Occupations	42,188	47,447	5,259	12.5%
19-0000	Life, Physical, and Social Science Occupations	23,301	28,041	4,740	20.3%
21-0000	Community and Social Service Occupations	18,510	20,710	2,200	11.9%
23-0000	Legal Occupations	11,412	13,033	1,621	14.2%
25-0000	Education, Training, and Library Occupations	76,832	86,453	9,621	12.5%
27-0000	Arts, Design, Entertainment, Sports, and Media Occupations	18,698	20,691	1,993	10.7%

SOC CODE	OCCUPATION DESCRIPTION	2015 JOBS	2025 JOBS	2015 TO 2025 CHANGE	2015 TO 2025 % CHANGE
29-0000	Healthcare Practitioners and Technical Occupations	70,292	84,201	13,909	19.8%
31-0000	Healthcare Support Occupations	34,172	43,412	9,240	27.0%
33-0000	Protective Service Occupations	31,155	35,430	4,275	13.7%
35-0000	Food Preparation and Serving Related Occupations	146,928	176,243	29,315	20.0%
37-0000	Building and Grounds Cleaning and Maintenance Occupations	47,400	54,561	7,161	15.1%
39-0000	Personal Care and Service Occupations	44,756	57,535	12,779	28.6%
41-0000	Sales and Related Occupations	144,219	165,421	21,202	14.7%
43-0000	Office and Administrative Support Occupations	214,343	238,618	24,275	11.3%
45-0000	Farming, Fishing, and Forestry Occupations	7,891	7,335	-556	-7.0%
47-0000	Construction and Extraction Occupations	53,385	62,734	9,349	17.5%
49-0000	Installation, Maintenance, and Repair Occupations	45,158	51,764	6,606	14.6%
51-0000	Production Occupations	69,338	72,503	3,165	4.6%
53-0000	Transportation and Material Moving Occupations	63,987	73,102	9,115	14.2%
	Total	1,376,141	1,582,219	206,078	15.0%

The distribution of unemployed in Imperial County (data from November 2015) shows the highest concentration of unemployed workers in food service, sales, office and farming occupations. Compared to their share of the overall labor force in Imperial County, the management/business/science/arts occupations have a comparatively small share of the unemployed workers.

The labor force in Imperial County shows a relatively even distribution of jobs across broad occupational groups. However, the concentration of occupations in the management/business/science/arts occupations (25.1 percent) is low in Imperial County compared to neighboring San Diego County (40.5 percent) and California (37.1 percent). These occupations generally require a higher level of technical training and education, and have a higher wage.

Table 9 — Imperial County Occupational Unemployment

SOC	OCCUPATION	UNEMPLOYED (11/2015)	% OF TOTAL COUNTY UNEMPLOYMENT	% OF TOTAL US UNEMPLOYMENT
11-0000	Management Occupations	369	2.0%	6.0%
13-0000	Business and Financial Operations Occupations	171	1.0%	3.0%
15-0000	Computer and Mathematical Occupations	62	0.0%	1.0%
17-0000	Architecture and Engineering Occupations	31	0.0%	1.0%
19-0000	Life, Physical, and Social Science Occupations	0	0.0%	0.0%
21-0000	Community and Social Service Occupations	87	1.0%	1.0%
23-0000	Legal Occupations	23	0.0%	1.0%
25-0000	Education, Training, and Library Occupations	317	2.0%	3.0%
27-0000	Arts, Design, Entertainment, Sports, and Media Occupations	71	0.0%	2.0%
29-0000	Healthcare Practitioners and Technical Occupations	81	0.0%	2.0%
31-0000	Healthcare Support Occupations	105	1.0%	2.0%

SOC	OCCUPATION	UNEMPLOYED (11/2015)	% OF TOTAL COUNTY UNEMPLOYMENT	% OF TOTAL US UNEMPLOYMENT
33-0000	Protective Service Occupations	0	0.0%	1.0%
35-0000	Food Preparation and Serving Related Occupations	1,650	10.0%	7.0%
37-0000	Building and Grounds Cleaning and Maintenance Occupations	468	3.0%	5.0%
39-0000	Personal Care and Service Occupations	597	4.0%	4.0%
41-0000	Sales and Related Occupations	4,001	24.0%	10.0%
43-0000	Office and Administrative Support Occupations	1,010	6.0%	15.0%
45-0000	Farming, Fishing, and Forestry Occupations	3,027	18.0%	1.0%
47-0000	Construction and Extraction Occupations	664	4.0%	8.0%
49-0000	Installation, Maintenance, and Repair Occupations	185	1.0%	2.0%
51-0000	Production Occupations	888	5.0%	6.0%
53-0000	Transportation and Material Moving Occupations	548	3.0%	7.0%
99-0000	No Previous Work Experience/Unspecified	2,492	15.0%	12.0%

Source: ADE, Inc.; data from EMSI.

ECONOMIC INDICATORS

The gross regional product (GRP) is a commonly used measure to gauge the level of economic activity in a region. It primarily consists of value-added measures such as earnings and property income (which includes corporate profits). As a whole, the GRP for Imperial County totals \$5.2 billion. The highest value private sectors are crop and animal production, retail trade, wholesale trade, manufacturing, and health care. Government makes up the largest portion of the GRP with \$1.7 billion. By comparison, San Diego County has a total gross regional product of \$189.6 billion. The highest value private sectors for the county are manufacturing, finance and insurance, professional services, and health care.

Table 10 — Imperial Gross Regional Product, 2013

NAICS	INDUSTRY	EARNINGS	PROPERTY INCOME	TAXES	SUBSIDIES	GROSS REGIONAL PRODUCT
11	Crop and Animal Production	\$330,108,348	\$147,403,864	\$16,538,012	-\$28,432,962	\$465,617,262
21	Mining, Quarrying, and Oil and Gas Extraction	\$36,039,488	\$57,201,308	\$6,213,498	\$0	\$99,454,295
22	Utilities	\$49,999,234	\$83,366,835	\$36,171,881	\$0	\$169,537,950
23	Construction	\$107,930,436	\$37,984,840	\$1,890,705	\$0	\$147,805,981
31	Manufacturing	\$122,576,197	\$87,742,036	\$13,902,813	-\$190	\$224,220,857
42	Wholesale Trade	\$117,663,927	\$70,122,245	\$50,422,164	\$0	\$238,208,337
44	Retail Trade	\$250,575,725	\$38,679,902	\$94,766,906	\$0	\$384,022,533
48	Transportation and Warehousing	\$101,788,520	\$28,518,214	\$4,567,087	-\$126,084	\$134,747,737
51	Information	\$19,848,540	\$33,489,647	\$5,226,672	-\$16,771	\$58,548,089
52	Finance and Insurance	\$76,550,083	\$56,004,453	\$4,277,639	-\$9,876	\$136,822,299
53	Real Estate and Rental and Leasing	\$61,252,202	\$59,739,955	\$10,791,843	-\$2,730,982	\$129,053,019
54	Professional, Scientific, and Technical Services	\$66,904,985	\$9,648,755	\$2,140,783	\$0	\$78,694,523
55	Management of Companies and Enterprises	\$9,779,872	\$1,387,595	\$353,374	\$0	\$11,520,840
56	Administrative and Support and Waste	\$85,162,783	\$21,313,128	\$3,030,520	\$0	\$109,506,432

NAICS	INDUSTRY	EARNINGS	PROPERTY INCOME	TAXES	SUBSIDIES	GROSS REGIONAL PRODUCT
	Management and Remediation Services					
61	Educational Services	\$13,553,735	\$656,890	\$675,907	\$0	\$14,886,532
62	Health Care and Social Assistance	\$200,727,688	\$11,160,860	\$2,750,007	-\$16,547	\$214,622,008
71	Arts, Entertainment, and Recreation	\$5,129,176	\$1,089,361	\$668,234	\$0	\$6,886,771
72	Accommodation and Food Services	\$69,684,606	\$21,038,658	\$15,795,996	\$0	\$106,519,261
81	Other Services (except Public Administration)	\$54,032,151	\$2,107,638	\$4,575,056	\$0	\$60,714,845
90	Government	\$1,436,943,017	\$292,604,250	\$0	-\$1,262,099	\$1,728,285,168
	Other Vectors	\$0	\$581,937,970	\$79,248,561	\$0	\$661,186,531
	Total	\$3,216,250,713	\$1,643,198,407	\$354,007,659	-\$32,595,509	\$5,180,861,270

Source: ADE, Inc.; data from EMSI.

Notes: The Gross Regional Product represents the final market value of all goods and services produced in a region

Table 11 — San Diego County Gross Regional Production, 2013

NAICS	INDUSTRY	EARNINGS	PROPERTY INCOME	TAXES	SUBSIDIES	GROSS REGIONAL PRODUCT
11	Crop and Animal Production	\$593,437,437	\$210,061,286	\$48,844,109	-\$73,460,149	\$778,882,682
21	Mining, Quarrying, and Oil and Gas Extraction	\$52,211,717	\$85,361,350	\$11,098,783	\$0	\$148,671,850
22	Utilities	\$1,170,438,766	\$2,736,151,513	\$1,015,360,871	\$0	\$4,921,951,149
23	Construction	\$4,832,496,918	\$1,712,801,982	\$84,746,378	\$0	\$6,630,045,277
31	Manufacturing	\$9,277,033,250	\$8,969,648,606	\$742,545,097	-\$3,160,341	\$18,986,066,613
42	Wholesale Trade	\$4,426,285,564	\$2,659,271,258	\$1,900,765,901	\$0	\$8,986,322,723
44	Retail Trade	\$5,926,429,348	\$853,074,760	\$2,112,995,388	\$0	\$8,892,499,496
48	Transportation and Warehousing	\$1,315,310,648	\$411,726,033	\$88,472,043	-\$452,290	\$1,815,056,434
51	Information	\$2,802,107,817	\$4,133,251,463	\$489,598,152	-\$6,787,277	\$7,418,170,154
52	Finance and Insurance	\$7,240,081,355	\$3,552,658,249	\$411,929,426	-\$568,737	\$11,204,100,293
53	Real Estate and Rental and Leasing	\$4,198,060,128	\$4,098,823,700	\$669,653,685	-\$510,746,350	\$8,455,791,164
54	Professional, Scientific, and Technical Services	\$17,556,920,190	\$1,830,836,238	\$463,051,113	\$0	\$19,850,807,542
55	Management of Companies and Enterprises	\$2,883,417,952	\$410,735,679	\$103,976,174	\$0	\$3,398,129,804
56	Administrative and Support and Waste Management and Remediation	\$4,608,265,275	\$1,012,510,840	\$120,910,712	\$0	\$5,741,686,827

NAICS	INDUSTRY	EARNINGS	PROPERTY INCOME	TAXES	SUBSIDIES	GROSS REGIONAL PRODUCT
61	Services Educational Services	\$1,894,370,127	\$98,915,624	\$81,981,906	\$0	\$2,075,267,657
62	Health Care and Social Assistance	\$9,682,968,020	\$599,580,188	\$241,666,491	-\$57,938,969	\$10,466,275,730
71	Arts, Entertainment, and Recreation	\$1,429,593,194	\$410,452,094	\$247,538,141	\$0	\$2,087,583,429
72	Accommodation and Food Services	\$3,665,413,823	\$1,138,812,797	\$877,256,926	\$0	\$5,681,483,546
81	Other Services (except Public Administration)	\$2,804,986,389	\$137,099,687	\$200,255,449	\$0	\$3,142,341,526
90	Government	\$25,645,509,827	\$13,792,926,637	\$0	-\$67,118,021	\$39,371,318,443
	Other Vectors	\$0	\$17,218,745,177	\$2,321,340,905	\$0	\$19,540,086,081
	Total	\$112,005,337,745	\$66,073,445,159	\$12,233,987,650	-\$720,232,134	\$189,592,538,420

Source: ADE, Inc.; data from EMSI.

Notes: The Gross Regional Product represents the final market value of all goods and services produced in a region

In terms of buyer-supplier relationships, industries in Imperial County require about \$12.2 billion in purchases in order to operation. About \$2.6 billion (8.6 percent) of this business-to-business demand is met within the county. The rest of the business requirements are met by importing goods and services from outside of Imperial County. Industry categories where over 20 percent of the business-to-business demand is satisfied within Imperial County include crop and animal production (21.9 percent), retail trade (38.7 percent), administrative service (22.5 percent), accommodations and food service (28.3 percent), other services (20.6 percent) and government (32.8 percent).

Table 12 — Imperial Regional Requirements, 2013

NAICS	INDUSTRY	TOTAL REQUIREMENTS	SATISFIED IN IMPERIAL COUNTY	SATISFIED OUTSIDE IMPERIAL COUNTY	PERCENT SATISFIED IN IMPERIAL COUNTY
11	Crop and Animal Production	\$454,746,600	\$99,566,383	\$355,180,216	21.9%
21	Mining, Quarrying, and Oil and Gas Extraction	\$110,064,106	\$10,926,089	\$99,138,017	9.9%
22	Utilities	\$124,808,277	\$5,849,646	\$118,958,632	4.7%
23	Construction	\$520,738,826	\$112,345,631	\$408,393,194	21.6%
31	Manufacturing	\$1,525,855,300	\$77,751,971	\$1,448,103,328	5.1%
42	Wholesale Trade	\$418,995,374	\$44,921,982	\$374,073,392	10.7%
44	Retail Trade	\$495,143,902	\$191,601,064	\$303,542,838	38.7%
48	Transportation and Warehousing	\$304,482,823	\$47,495,169	\$256,987,654	15.6%
51	Information	\$388,526,544	\$35,400,377	\$353,126,167	9.1%
52	Finance and Insurance	\$557,631,061	\$41,137,714	\$516,493,347	7.4%
53	Real Estate and Rental and Leasing	\$326,397,416	\$58,041,332	\$268,356,084	17.8%
54	Professional, Scientific, and Technical Services	\$485,998,818	\$31,333,887	\$454,664,931	6.4%
55	Management of Companies and Enterprises	\$111,110,359	\$1,299,340	\$109,811,019	1.2%
56	Administrative and Support and Waste Management and Remediation Services	\$171,847,018	\$38,615,521	\$133,231,496	22.5%
61	Educational Services	\$121,164,162	\$9,404,567	\$111,759,595	7.8%

NAICS	INDUSTRY	TOTAL REQUIREMENTS	SATISFIED IN IMPERIAL COUNTY	SATISFIED OUTSIDE IMPERIAL COUNTY	PERCENT SATISFIED IN IMPERIAL COUNTY
62	Health Care and Social Assistance	\$720,587,930	\$107,288,624	\$613,299,306	14.9%
71	Arts, Entertainment, and Recreation	\$82,336,657	\$4,537,991	\$77,798,665	5.5%
72	Accommodation and Food Services	\$266,353,759	\$75,322,591	\$191,031,168	28.3%
81	Other Services (except Public Administration)	\$174,151,192	\$35,809,490	\$138,341,702	20.6%
90	Government	\$4,862,226,824	\$1,594,848,891	\$3,267,377,933	32.8%
	Total	\$12,223,166,946	\$2,623,498,262	\$9,599,668,684	21.5%

Source: ADE, Inc.; data from the EMSI input-output model.

By comparison, the larger geographic area and base of business activity for San Diego County creates a much larger pool of internal business-to-business trade. Businesses within the county require about \$341.1 billion in supplier purchases to operate. About \$153.9 billion (45.1 percent) of this requirement is met within San Diego County. In general, the services sectors have a much higher proportion of their requirements met with internal business-to-business relationships. Manufacturing has a much higher import component.

Table 13 — San Diego County Regional Requirements, 2013

NAICS	INDUSTRY	TOTAL REQUIREMENTS	SATISFIED IN COUNTY	SATISFIED OUTSIDE COUNTY	PERCENT SATISFIED IN COUNTY
11	Crop and Animal Production	\$1,799,859,087	\$713,207,823	\$1,086,651,264	39.6%
21	Mining, Quarrying, and Oil and Gas Extraction	\$2,996,442,106	\$106,148,865	\$2,890,293,241	3.5%
22	Utilities	\$3,996,434,634	\$1,989,452,788	\$2,006,981,846	49.8%
23	Construction	\$12,654,056,312	\$9,039,973,097	\$3,614,083,215	71.4%
31	Manufacturing	\$52,811,603,510	\$10,827,583,785	\$41,984,019,725	20.5%
42	Wholesale Trade	\$13,511,049,566	\$6,168,990,729	\$7,342,058,837	45.7%
44	Retail Trade	\$15,549,374,976	\$11,121,578,675	\$4,427,796,301	71.5%
48	Transportation and Warehousing	\$9,118,844,988	\$2,477,819,926	\$6,641,025,062	27.2%
51	Information	\$15,658,929,419	\$8,643,705,785	\$7,015,223,634	55.2%
52	Finance and Insurance	\$21,228,661,798	\$12,042,550,598	\$9,186,111,201	56.7%
53	Real Estate and Rental and Leasing	\$14,846,780,112	\$11,375,384,523	\$3,471,395,589	76.6%
54	Professional, Scientific, and Technical Services	\$23,339,138,050	\$16,820,600,898	\$6,518,537,152	72.1%
55	Management of Companies and Enterprises	\$5,219,113,825	\$3,014,973,756	\$2,204,140,069	57.8%
56	Administrative and Support and Waste Management and Remediation Services	\$9,594,879,249	\$6,623,454,381	\$2,971,424,869	69.0%
61	Educational Services	\$3,923,286,219	\$2,698,928,790	\$1,224,357,429	68.8%
62	Health Care and Social Assistance	\$22,278,061,557	\$14,133,322,106	\$8,144,739,450	63.4%
71	Arts, Entertainment, and Recreation	\$3,221,198,424	\$2,030,842,832	\$1,190,355,592	63.0%
72	Accommodation and Food Services	\$9,068,619,818	\$7,336,208,272	\$1,732,411,546	80.9%
81	Other Services (except Public Administration)	\$5,916,364,636	\$4,046,568,064	\$1,869,796,572	68.4%
90	Government	\$94,346,417,737	\$22,641,104,404	\$71,705,313,333	24.0%
	Total	\$341,079,116,021	\$153,852,400,096	\$187,226,715,925	45.1%

Source: ADE, Inc.; data from the EMSI input-output model.

Imperial County exported about \$11.1 billion worth of goods and services in 2013. The largest export sectors were crop and animal production, manufacturing, retail trade, and government. San Diego County's export base totaled about \$219.6 billion, with the largest private export sectors in manufacturing and professional services.

Table 14 — Imperial and San Diego County Exports, 2013

NAICS	INDUSTRY	IMPERIAL COUNTY EXPORTS	SAN DIEGO COUNTY EXPORTS
11	Crop and Animal Production	\$867,200,953	\$1,600,671,606
21	Mining, Quarrying, and Oil and Gas Extraction	\$135,144,218	\$104,011,173
22	Utilities	\$248,493,854	\$4,971,301,129
23	Construction	\$152,998,699	\$2,853,622,410
31	Manufacturing	\$897,236,925	\$27,311,216,202
42	Wholesale Trade	\$304,405,484	\$6,974,645,327
44	Retail Trade	\$421,646,375	\$3,301,988,994
48	Transportation and Warehousing	\$240,318,111	\$1,114,781,911
51	Information	\$74,873,012	\$5,605,320,947
52	Finance and Insurance	\$151,143,779	\$5,637,523,184
53	Real Estate and Rental and Leasing	\$188,192,837	\$6,328,936,086
54	Professional, Scientific, and Technical Services	\$88,415,961	\$17,937,021,742
55	Management of Companies and Enterprises	\$18,517,464	\$2,827,686,136
56	Administrative and Support and Waste Management and Remediation Services	\$129,763,079	\$1,876,350,005
61	Educational Services	\$12,246,882	\$752,115,198
62	Health Care and Social Assistance	\$218,910,130	\$3,434,175,216
71	Arts, Entertainment, and Recreation	\$7,622,295	\$1,406,230,651
72	Accommodation and Food Services	\$135,390,982	\$3,180,419,291
81	Other Services (except Public Administration)	\$67,044,855	\$1,295,013,328
90	Government	\$6,753,224,517	\$121,116,927,233
	Total	\$11,112,790,412	\$219,629,957,769

Source: ADE, Inc.; data from the EMSI input-output model.

2.2 CLUSTER ANALYSIS

The more detailed analysis of trends in advanced manufacturing takes a cluster-oriented approach. This methodology assumes that interrelated groupings of industries create a regional advantage through specialization and concentration of activity in particular areas that draw from a region's strengths. Even though there are different approaches to analyzing clusters, the initial approach for Imperial County was to examine six specific clusters, namely aerospace, automotive and machinery, water technologies, biofuel manufacturing, agriculture, and medical services.

These clusters were analyzed within the broader context of identifying opportunities for advanced manufacturing. Because of this, the analysis also looks at existing manufacturing as a group. Not all of these clusters of interest have a large amount of existing employment. As such, those clusters can be considered aspirational, in other words, clusters that could potentially locate in Imperial County under the right set of conditions.

To begin with, the cluster analysis took an overall examination of clusters throughout Imperial County's economy, with an emphasis on "traded clusters." Traded clusters represent the groups of economic sectors that serve regional and global markets, rather than local demand that depends more on population and household income factors. These clusters drive wealth creation and generally have a higher value added than the sectors that serve local markets. As a joint venture by the Harvard Business School and U.S. Economic

Development Administration, the U.S. Cluster Mapping Project has developed a set of 51 standard cluster definitions that they use to identify the economic drivers for various economic regions throughout the U.S. These clusters cover a broad range of different economic activities, and have a high level of specificity.

For Imperial County, the U.S. Cluster Mapping Project identified nine traded clusters as the leading clusters, based on performance measures that compare Imperial County to other regions. The leading clusters generally have a high level of specialization in the county. These clusters are shown in Table x-x.

Traded clusters in Imperial County are led by agriculture, distribution, and livestock processing. Other areas of known specialization in Imperial County, such as electrical power, do not show up in the datasets because they only track private sector employment. In addition, certain new technologies such as biomass are frequently not tracked well by the existing NAICS code definitions. As a group, traded clusters in Imperial County made up about 20 percent of the overall employment, and the job growth lagged behind the relatively high job growth for all sectors. This means that a relatively high 80 percent of the county economy depends on population and income growth, rather than trade with regional and global customers.

In neighboring San Diego County, the leading traded clusters include tourism, education, and various clusters related to technology and transportation. As a whole, the traded clusters represent more than 30 percent of the job base in San Diego County, with over 369,000 jobs in 2014. Since 2001, traded clusters added just under 10,000 new jobs. Compared to the overall economy that grew by over 113,000 jobs, several of the traded clusters in San Diego County had job losses. This indicates that much of the job growth occurred in local-serving sectors.

Between 2015 and 2025, the traded clusters show an overall projected growth of about 950 jobs in Imperial County. Compared to the more than 11,000 projected new jobs overall that Imperial County expects to add through 2025, the long-term projections show a continued trend where the employment base depends on local demand. The traded clusters expected to show the highest growth in Imperial County are distribution, business services, hospitality, and logistics. Losses are expected in agriculture, construction, and livestock.

Projected jobs in traded clusters show over 47,600 new jobs in San Diego County. The growth will be distributed across a wide cross-section of clusters with largest projected growth occurring in business services, distribution, education, and hospitality.

Table 15 — Imperial County Clusters

TRADED CLUSTER	2001 JOBS (IMPERIAL COUNTY)	2014 JOBS (IMPERIAL COUNTY)	2001 TO 2014 JOB CHANGE	2014 LOCATION QUOTIENT	LEADING COUNTY CLUSTER (US CLUSTER MAPPING PROJECT)	HIGH LOCATION QUOTIENT	POSITIVE GROWTH
Aerospace Vehicles and Defense	20	11	-9	0.03	X		
Agricultural Inputs and Services	6,057	6,859	802	8.27	X	X	X
Apparel	0	14	14	0.06	X		X
Automotive	0	0	0	0.00			
Biopharmaceuticals	0	0	0	0.00			
Business Services	753	787	34	0.19			X
Coal Mining	0	0	0	0.00			
Communications Equipment And Services	52	34	-18	0.14			
Construction Products and Services	571	313	-258	1.42		X	
Distribution and Electronic Commerce	1,721	1,648	-73	0.64	X		
Downstream Chemical Products	58	0	-58	0.00			
Downstream Metal Products	0	33	33	0.31			X
Education and Knowledge Creation	35	20	-15	0.02			
Electric Power Generation and Transmission	0	0	0	0.00	X		
Environmental Services	0	0	0	0.00			
Financial Services	215	305	91	0.37			X
Fishing and Fishing Products	0	0	0	0.00			
Food Processing and Manufacturing	564	356	-208	0.58			
Footwear	19	0	-19	0.00			
Forestry	20	93	72	5.39		X	X
Furniture	17	22	4	0.18			X
Hospitality and Tourism	477	390	-87	0.28			
Information Technology and Analytical Instruments	85	52	-33	0.05			
Insurance Services	49	13	-36	0.03			
Jewelry and Precious Metals	0	0	0	0.00			
Leather and Related Products	0	0	0	0.00	X		
Lighting and Electrical Equipment	0	0	0	0.00	X		
Livestock Processing	0	774	774	8.84	X	X	X
Marketing, Design, and Publishing	68	29	-39	0.03			
Medical Devices	11	0	-11	0.00			
Metal Mining	95	152	57	49.41	X	X	X
Metalworking Technology	0	0	0	0.00			
Music and Sound Recording	0	0	0	0.00			
Nonmetal Mining	0	57	57	3.13		X	X
Oil and Gas Production and Transportation	0	97	97	0.61			X
Paper and Packaging	108	0	-108	0.00			
Performing Arts	0	0	0	0.00			

TRADED CLUSTER	2001 JOBS (IMPERIAL COUNTY)	2014 JOBS (IMPERIAL COUNTY)	2001 TO 2014 JOB CHANGE	2014 LOCATION QUOTIENT	LEADING COUNTY CLUSTER (US CLUSTER MAPPING PROJECT)	HIGH LOCATION QUOTIENT	POSITIVE GROWTH
Plastics	90	0	-90	0.00			
Production Technology and Heavy Machinery	0	24	24	0.11			X
Recreational and Small Electric Goods	0	40	40	0.41			X
Textile Manufacturing	0	0	0	0.00			
Trailers, Motor Homes, and Appliances	0	0	0	0.00			
Transportation and Logistics	468	493	26	0.87			X
Upstream Chemical Products	0	0	0	0.00			
Upstream Metal Manufacturing	21	0	-21	0.00			
Video Production and Distribution	0	0	0	0.00			
Vulcanized and Fired Materials	0	0	0	0.00			
Water Transportation	0	0	0	0.00			
Wood Products	23	16	-6	0.19			
Total Jobs (All Sectors)	49,839	62,780	12,941				
Traded Cluster Jobs	11,596	12,632	1,036				

Source: ADE, Inc.; data from EMSI, EDA, and US Cluster Mapping Project.

Table 16 — San Diego County Clusters

TRADED CLUSTER	2001 JOBS (SAN DIEGO COUNTY)	2014 JOBS (SAN DIEGO COUNTY)	2001 TO 2014 JOB CHANGE	2014 LOCATION QUOTIENT	LEADING COUNTY CLUSTER (US CLUSTER MAPPING PROJECT)	HIGH LOCATION QUOTIENT	POSITIVE GROWTH
Aerospace Vehicles and Defense	8,446	12,041	3,595	1.43	X	X	X
Agricultural Inputs and Services	1,752	1,075	-676	0.06			
Apparel	3,323	1,443	-1,881	0.31			
Automotive	1,453	1,042	-411	0.42			
Biopharmaceuticals	4,431	6,367	1,936	1.60	X	X	X

TRADED CLUSTER	2001 JOBS (SAN DIEGO COUNTY)	2014 JOBS (SAN DIEGO COUNTY)	2001 TO 2014 JOB CHANGE	2014 LOCATION QUOTIENT	LEADING COUNTY CLUSTER (US CLUSTER MAPPING PROJECT)	HIGH LOCATION QUOTIENT	POSITIVE GROWTH
Business Services	71,408	84,808	13,400	0.98			X
Coal Mining	0	0	0	0.00			
Communications Equipment And Services	15,685	8,677	-7,008	1.69	X	X	
Construction Products and Services	5,179	2,784	-2,395	0.60			
Distribution and Electronic Commerce	35,582	38,464	2,882	0.71			X
Downstream Chemical Products	976	676	-300	0.37			
Downstream Metal Products	2,610	1,859	-750	0.81			
Education and Knowledge Creation	33,528	51,333	17,805	1.92	X	X	X
Electric Power Generation and Transmission	0	765	765	0.64			X
Environmental Services	942	813	-129	0.67			
Financial Services	20,721	18,155	-2,566	1.04		X	
Fishing and Fishing Products	479	62	-417	0.48			
Food Processing and Manufacturing	4,071	5,456	1,384	0.42			X
Footwear	0	12	12	0.15			X
Forestry	12	130	118	0.36			X
Furniture	4,044	1,384	-2,661	0.54			
Hospitality and Tourism	38,537	45,280	6,743	1.52	X	X	X
Information Technology and Analytical Instruments	28,704	19,368	-9,336	0.84	X		
Insurance Services	8,933	8,396	-537	1.01		X	
Jewelry and Precious Metals	315	68	-247	0.28			
Leather and Related Products	761	343	-418	0.95	X		
Lighting and Electrical Equipment	3,163	2,031	-1,132	0.89	X		
Livestock Processing	95	235	140	0.13			X
Marketing, Design, and Publishing	13,861	13,405	-456	0.76	X		
Medical Devices	5,661	6,295	634	1.48	X	X	X
Metal Mining	0	21	21	0.32			X
Metalworking Technology	2,313	2,602	290	0.67			X
Music and Sound Recording	574	155	-419	0.50	X		
Nonmetal Mining	228	231	3	0.60			X
Oil and Gas Production and Transportation	147	455	308	0.14			X
Paper and Packaging	972	666	-305	0.40			
Performing Arts	2,754	2,423	-330	0.51			
Plastics	3,564	2,486	-1,078	0.76			
Production Technology and Heavy Machinery	7,841	6,913	-928	1.53		X	
Recreational and Small Electric Goods	7,540	3,913	-3,627	1.86	X	X	
Textile Manufacturing	1,354	459	-895	0.41			
Trailers, Motor Homes, and Appliances	271	44	-227	0.13			
Transportation and Logistics	6,625	6,270	-355	0.52			
Upstream Chemical Products	770	707	-63	1.49		X	

TRADED CLUSTER	2001 JOBS (SAN DIEGO COUNTY)	2014 JOBS (SAN DIEGO COUNTY)	2001 TO 2014 JOB CHANGE	2014 LOCATION QUOTIENT	LEADING COUNTY CLUSTER (US CLUSTER MAPPING PROJECT)	HIGH LOCATION QUOTIENT	POSITIVE GROWTH
Upstream Metal Manufacturing	909	926	17	0.49			X
Video Production and Distribution	812	679	-133	0.06			
Vulcanized and Fired Materials	962	591	-372	0.56			
Water Transportation	5,791	6,582	791	2.62	X	X	X
Wood Products	1,282	452	-830	0.26			
Total Jobs (All Sectors)	1,218,997	1,332,695	113,698				
Traded Cluster Jobs	359,379	369,352	9,972				

Source: ADE, Inc.; data from EMSI, EDA, and US Cluster Mapping Project.

Table 17 — Imperial County Projected Cluster

TRADED CLUSTER	2015 JOBS (IMPERIAL COUNTY)	2025 JOBS (IMPERIAL COUNTY)	2015 TO 2025 JOB CHANGE
Aerospace Vehicles and Defense	0	18	18
Agricultural Inputs and Services	6,895	6,694	-201
Apparel	0	0	0
Automotive	0	0	0
Biopharmaceuticals	0	0	0
Business Services	683	846	163
Coal Mining	0	0	0
Communications Equipment And Services	37	44	8
Construction Products and Services	333	285	-48
Distribution and Electronic Commerce	1,655	2,035	380
Downstream Chemical Products	0	0	0
Downstream Metal Products	34	81	48
Education and Knowledge Creation	17	16	-1
Electric Power Generation and Transmission	0	0	0
Environmental Services	0	0	0
Financial Services	317	370	53
Fishing and Fishing Products	0	0	0
Food Processing and Manufacturing	114	155	41
Footwear	0	0	0
Forestry	99	100	0
Furniture	20	0	-20
Hospitality and Tourism	386	495	109
Information Technology and Analytical Instruments	42	68	26
Insurance Services	15	47	32
Jewelry and Precious Metals	0	0	0
Leather and Related Products	0	13	13
Lighting and Electrical Equipment	0	0	0
Livestock Processing	309	239	-70
Marketing, Design, and Publishing	26	59	34
Medical Devices	0	0	0
Metal Mining	186	177	-9
Metalworking Technology	0	0	0
Music and Sound Recording	0	0	0
Nonmetal Mining	69	86	17
Oil and Gas Production and Transportation	125	200	75
Paper and Packaging	0	0	0
Performing Arts	0	0	0
Plastics	0	0	0
Production Technology and Heavy Machinery	23	31	8
Recreational and Small Electric Goods	42	99	57
Textile Manufacturing	0	0	0
Trailers, Motor Homes, and Appliances	0	0	0
Transportation and Logistics	575	762	187
Upstream Chemical Products	0	0	0
Upstream Metal Manufacturing	0	0	0
Video Production and Distribution	0	0	0
Vulcanized and Fired Materials	0	0	0
Water Transportation	0	0	0
Wood Products	18	50	32
Total Jobs (All Sectors)	63,811	75,131	11,320
Traded Cluster Jobs	12,020	12,969	950

Table 18 — San Diego County Projected Clusters

TRADED CLUSTER	2015 JOBS (SAN DIEGO COUNTY)	2025 JOBS (SAN DIEGO COUNTY)	2015 TO 2025 JOB CHANGE
Aerospace Vehicles and Defense	12,252	13,574	1,322
Agricultural Inputs and Services	1,017	528	-488
Apparel	1,426	1,101	-325
Automotive	897	860	-37
Biopharmaceuticals	6,484	8,947	2,462
Business Services	90,181	106,636	16,455
Coal Mining	0	0	0
Communications Equipment And Services	8,581	6,333	-2,248
Construction Products and Services	2,841	2,115	-726
Distribution and Electronic Commerce	41,011	50,293	9,283
Downstream Chemical Products	588	358	-229
Downstream Metal Products	1,988	1,981	-7
Education and Knowledge Creation	53,246	66,829	13,582
Electric Power Generation and Transmission	689	463	-226
Environmental Services	786	788	2
Financial Services	18,212	19,402	1,190
Fishing and Fishing Products	48	0	-48
Food Processing and Manufacturing	5,454	6,707	1,253
Footwear	11	0	-11
Forestry	137	176	39
Furniture	1,413	557	-857
Hospitality and Tourism	45,109	52,966	7,857
Information Technology and Analytical Instruments	19,272	17,835	-1,437
Insurance Services	8,620	9,449	829
Jewelry and Precious Metals	61	0	-61
Leather and Related Products	319	134	-185
Lighting and Electrical Equipment	1,978	1,561	-417
Livestock Processing	242	427	185
Marketing, Design, and Publishing	14,698	16,043	1,345
Medical Devices	6,456	6,824	368
Metal Mining	24	32	8
Metalworking Technology	2,753	2,867	113
Music and Sound Recording	169	68	-102
Nonmetal Mining	218	125	-94
Oil and Gas Production and Transportation	483	641	158
Paper and Packaging	650	593	-57
Performing Arts	2,084	1,946	-138
Plastics	2,504	2,279	-225
Production Technology and Heavy Machinery	7,008	7,546	537
Recreational and Small Electric Goods	3,869	2,852	-1,016
Textile Manufacturing	441	352	-89
Trailers, Motor Homes, and Appliances	37	0	-37
Transportation and Logistics	6,206	6,843	637
Upstream Chemical Products	634	689	56
Upstream Metal Manufacturing	940	982	41
Video Production and Distribution	816	739	-77
Vulcanized and Fired Materials	619	434	-185
Water Transportation	7,563	6,855	-708
Wood Products	456	420	-36
Total Jobs (All Sectors)	1,376,141	1,582,219	206,078
Traded Cluster Jobs	381,503	429,178	47,676

2.3 INDIVIDUAL CLUSTERS

This section examines clusters of interest in greater detail. Within each cluster, the analysis looks at the following measures:

- **Recent employment trends.** The recent trends point to whether a cluster has shown positive job creating performance over the long-term back to 2001, and in the short-term dating back to 2014. The employment indicators are the first measure of how well a cluster currently performs, and whether it has a high level of specialization within the regional economy.
- **Projected employment.** The projected employment looks at future trends moving forward to 2025. The projections identify whether the job growth and specialization for a particular cluster expects to increase over the long-term or if it expects to decline.
- **Staffing patterns.** Each cluster has a unique distribution of occupations that comprise the existing employment base. The occupational patterns include the growth trends and the median hourly wage. The staffing patterns help identify employer needs, and how they line up with the existing labor force in Imperial County.
- **Training requirements.** In addition to the occupational distribution, each cluster also has pattern of typical education, work experience, and on-the-job-training needs. This serves as an indicator of the level of preparedness needed for typical jobs in a particular cluster.
- **Supply chain needs.** The supply chain identifies the business-to-business purchases that are needed in order for employers to operate. This includes all categories of goods and services. The supply chain data identifies those supplier needs that Imperial County businesses currently meet, and those needs that currently require importing goods and services from outside the area. This “leakage” of business spending can also be considered a potential opportunity for new business formation and expansion.

In general, the cluster analysis focuses on Imperial County and the staffing and supply chain characteristics for businesses located in the area. However, for certain cluster that lack an existing presence in Imperial County, the analysis used statewide data California to try and come up with representative indicators that could be applied to future cluster formation in Imperial County.

The datasets used in the cluster analysis come from Economic Modeling Specialists International, Inc. (EMSI), which uses the QCEW and Current Employment Statistics datasets issued by the Bureau of Labor Statistics (BLS), and runs them through a proprietary model that estimates the job counts for industry and occupational categories that BLS does not disclose due to confidentiality restrictions. The projected employment also uses EMSI data. The growth assumptions for the projections come from the California Labor Market Information Division (LMID) and the National Industry-Occupation Employment Matrix (NIOEM).

MANUFACTURING

RECENT TRENDS

As a point of reference, the analysis of individual clusters starts with an overview of all existing manufacturing activity in Imperial County. In general, manufacturing has not been one of the leading job generators in the county. Among most manufacturing categories, Imperial County has fewer than 100 jobs.

As shown in Table 19, Imperial County had a total of 1,744 manufacturing jobs in 2014, which constitutes less than three percent of the total jobs in the county. Even though manufacturing had a net gain of 32 jobs between 2001 and 2014, the shorter-term trend between 2009 and 2014 showed a loss of over 700 jobs (28.8 percent).

The largest manufacturing sector in Imperial County is food processing, with over 1,600 jobs in 2014. The only other manufacturing industry in Imperial County with over 100 jobs is nonmetallic mineral product manufacturing.

Compared to the rest of California, Imperial County has a relatively low concentration of jobs with a location quotient of 0.35. This means that the concentration of manufacturing employment in Imperial County is only about one-third of the statewide average.

Table 19 — Manufacturing Employment Trend, 2001 to 2014

NAICS	DESCRIPTION	2001 JOBS	2009 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	2009 TO 2014 CHANGE	2009 TO 2014 % CHANGE	2014 LOCATION QUOTIENT
31	Manufacturing	1,712	2,449	1,744	32	1.9%	-705	-28.8%	0.35
311	Food Manufacturing	387	1,620	1,062	675	174.4%	-558	-34.4%	1.76
312	Beverage and Tobacco Product Manufacturing	185	91	63	-123	-66.2%	-28	-30.9%	0.31
313	Textile Mills	0	0	0	Insf. Data	Insf. Data	Insf. Data	Insf. Data	0.00
314	Textile Product Mills	<10	<10	<10	Insf. Data	Insf. Data	Insf. Data	Insf. Data	Insf. Data
315	Apparel Manufacturing	11	<10	20	9	83.9%	Insf. Data	Insf. Data	0.09
316	Leather and Allied Product Manufacturing	19	<10	0	-19	-100.0%	Insf. Data	Insf. Data	0.00
321	Wood Product Manufacturing	24	31	16	-8	-34.3%	-15	-48.6%	0.18
322	Paper Manufacturing	108	84	<10	Insf. Data	Insf. Data	Insf. Data	Insf. Data	Insf. Data
323	Printing and Related Support Activities	34	28	10	-24	-69.6%	-18	-63.7%	0.06
324	Petroleum and Coal Products Manufacturing	0	0	0	Insf. Data	Insf. Data	Insf. Data	Insf. Data	0.00
325	Chemical Manufacturing	103	<10	<10	Insf. Data	Insf. Data	Insf. Data	Insf. Data	Insf. Data
326	Plastics and Rubber Products Manufacturing	99	<10	<10	Insf. Data	Insf. Data	Insf. Data	Insf. Data	Insf. Data
327	Nonmetallic Mineral Product Manufacturing	372	337	303	-69	-18.6%	-34	-10.1%	2.54
331	Primary Metal Manufacturing	0	0	0	Insf. Data	Insf. Data	Insf. Data	Insf. Data	0.00
332	Fabricated Metal Product Manufacturing	176	78	70	-106	-60.4%	-8	-10.0%	0.14
333	Machinery Manufacturing	<10	25	32	Insf. Data	Insf. Data	8	30.7%	0.11
334	Computer and Electronic Product Manufacturing	114	27	58	-56	-49.0%	32	117.7%	0.06
335	Electrical Equipment, Appliance, and Component Manufacturing	0	0	0	Insf. Data	Insf. Data	Insf. Data	Insf. Data	0.00
336	Transportation Equipment Manufacturing	21	34	17	-4	-18.1%	-17	-49.4%	0.04
337	Furniture and Related Product Manufacturing	19	23	22	3	14.1%	-2	-7.3%	0.16
339	Miscellaneous Manufacturing	29	55	60	31	106.4%	5	8.6%	0.18
	Imperial County Total	49,839	57,237	62,780	12,941	26.0%	5,543	9.7%	

PROJECTED TRENDS

Projected employment in Imperial County shows about a 5.2 percent gain (70 jobs) between 2015 and 2025. Because the rest of the Imperial County job base is projected to grow at a much faster rate, the concentration of employment will continue to decline. However, some manufacturing sectors show some promise as potentially emerging industries. Wood product, fabricated metal, machinery, electronic product, and miscellaneous manufacturing all have projected employment gains of over 50 percent, with fabricated metal and miscellaneous manufacturing expected to exceed 100 jobs by 2025.

Table 20 — Manufacturing Projection, Imperial County 2015 to 2025

NAICS CODE	INDUSTRY DESCRIPTION	2015 PROJECTED JOBS	2025 PROJECTED JOBS	2015 TO 2025 CHANGE	2015 TO 2025 % CHANGE	2025 PROJECTED LOCATION QUOTIENT
31-33	Manufacturing	1,340	1,410	70	5.2%	0.23
311	Food Manufacturing	671	594	-77	-11.5%	0.84
312	Beverage and Tobacco Product Manufacturing	59	62	4	6.4%	0.26
313	Textile Mills	0	0	0	Insf. Data	0.00
314	Textile Product Mills	<10	17	Insf. Data	Insf. Data	0.41
315	Apparel Manufacturing	17	<10	Insf. Data	Insf. Data	Insf. Data
316	Leather and Allied Product Manufacturing	0	0	0	Insf. Data	0.00
321	Wood Product Manufacturing	13	45	31	232.2%	0.41
322	Paper Manufacturing	<10	<10	Insf. Data	Insf. Data	Insf. Data
323	Printing and Related Support Activities	10	<10	Insf. Data	Insf. Data	Insf. Data
324	Petroleum and Coal Products Manufacturing	0	0	0	Insf. Data	0.00
325	Chemical Manufacturing	<10	<10	Insf. Data	Insf. Data	Insf. Data
326	Plastics and Rubber Products Manufacturing	<10	<10	Insf. Data	Insf. Data	Insf. Data
327	Nonmetallic Mineral Product Manufacturing	324	293	-31	-9.7%	1.88
331	Primary Metal Manufacturing	0	0	0	Insf. Data	0.00
332	Fabricated Metal Product Manufacturing	65	121	56	86.9%	0.20
333	Machinery Manufacturing	30	50	19	62.8%	0.15
334	Computer and Electronic Product Manufacturing	43	83	41	95.1%	0.07
335	Electrical Equipment, Appliance, and Component Manufacturing	0	0	0	Insf. Data	0.00
336	Transportation Equipment Manufacturing	16	<10	Insf. Data	Insf. Data	Insf. Data
337	Furniture and Related Product Manufacturing	21	10	-10	-50.1%	0.06
339	Miscellaneous Manufacturing	61	107	46	75.9%	0.26
	Imperial County Total	65,881	77,225	11,344	17.2%	

Source: ADE, Inc.; data from EMSI.

STAFFING PATTERNS

The staffing patterns for manufacturing show job losses in most of the higher paying technical, management, and business occupations. The largest occupational categories are production and transportation, both of which have median hourly wage levels below \$17 per hour. These categories also had the largest job gains between 2001 and 2014. Over half of the manufacturing jobs (57.9 percent) are in production occupations. About 7.2 percent of the jobs are in management, business, and technical occupations.

Table 21 — Manufacturing Staffing Pattern, Imperial County 2001 to 2014

SOC CODE	OCCUPATION DESCRIPTION	2001 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	MEDIAN HOURLY WAGE
11-0000	Management Occupations	82	56	-25	-31.1%	\$41.54
13-0000	Business and Financial Operations Occupations	36	21	-15	-40.9%	\$31.45
15-0000	Computer and Mathematical Occupations	23	11	-12	-52.5%	\$28.63
17-0000	Architecture and Engineering Occupations	46	18	-27	-59.7%	\$38.86
19-0000	Life, Physical, and Social Science Occupations	10	<10	Insf. Data	Insf. Data	\$35.23
21-0000	Community and Social Service Occupations	0	0	0	Insf. Data	\$23.00
23-0000	Legal Occupations	0	0	0	Insf. Data	\$33.78
25-0000	Education, Training, and Library Occupations	0	0	0	Insf. Data	\$27.16
27-0000	Arts, Design, Entertainment, Sports, and Media Occupations	<10	<10	Insf. Data	Insf. Data	\$19.38
29-0000	Healthcare Practitioners and Technical Occupations	<10	<10	Insf. Data	Insf. Data	\$39.77
31-0000	Healthcare Support Occupations	0	0	0	Insf. Data	\$13.82
33-0000	Protective Service Occupations	<10	<10	Insf. Data	Insf. Data	\$39.48
35-0000	Food Preparation and Serving Related Occupations	15	<10	Insf. Data	Insf. Data	\$10.88
37-0000	Building and Grounds Cleaning and Maintenance Occupations	<10	<10	Insf. Data	Insf. Data	\$11.03
39-0000	Personal Care and Service Occupations	<10	0	Insf. Data	Insf. Data	\$10.80
41-0000	Sales and Related Occupations	88	48	-40	-45.7%	\$12.17
43-0000	Office and Administrative Support Occupations	145	110	-35	-24.2%	\$15.13
45-0000	Farming, Fishing, and Forestry Occupations	22	35	13	57.6%	\$9.99
47-0000	Construction and Extraction Occupations	23	16	-7	-28.4%	\$25.11
49-0000	Installation, Maintenance, and Repair Occupations	97	81	-17	-17.0%	\$21.21
51-0000	Production Occupations	871	1,047	176	20.2%	\$16.18
53-0000	Transportation and Material Moving Occupations	235	275	40	16.9%	\$13.85

Source: ADE, Inc.; data from EMSI.

TRAINING REQUIREMENTS

The job training requirements for manufacturing generally show educational requirements of high school diploma or less for 87.0 percent of the existing manufacturing jobs in Imperial County. Over half of the jobs require at least a high school diploma, and about 13.0 percent of the manufacturing jobs require either a college degree or some other type of postsecondary award. While 91.1 percent of the manufacturing jobs do not specify any work experience requirement, about 88.2 percent require some type of on-the-job training. About 45.4 percent of the on-the-job training is short-term.

Table 22 — Manufacturing Training Requirements

TYPICAL ENTRY LEVEL EDUCATION	TOTAL
Less than high school	37.8%
High school diploma or equivalent	49.2%
Some college, no degree	0.1%
Associate's degree	0.7%
Bachelor's degree	6.1%
Master's degree	0.0%
Doctoral or professional degree	0.0%
Postsecondary non-degree award	6.1%
WORK EXPERIENCE REQUIRED	TOTAL
None	91.1%
Less than 5 years	6.5%
5 years or more	2.4%
ON-THE-JOB TRAINING	TOTAL
None	11.8%
Short-term on-the-job training	45.4%
Moderate-term on-the-job training	34.1%
Long-term on-the-job training	8.2%
Apprenticeship	0.5%
Internship/residency	0.0%

Source: ADE, Inc.; data from EMSI

SUPPLY CHAIN

The supply chain requirements for manufacturing show that the majority of the business-to-business supplier purchases are imported into Imperial County from elsewhere. For manufacturing, the top supplier categories are animal production and food manufacturing. This results from the majority of current manufacturing jobs occurring in food processing. Other prominent supplier categories include truck transportation, management services, wholesale trade, and professional and technical services. Manufacturing inputs, besides food and agricultural products, include paper, chemical, metals, plastics, and nonmetallic mineral product manufacturing.

Table 23 — Manufacturing Supply Chain, 2013

NAICS	INDUSTRY	AMOUNT	IN-REGION	OUT OF REGION
112	Animal Production and Aquaculture	\$244,054,735	5.9%	94.1%
311	Food Manufacturing	\$144,934,371	25.4%	74.6%
484	Truck Transportation	\$31,294,833	23.4%	76.6%
111	Crop Production	\$29,963,435	42.8%	57.2%
551	Management of Companies and Enterprises	\$27,245,925	1.2%	98.8%
212	Mining (except Oil and Gas)	\$20,873,540	9.8%	90.2%
423	Merchant Wholesalers, Durable Goods	\$20,648,656	7.9%	92.1%
322	Paper Manufacturing	\$17,794,379	0.8%	99.2%
424	Merchant Wholesalers, Nondurable Goods	\$12,880,114	14.7%	85.3%
541	Professional, Scientific, and Technical Services	\$11,224,479	8.8%	91.2%

NAICS	INDUSTRY	AMOUNT	IN-REGION	OUT OF REGION
325	Chemical Manufacturing	\$11,211,264	0.3%	99.7%
482	Rail Transportation	\$10,847,830	9.1%	90.9%
331	Primary Metal Manufacturing	\$10,828,857	0.6%	99.4%
326	Plastics and Rubber Products Manufacturing	\$10,636,125	0.1%	99.9%
221	Utilities	\$9,936,143	8.7%	91.3%
327	Nonmetallic Mineral Product Manufacturing	\$8,383,258	3.0%	97.0%
425	Wholesale Electronic Markets and Agents and Brokers	\$8,373,887	11.5%	88.5%
332	Fabricated Metal Product Manufacturing	\$7,046,879	3.6%	96.4%
324	Petroleum and Coal Products Manufacturing	\$5,951,255	0.0%	100.0%
561	Administrative and Support Services	\$4,992,428	26.4%	73.6%
522	Credit Intermediation and Related Activities	\$4,163,443	17.4%	82.6%
483	Water Transportation	\$4,089,835	0.0%	100.0%
533	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	\$3,026,927	0.7%	99.3%
336	Transportation Equipment Manufacturing	\$2,963,801	0.8%	99.2%
312	Beverage and Tobacco Product Manufacturing	\$2,779,247	15.2%	84.8%
321	Wood Product Manufacturing	\$2,341,090	2.3%	97.7%
333	Machinery Manufacturing	\$2,212,581	0.4%	99.6%
722	Food Services and Drinking Places	\$1,959,827	35.8%	64.2%
334	Computer and Electronic Product Manufacturing	\$1,861,687	0.3%	99.7%
481	Air Transportation	\$1,769,042	1.5%	98.5%
811	Repair and Maintenance	\$1,379,716	27.8%	72.2%
517	Telecommunications	\$1,362,574	15.0%	85.0%
518	Data Processing, Hosting, and Related Services	\$1,346,088	0.5%	99.5%
113	Forestry and Logging	\$1,151,481	7.9%	92.1%
445	Food and Beverage Stores	\$1,135,576	47.6%	52.4%
562	Waste Management and Remediation Services	\$1,127,657	19.1%	80.9%
493	Warehousing and Storage	\$1,060,824	9.3%	90.7%
523	Securities, Commodity Contracts, and Other Financial Investments and Related Activities	\$1,039,010	2.5%	97.5%
335	Electrical Equipment, Appliance, and Component Manufacturing	\$1,020,425	0.0%	100.0%
524	Insurance Carriers and Related Activities	\$975,521	10.4%	89.6%
721	Accommodation	\$876,484	10.8%	89.2%
313	Textile Mills	\$834,255	1.8%	98.2%
531	Real Estate	\$815,020	16.2%	83.8%
114	Fishing, Hunting and Trapping	\$806,788	1.9%	98.1%
238	Specialty Trade Contractors	\$763,542	24.8%	75.2%
339	Miscellaneous Manufacturing	\$708,378	1.8%	98.2%
519	Other Information Services	\$675,354	0.9%	99.1%
532	Rental and Leasing Services	\$641,940	29.5%	70.5%
452	General Merchandise Stores	\$561,346	68.0%	32.0%
441	Motor Vehicle and Parts Dealers	\$561,072	32.6%	67.4%
337	Furniture and Related Product Manufacturing	\$517,678	1.2%	98.8%
511	Publishing Industries (except Internet)	\$512,022	12.1%	87.9%
515	Broadcasting (except Internet)	\$441,242	7.9%	92.1%
488	Support Activities for Transportation	\$439,932	24.7%	75.3%
323	Printing and Related Support Activities	\$400,102	0.7%	99.3%
711	Performing Arts, Spectator Sports, and Related Industries	\$361,531	4.0%	96.0%
611	Educational Services	\$351,527	2.3%	97.7%
813	Religious, Grantmaking, Civic, Professional, and Similar Organizations	\$347,321	15.5%	84.5%
485	Transit and Ground Passenger Transportation	\$322,403	21.0%	79.0%
236	Construction of Buildings	\$313,239	18.6%	81.4%
211	Oil and Gas Extraction	\$225,643	0.4%	99.6%
901	Federal Government	\$223,174	27.1%	72.9%
237	Heavy and Civil Engineering Construction	\$198,102	17.4%	82.6%
713	Amusement, Gambling, and Recreation Industries	\$166,698	10.7%	89.3%
446	Health and Personal Care Stores	\$149,361	29.1%	70.9%
454	Nonstore Retailers	\$143,814	8.5%	91.5%
444	Building Material and Garden Equipment and	\$142,941	40.7%	59.3%

NAICS	INDUSTRY	AMOUNT	IN-REGION	OUT OF REGION
	Supplies Dealers			
314	Textile Product Mills	\$131,522	2.6%	97.4%
453	Miscellaneous Store Retailers	\$123,736	37.6%	62.4%
448	Clothing and Clothing Accessories Stores	\$119,267	51.4%	48.6%
443	Electronics and Appliance Stores	\$80,503	13.6%	86.4%
622	Hospitals	\$78,294	2.4%	97.6%
315	Apparel Manufacturing	\$76,055	1.6%	98.4%
621	Ambulatory Health Care Services	\$66,763	20.8%	79.2%
447	Gasoline Stations	\$64,082	16.6%	83.4%
442	Furniture and Home Furnishings Stores	\$56,938	20.0%	80.0%
451	Sporting Goods, Hobby, Musical Instrument, and Book Stores	\$52,623	32.9%	67.1%
486	Pipeline Transportation	\$48,249	0.7%	99.3%
213	Support Activities for Mining	\$43,094	23.0%	77.0%
492	Couriers and Messengers	\$36,029	19.7%	80.3%
521	Monetary Authorities-Central Bank	\$31,402	0.0%	100.0%
812	Personal and Laundry Services	\$25,532	31.8%	68.2%
316	Leather and Allied Product Manufacturing	\$19,639	0.3%	99.7%
487	Scenic and Sightseeing Transportation	\$18,984	54.6%	45.4%
512	Motion Picture and Sound Recording Industries	\$4,606	2.3%	97.7%
623	Nursing and Residential Care Facilities	\$2,428	4.7%	95.3%
712	Museums, Historical Sites, and Similar Institutions	\$1,279	0.8%	99.2%
624	Social Assistance	\$1,073	37.5%	62.5%
491	Postal Service	\$1,031	0.0%	100.0%
525	Funds, Trusts, and Other Financial Vehicles	\$144	0.0%	100.0%
115	Support Activities for Agriculture and Forestry	\$30	56.7%	43.3%

Source: ADE, Inc.; data from EMSI

AEROSPACE

RECENT TRENDS

The aerospace cluster generally consists of manufacturing industries that product aircraft, aircraft parts, search and navigation instruments, guided missiles and space vehicles, and associated components. The cluster definition used in this analysis comes from the U.S. Cluster Mapping Project, which also identified the aerospace cluster as one of the nine leading clusters in the county.

For Imperial County, the aerospace cluster shows a total private sector job count of 20 jobs, all of which are in search and navigation instruments, aircraft, and aircraft parts. Compared to other parts of California, this is a relatively low concentration of employment. It should be noted that the estimated job count from the U.S. Cluster Mapping Project shows 1,770 jobs (2013). At least some of this employment likely comes from military and defense facilities in Imperial County, which does not show up as private sector jobs.

It should be noted that across the border, Mexicali accounts for a very high concentration of Mexico's aerospace industry. According to the Industrial Development Commission of Mexicali, aerospace companies in the Mexicali area employ over 10,500 workers.

PROJECTED EMPLOYMENT

The projected employment for the aerospace cluster shows a net gain of about 8 jobs between 2015 and 2025, with the job base for search and navigation instruments manufacturing increasing to about 18 jobs. Employment concentration for all aerospace cluster industries will remain low for all sectors.

STAFFING PATTERNS

The staffing pattern for existing aerospace industries in Imperial County show that the typical distribution of occupations has about 47.2 percent of the jobs in production occupations, and about 33.2 percent of the jobs in management, business, and technical occupations. In general, aerospace has a higher concentration of employment in the higher paying occupations than other types of manufacturing.

TRAINING REQUIREMENTS

The training requirements for aerospace show that only 5.0 percent of the jobs require less than a high school diploma, and 37.9 percent of the jobs require at least a college degree or postsecondary award. In addition, about 38.6 percent of the aerospace jobs do not have on-the-job training.

SUPPLY CHAIN

The supplier sectors for aerospace are heavily concentrated in management, professional, and administrative services; and with transportation equipment, electronics, and metal product manufacturing. Except for administrative services, over 90 percent of the operational requirements for all of the top aerospace supplier categories are met through imports.

Table 24 — Aerospace Employment Trend, Imperial County 2001 to 2015

NAICS	DESCRIPTION	2001 JOBS	2009 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	2009 TO 2014 CHANGE	2009 TO 2014 % CHANGE	2014 LOCATION QUOTIENT
334511	Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing	0	0	<10	Insf. Data	Insf. Data	Insf. Data	Insf. Data	Insf. Data
336411	Aircraft Manufacturing	0	0	<10	Insf. Data	Insf. Data	Insf. Data	Insf. Data	Insf. Data
336412	Aircraft Engine and Engine Parts Manufacturing	20	21	11	-9	-45.0%	-10	-47.6%	1.13
336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing	0	0	0	0	Insf. Data	Insf. Data	Insf. Data	0.00
336414	Guided Missile and Space Vehicle Manufacturing	0	0	0	0	Insf. Data	Insf. Data	Insf. Data	0.00
336415	Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	0	0	0	0	Insf. Data	Insf. Data	Insf. Data	0.00
336419	Other Guided Missile and Space Vehicle Parts and Auxiliary Equipment Manufacturing	0	0	0	0	Insf. Data	Insf. Data	Insf. Data	0.00
	Aerospace Cluster Total	20	21	20	0	0.0%	-1	-4.8%	0.05
	Imperial County Total	49,839	57,237	62,780	12,941	26.0%	5,543	9.7%	

Source: ADE, Inc.; data from EMSI

Table 25 — Aerospace Projected Employment, Imperial County 2015 to 2025

NAICS CODE	INDUSTRY DESCRIPTION	2015 PROJECTED JOBS	2025 PROJECTED JOBS	2015 TO 2025 CHANGE	2015 TO 2025 % CHANGE	2025 PROJECTED LOCATION QUOTIENT
334511	Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing	<10	18	Insf. Data	Insf. Data	0.13
336411	Aircraft Manufacturing	<10	<10	Insf. Data	Insf. Data	Insf. Data
336412	Aircraft Engine and Engine Parts Manufacturing	10	<10	Insf. Data	Insf. Data	Insf. Data
336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing	0	0	0	Insf. Data	0.00
336414	Guided Missile and Space Vehicle Manufacturing	0	0	0	Insf. Data	0.00
336415	Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	0	0	0	Insf. Data	0.00
336419	Other Guided Missile and Space Vehicle Parts and Auxiliary Equipment Manufacturing	0	0	0	Insf. Data	0.00
	Aerospace Cluster Total	19	27	8	42.1%	0.06
	Imperial County Total	65,881	77,225	11,344	17.2%	

Source: ADE, Inc.; data from EMSI

Table 26 — Aerospace Staffing Pattern, Imperial County

SOC CODE	OCCUPATION DESCRIPTION	2001 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	PERCENT OF TOTAL	MEDIAN HOURLY WAGE
11-0000	Management Occupations	<10	<10	Insf. Data	Insf. Data	10.3%	\$41.54
13-0000	Business and Financial Operations Occupations	<10	<10	Insf. Data	Insf. Data	6.2%	\$31.45
15-0000	Computer and Mathematical Occupations	<10	<10	Insf. Data	Insf. Data	4.1%	\$28.63
17-0000	Architecture and Engineering Occupations	<10	<10	Insf. Data	Insf. Data	12.6%	\$38.86
19-0000	Life, Physical, and Social Science Occupations	0	0	0	Insf. Data	0.0%	\$35.23
21-0000	Community and Social Service Occupations	0	0	0	Insf. Data	0.0%	\$23.00
23-0000	Legal Occupations	0	0	0	Insf. Data	0.0%	\$33.78
25-0000	Education, Training, and Library Occupations	0	0	0	Insf. Data	0.0%	\$27.16
27-0000	Arts, Design, Entertainment, Sports, and Media Occupations	0	0	0	Insf. Data	0.0%	\$19.38
29-0000	Healthcare Practitioners and Technical Occupations	0	0	0	Insf. Data	0.0%	\$39.77
31-0000	Healthcare Support Occupations	0	0	0	Insf. Data	0.0%	\$13.82
33-0000	Protective Service Occupations	<10	0	Insf. Data	Insf. Data	0.8%	\$39.48
35-0000	Food Preparation and Serving Related Occupations	0	0	0	Insf. Data	0.0%	\$10.88
37-0000	Building and Grounds Cleaning and Maintenance Occupations	0	0	0	Insf. Data	0.0%	\$11.03
39-0000	Personal Care and Service Occupations	0	0	0	Insf. Data	0.0%	\$10.80
41-0000	Sales and Related Occupations	0	<10	Insf. Data	Insf. Data	1.4%	\$12.17
43-0000	Office and Administrative Support Occupations	<10	<10	Insf. Data	Insf. Data	9.5%	\$15.13
45-0000	Farming, Fishing, and Forestry Occupations	0	0	0	Insf. Data	0.0%	\$9.99
47-0000	Construction and Extraction Occupations	0	0	0	Insf. Data	0.0%	\$25.11
49-0000	Installation, Maintenance, and Repair Occupations	<10	<10	Insf. Data	Insf. Data	6.4%	\$21.21
51-0000	Production Occupations	<10	<10	Insf. Data	Insf. Data	47.2%	\$16.18
53-0000	Transportation and Material Moving Occupations	<10	<10	Insf. Data	Insf. Data	1.6%	\$13.85

Source: ADE, Inc.; data from EMSI

Table 27 — Aerospace Training Requirements, Imperial County

TYPICAL ENTRY LEVEL EDUCATION	TOTAL
Less than high school	5.0%
High school diploma or equivalent	57.1%
Some college, no degree	0.0%
Associate's degree	3.8%
Bachelor's degree	26.0%
Master's degree	0.0%
Doctoral or professional degree	0.0%
Postsecondary non-degree award	8.1%
WORK EXPERIENCE REQUIRED	TOTAL
None	83.4%
Less than 5 years	10.3%
5 years or more	6.3%
Typical On-The-Job Training	Total
None	38.6%
Short-term on-the-job training	15.4%
Moderate-term on-the-job training	30.4%
Long-term on-the-job training	15.6%
Apprenticeship	0.0%
Internship/residency	0.0%

Source: ADE, Inc.; data from EMSI

Table 28 — Aerospace Supply Chain, Imperial County

NAICS	INDUSTRY	AMOUNT	IN-REGION	OUT OF REGION
336	Transportation Equipment Manufacturing	\$867,184	2.0%	98.0%
551	Management of Companies and Enterprises	\$412,826	1.2%	98.8%
334	Computer and Electronic Product Manufacturing	\$261,779	0.2%	99.8%
541	Professional, Scientific, and Technical Services	\$195,190	6.8%	93.2%
332	Fabricated Metal Product Manufacturing	\$179,153	3.7%	96.3%
331	Primary Metal Manufacturing	\$129,272	1.0%	99.0%
561	Administrative and Support Services	\$112,805	23.5%	76.5%
423	Merchant Wholesalers, Durable Goods	\$97,082	7.9%	92.1%
424	Merchant Wholesalers, Nondurable Goods	\$60,557	14.7%	85.3%
335	Electrical Equipment, Appliance, and Component Manufacturing	\$51,798	0.0%	100.0%
425	Wholesale Electronic Markets and Agents and Brokers	\$39,371	11.5%	88.5%
333	Machinery Manufacturing	\$39,058	0.3%	99.7%
484	Truck Transportation	\$38,959	23.4%	76.6%
326	Plastics and Rubber Products Manufacturing	\$36,576	0.1%	99.9%
325	Chemical Manufacturing	\$30,517	0.3%	99.7%
518	Data Processing, Hosting, and Related Services	\$26,132	0.5%	99.5%
531	Real Estate	\$23,028	16.2%	83.8%
533	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	\$23,013	0.7%	99.3%
221	Utilities	\$19,576	4.9%	95.1%
517	Telecommunications	\$19,424	15.4%	84.6%
522	Credit Intermediation and Related Activities	\$17,610	17.2%	82.8%
324	Petroleum and Coal Products Manufacturing	\$13,713	0.0%	100.0%
493	Warehousing and Storage	\$13,440	9.3%	90.7%
322	Paper Manufacturing	\$12,754	1.3%	98.7%
511	Publishing Industries (except Internet)	\$12,520	8.7%	91.3%
523	Securities, Commodity Contracts, and Other Financial Investments and Related Activities	\$10,563	2.6%	97.4%
519	Other Information Services	\$8,761	0.9%	99.1%
481	Air Transportation	\$7,015	1.5%	98.5%
811	Repair and Maintenance	\$6,753	27.1%	72.9%
482	Rail Transportation	\$5,669	9.1%	90.9%
515	Broadcasting (except Internet)	\$5,458	7.9%	92.1%

NAICS	INDUSTRY	AMOUNT	IN-REGION	OUT OF REGION
562	Waste Management and Remediation Services	\$5,431	19.1%	80.9%
314	Textile Product Mills	\$5,189	0.1%	99.9%
212	Mining (except Oil and Gas)	\$4,595	21.6%	78.4%
722	Food Services and Drinking Places	\$4,304	35.6%	64.4%
339	Miscellaneous Manufacturing	\$3,920	1.5%	98.5%
327	Nonmetallic Mineral Product Manufacturing	\$3,896	1.7%	98.3%
524	Insurance Carriers and Related Activities	\$3,673	10.2%	89.8%
238	Specialty Trade Contractors	\$3,355	24.8%	75.2%
441	Motor Vehicle and Parts Dealers	\$3,283	32.6%	67.4%
532	Rental and Leasing Services	\$3,056	29.0%	71.0%
611	Educational Services	\$2,929	3.8%	96.2%
323	Printing and Related Support Activities	\$2,553	0.8%	99.2%
721	Accommodation	\$2,083	10.8%	89.2%
711	Performing Arts, Spectator Sports, and Related Industries	\$1,491	3.9%	96.1%
236	Construction of Buildings	\$1,376	18.6%	81.4%
483	Water Transportation	\$1,258	0.0%	100.0%
812	Personal and Laundry Services	\$1,236	33.2%	66.8%
337	Furniture and Related Product Manufacturing	\$1,042	1.1%	98.9%
622	Hospitals	\$964	2.4%	97.6%
311	Food Manufacturing	\$936	3.9%	96.1%
488	Support Activities for Transportation	\$934	24.7%	75.3%
237	Heavy and Civil Engineering Construction	\$870	17.4%	82.6%
313	Textile Mills	\$818	0.1%	99.9%
321	Wood Product Manufacturing	\$805	10.9%	89.1%
485	Transit and Ground Passenger Transportation	\$769	21.0%	79.0%
621	Ambulatory Health Care Services	\$660	20.6%	79.4%
901	Federal Government	\$656	27.1%	72.9%
813	Religious, Grantmaking, Civic, Professional, and Similar Organizations	\$609	15.4%	84.6%
211	Oil and Gas Extraction	\$442	0.4%	99.6%
713	Amusement, Gambling, and Recreation Industries	\$422	10.7%	89.3%
213	Support Activities for Mining	\$364	22.6%	77.4%
446	Health and Personal Care Stores	\$260	29.1%	70.9%
312	Beverage and Tobacco Product Manufacturing	\$259	31.8%	68.2%
454	Nonstore Retailers	\$251	8.5%	91.5%
444	Building Material and Garden Equipment and Supplies Dealers	\$249	40.7%	59.3%
445	Food and Beverage Stores	\$248	47.6%	52.4%
452	General Merchandise Stores	\$216	68.0%	32.0%
453	Miscellaneous Store Retailers	\$216	37.6%	62.4%
448	Clothing and Clothing Accessories Stores	\$208	51.4%	48.6%
315	Apparel Manufacturing	\$195	1.6%	98.4%
521	Monetary Authorities-Central Bank	\$149	0.0%	100.0%
443	Electronics and Appliance Stores	\$140	13.6%	86.4%
512	Motion Picture and Sound Recording Industries	\$130	2.2%	97.8%
447	Gasoline Stations	\$112	16.6%	83.4%
442	Furniture and Home Furnishings Stores	\$99	20.0%	80.0%
486	Pipeline Transportation	\$93	0.7%	99.3%
451	Sporting Goods, Hobby, Musical Instrument, and Book Stores	\$92	32.9%	67.1%
492	Couriers and Messengers	\$56	19.7%	80.3%
487	Scenic and Sightseeing Transportation	\$40	54.6%	45.4%
525	Funds, Trusts, and Other Financial Vehicles	\$23	0.0%	100.0%
316	Leather and Allied Product Manufacturing	\$18	0.3%	99.7%
624	Social Assistance	\$15	32.9%	67.1%
623	Nursing and Residential Care Facilities	\$10	4.6%	95.4%
712	Museums, Historical Sites, and Similar Institutions	\$3	0.9%	99.1%
491	Postal Service	\$3	0.0%	100.0%
111	Crop Production	\$2	42.8%	57.2%
112	Animal Production and Aquaculture	\$2	5.9%	94.1%

Source: ADE, Inc.; data from EMSI

AUTOMOTIVE AND MACHINERY

RECENT TRENDS

The automotive and machinery cluster consists of a broad range of industries engaged in manufacturing automobiles, automobile parts, primary metals, industrial parts, and multiple machinery categories. The cluster definition combined the automotive cluster and all of the machinery cluster categories from the U.S. Cluster Mapping Project.

Despite the large number of industries represented, the automotive and machinery cluster generated a total of only about 33 jobs in Imperial County in 2014. The largest individual industry was construction machinery manufacturing, with 24 jobs. This results in an employment concentration higher than the statewide average for that industry. All of the other industries represented in this cluster had fewer than 10 jobs.

In Mexicali, data from the Industrial Development Commission of Mexicali indicates that automotive industries generate close to 9,000 jobs in the region.

PROJECTED EMPLOYMENT

The projected employment from 2015 to 2025 shows employment growing to 54 jobs by 2025, with most of the growth occurring in construction machinery manufacturing.

STAFFING PATTERN

The staffing pattern for the automotive and machinery cluster shows a general occupational distribution with over half of the jobs (58.2 percent) concentrated in production. The higher wage management, business, and technical occupations account for about 11.6 percent of the jobs in this cluster.

TRAINING REQUIREMENTS

Training requirements for automotive and machinery jobs indicate that 16.9 percent of the occupations require at least a college degree or postsecondary award. Only 16.0 percent of the jobs do not require at least a high school diploma. About 87.8 percent of the jobs require no experience, and 82.6 percent of the jobs require some degree of on-the-job training.

SUPPLY CHAIN

The supply chain for the automotive and machinery cluster in Imperial County show much of the demand in metal, plastics, electrical equipment, machinery, chemical and transportation equipment manufacturing, as well as transportation and wholesale trade. Among the largest suppliers, only wholesale trade and transportation services have more than 10 percent of the commodity demand met by other Imperial County businesses.

Table 29 — Automotive and Machinery Employment Trend, Imperial County 2001 to 2014

NAICS	DESCRIPTION	2001 JOBS	2009 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	2009 TO 2014 CHANGE	2009 TO 2014 % CHANGE	2014 LOCATION QUOTIENT
331511	Iron Foundries	0	0	0	0	Insf. Data	0	Insf. Data	0.00
331512	Steel Investment Foundries	0	0	0	0	Insf. Data	0	Insf. Data	0.00
331513	Steel Foundries (except Investment)	0	0	0	0	Insf. Data	0	Insf. Data	0.00
331524	Aluminum Foundries (except Die-Casting)	0	0	0	0	Insf. Data	0	Insf. Data	0.00
331529	Other Nonferrous Metal Foundries (except Die-Casting)	0	0	0	0	Insf. Data	0	Insf. Data	0.00
332114	Custom Roll Forming	0	0	0	0	Insf. Data	0	Insf. Data	0.00
332911	Industrial Valve Manufacturing	0	0	<10	Insf. Data	Insf. Data	Insf. Data	Insf. Data	Insf. Data
332912	Fluid Power Valve and Hose Fitting Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
332919	Other Metal Valve and Pipe Fitting Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
332991	Ball and Roller Bearing Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
333111	Farm Machinery and Equipment Manufacturing	<10	0	0	Insf. Data	Insf. Data	0	Insf. Data	0.00
333112	Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
333120	Construction Machinery Manufacturing	0	12	24	24	Insf. Data	11	91.7%	9.02
333131	Mining Machinery and Equipment Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
333241	Food Product Machinery Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
333243	Sawmill, Woodworking, and Paper Machinery Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
333244	Printing Machinery and Equipment Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
333249	Other Industrial Machinery Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
333318	Other Commercial and Service Industry Machinery Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
333413	Industrial and Commercial Fan and Blower and Air Purification Equipment Manufacturing	0	<10	0	0	Insf. Data	Insf. Data	Insf. Data	0.00
333414	Heating Equipment (except Warm Air Furnaces) Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
333415	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing	0	0	<10	Insf. Data	Insf. Data	Insf. Data	Insf. Data	Insf. Data
333611	Turbine and Turbine Generator Set Units Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
333612	Speed Changer, Industrial High-Speed Drive, and Gear Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data

NAICS	DESCRIPTION	2001 JOBS	2009 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	2009 TO 2014 CHANGE	2009 TO 2014 % CHANGE	2014 LOCATION QUOTIENT
333613	Mechanical Power Transmission Equipment Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
333618	Other Engine Equipment Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
333911	Pump and Pumping Equipment Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
333912	Air and Gas Compressor Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
333913	Measuring and Dispensing Pump Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
333921	Elevator and Moving Stairway Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
333922	Conveyor and Conveying Equipment Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
333923	Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
333924	Industrial Truck, Tractor, Trailer, and Stacker Machinery Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
333993	Packaging Machinery Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
333994	Industrial Process Furnace and Oven Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
333995	Fluid Power Cylinder and Actuator Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
333996	Fluid Power Pump and Motor Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
333997	Scale and Balance Manufacturing	0	0	<10	Insf. Data	Insf. Data	Insf. Data	Insf. Data	Insf. Data
333999	All Other Miscellaneous General Purpose Machinery Manufacturing	0	0	<10	Insf. Data	Insf. Data	Insf. Data	Insf. Data	Insf. Data
336111	Automobile Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
336112	Light Truck and Utility Vehicle Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
336120	Heavy Duty Truck Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
336211	Motor Vehicle Body Manufacturing	<10	0	0	Insf. Data	Insf. Data	0	Insf. Data	Insf. Data
336310	Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	<10	0	0	Insf. Data	Insf. Data	0	Insf. Data	Insf. Data
336320	Motor Vehicle Electrical and Electronic Equipment Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
336330	Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
336340	Motor Vehicle Brake System Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
336350	Motor Vehicle Transmission and Power Train Parts Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
336360	Motor Vehicle Seating and Interior Trim Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
336370	Motor Vehicle Metal Stamping	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
336390	Other Motor Vehicle Parts Manufacturing	0	<10	0	0	Insf. Data	Insf. Data	Insf. Data	Insf. Data

NAICS	DESCRIPTION	2001 JOBS	2009 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	2009 TO 2014 CHANGE	2009 TO 2014 % CHANGE	2014 LOCATION QUOTIENT
336510	Railroad Rolling Stock Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
336992	Military Armored Vehicle, Tank, and Tank Component Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
336999	All Other Transportation Equipment Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
339991	Gasket, Packing, and Sealing Device Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
	Automotive and Machinery Cluster	<10	16	33	Insf. Data	Insf. Data	17	106.3%	0.10
	Imperial County Total	49,839	57,237	62,780	12,941	26.0%	5,543	9.7%	

Source: ADE, Inc.; data from EMSI

Table 30 — Automotive and Machinery Projected Employment, Imperial County 2015 to 2025

NAICS CODE	INDUSTRY DESCRIPTION	2015 PROJECTED JOBS	2025 PROJECTED JOBS	2015 TO 2025 CHANGE	2015 TO 2025 % CHANGE	2025 PROJECTED LOCATION QUOTIENT
331511	Iron Foundries	0	0	0	Insf. Data	0.00
331512	Steel Investment Foundries	0	0	0	Insf. Data	0.00
331513	Steel Foundries (except Investment)	0	0	0	Insf. Data	0.00
331524	Aluminum Foundries (except Die-Casting)	0	0	0	Insf. Data	0.00
331529	Other Nonferrous Metal Foundries (except Die-Casting)	0	0	0	Insf. Data	0.00
332114	Custom Roll Forming	0	0	0	Insf. Data	0.00
332911	Industrial Valve Manufacturing	<10	<10	Insf. Data	Insf. Data	Insf. Data
332912	Fluid Power Valve and Hose Fitting Manufacturing	0	0	0	Insf. Data	0.00
332919	Other Metal Valve and Pipe Fitting Manufacturing	0	0	0	Insf. Data	0.00
332991	Ball and Roller Bearing Manufacturing	0	0	0	Insf. Data	0.00
333111	Farm Machinery and Equipment Manufacturing	0	0	0	Insf. Data	0.00
333112	Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	0	0	0	Insf. Data	0.00
333120	Construction Machinery Manufacturing	20	32	12	60.0%	10.56
333131	Mining Machinery and Equipment Manufacturing	0	0	0	Insf. Data	0.00
333241	Food Product Machinery Manufacturing	0	0	0	Insf. Data	0.00
333243	Sawmill, Woodworking, and Paper Machinery Manufacturing	0	0	0	Insf. Data	0.00
333244	Printing Machinery and Equipment Manufacturing	0	0	0	Insf. Data	0.00
333249	Other Industrial Machinery Manufacturing	0	0	0	Insf. Data	0.00
333318	Other Commercial and Service Industry Machinery Manufacturing	0	0	0	Insf. Data	0.00
333413	Industrial and Commercial Fan and Blower and Air Purification Equipment Manufacturing	0	0	0	Insf. Data	0.00
333414	Heating Equipment (except Warm Air Furnaces) Manufacturing	0	0	0	Insf. Data	0.00
333415	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing	<10	<10	Insf. Data	Insf. Data	Insf. Data

NAICS CODE	INDUSTRY DESCRIPTION	2015 PROJECTED JOBS	2025 PROJECTED JOBS	2015 TO 2025 CHANGE	2015 TO 2025 % CHANGE	2025 PROJECTED LOCATION QUOTIENT
333611	Turbine and Turbine Generator Set Units Manufacturing	0	0	0	Insf. Data	0.00
333612	Speed Changer, Industrial High-Speed Drive, and Gear Manufacturing	0	0	0	Insf. Data	0.00
333613	Mechanical Power Transmission Equipment Manufacturing	0	0	0	Insf. Data	0.00
333618	Other Engine Equipment Manufacturing	0	0	0	Insf. Data	0.00
333911	Pump and Pumping Equipment Manufacturing	0	0	0	Insf. Data	0.00
333912	Air and Gas Compressor Manufacturing	0	0	0	Insf. Data	0.00
333913	Measuring and Dispensing Pump Manufacturing	0	0	0	Insf. Data	0.00
333921	Elevator and Moving Stairway Manufacturing	0	0	0	Insf. Data	0.00
333922	Conveyor and Conveying Equipment Manufacturing	0	0	0	Insf. Data	0.00
333923	Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	0	0	0	Insf. Data	0.00
333924	Industrial Truck, Tractor, Trailer, and Stacker Machinery Manufacturing	0	0	0	Insf. Data	0.00
333993	Packaging Machinery Manufacturing	0	0	0	Insf. Data	0.00
333994	Industrial Process Furnace and Oven Manufacturing	0	0	0	Insf. Data	0.00
333995	Fluid Power Cylinder and Actuator Manufacturing	0	0	0	Insf. Data	0.00
333996	Fluid Power Pump and Motor Manufacturing	0	0	0	Insf. Data	0.00
333997	Scale and Balance Manufacturing	<10	<10	Insf. Data	Insf. Data	Insf. Data
333999	All Other Miscellaneous General Purpose Machinery Manufacturing	<10	<10	Insf. Data	Insf. Data	Insf. Data
336111	Automobile Manufacturing	0	0	0	Insf. Data	0.00
336112	Light Truck and Utility Vehicle Manufacturing	0	0	0	Insf. Data	0.00
336120	Heavy Duty Truck Manufacturing	0	0	0	Insf. Data	0.00
336211	Motor Vehicle Body Manufacturing	0	0	0	Insf. Data	0.00
336310	Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	0	0	0	Insf. Data	0.00
336320	Motor Vehicle Electrical and Electronic Equipment Manufacturing	0	0	0	Insf. Data	0.00
336330	Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	0	0	0	Insf. Data	0.00
336340	Motor Vehicle Brake System Manufacturing	0	0	0	Insf. Data	0.00
336350	Motor Vehicle Transmission and Power Train Parts Manufacturing	0	0	0	Insf. Data	0.00
336360	Motor Vehicle Seating and Interior Trim Manufacturing	0	0	0	Insf. Data	0.00
336370	Motor Vehicle Metal Stamping	0	0	0	Insf. Data	0.00
336390	Other Motor Vehicle Parts Manufacturing	0	0	0	Insf. Data	0.00
336510	Railroad Rolling Stock Manufacturing	0	0	0	Insf. Data	0.00
336992	Military Armored Vehicle, Tank, and Tank Component Manufacturing	0	0	0	Insf. Data	0.00
336999	All Other Transportation Equipment Manufacturing	0	0	0	Insf. Data	0.00
339991	Gasket, Packing, and Sealing Device Manufacturing	0	0	0	Insf. Data	0.00
	Automotive and Machinery Cluster	31	54	23	74.2%	0.14
	Imperial County Total	65,881	77,225	11,344	17.2%	

Source: ADE, Inc.; data from EMSI

Table 31 — Automotive Staffing Pattern, Imperial County

SOC CODE	OCCUPATION DESCRIPTION	2001 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	PERCENT OF TOTAL	MEDIAN HOURLY WAGE
11-0000	Management Occupations	0	<10	Insf. Data	Insf. Data	5.7%	\$41.54
13-0000	Business and Financial Operations Occupations	0	<10	Insf. Data	Insf. Data	1.8%	\$31.45
15-0000	Computer and Mathematical Occupations	0	0	0	Insf. Data	0.3%	\$28.63
17-0000	Architecture and Engineering Occupations	0	<10	Insf. Data	Insf. Data	3.8%	\$38.86
19-0000	Life, Physical, and Social Science Occupations	0	0	0	Insf. Data	0.0%	\$35.23
21-0000	Community and Social Service Occupations	0	0	0	Insf. Data	0.0%	\$23.00
23-0000	Legal Occupations	0	0	0	Insf. Data	0.0%	\$33.78
25-0000	Education, Training, and Library Occupations	0	0	0	Insf. Data	0.0%	\$27.16
27-0000	Arts, Design, Entertainment, Sports, and Media Occupations	0	0	0	Insf. Data	0.0%	\$19.38
29-0000	Healthcare Practitioners and Technical Occupations	0	0	0	Insf. Data	0.0%	\$39.77
31-0000	Healthcare Support Occupations	0	0	0	Insf. Data	0.0%	\$13.82
33-0000	Protective Service Occupations	0	0	0	Insf. Data	0.1%	\$39.48
35-0000	Food Preparation and Serving Related Occupations	0	0	0	Insf. Data	0.0%	\$10.88
37-0000	Building and Grounds Cleaning and Maintenance Occupations	0	0	0	Insf. Data	0.5%	\$11.03
39-0000	Personal Care and Service Occupations	0	0	0	Insf. Data	0.0%	\$10.80
41-0000	Sales and Related Occupations	0	<10	Insf. Data	Insf. Data	3.3%	\$12.17
43-0000	Office and Administrative Support Occupations	0	<10	Insf. Data	Insf. Data	12.2%	\$15.13
45-0000	Farming, Fishing, and Forestry Occupations	0	0	0	Insf. Data	0.0%	\$9.99
47-0000	Construction and Extraction Occupations	0	0	0	Insf. Data	0.1%	\$25.11
49-0000	Installation, Maintenance, and Repair Occupations	0	<10	Insf. Data	Insf. Data	5.5%	\$21.21
51-0000	Production Occupations	<10	19	Insf. Data	Insf. Data	58.2%	\$16.18
53-0000	Transportation and Material Moving Occupations	0	<10	Insf. Data	Insf. Data	8.6%	\$13.85

Source: ADE, Inc.; data from EMSI

Table 32 — Automotive Training Requirements, Imperial County

TYPICAL ENTRY LEVEL EDUCATION	TOTAL
Less than high school	16.0%
High school diploma or equivalent	67.1%
Some college, no degree	0.0%
Associate's degree	1.3%
Bachelor's degree	9.5%
Master's degree	0.0%
Doctoral or professional degree	0.0%
Postsecondary non-degree award	6.0%
WORK EXPERIENCE REQUIRED	TOTAL
None	87.8%
Less than 5 years	8.5%
5 years or more	3.6%
TYPICAL ON-THE-JOB TRAINING	TOTAL
None	17.4%
Short-term on-the-job training	25.5%
Moderate-term on-the-job training	39.2%
Long-term on-the-job training	17.9%
Apprenticeship	0.1%
Internship/residency	0.0%

Source: ADE, Inc.; data from EMSI

Table 33 — Automotive Supply Chain, Imperial County

NAICS	INDUSTRY	AMOUNT	IN-REGION	OUT OF REGION
332	Fabricated Metal Product Manufacturing	\$982,179	4.5%	95.5%
331	Primary Metal Manufacturing	\$969,728	1.0%	99.0%
336	Transportation Equipment Manufacturing	\$636,897	0.2%	99.8%
333	Machinery Manufacturing	\$632,798	0.4%	99.6%
423	Merchant Wholesalers, Durable Goods	\$400,525	7.9%	92.1%
551	Management of Companies and Enterprises	\$321,953	1.2%	98.8%
326	Plastics and Rubber Products Manufacturing	\$308,391	0.0%	100.0%
424	Merchant Wholesalers, Nondurable Goods	\$249,837	14.7%	85.3%
541	Professional, Scientific, and Technical Services	\$176,421	7.4%	92.6%
425	Wholesale Electronic Markets and Agents and Brokers	\$162,429	11.5%	88.5%
335	Electrical Equipment, Appliance, and Component Manufacturing	\$152,972	0.0%	100.0%
325	Chemical Manufacturing	\$151,848	0.2%	99.8%
484	Truck Transportation	\$111,565	23.4%	76.6%
334	Computer and Electronic Product Manufacturing	\$91,928	0.3%	99.7%
441	Motor Vehicle and Parts Dealers	\$84,281	32.6%	67.4%
561	Administrative and Support Services	\$61,762	24.8%	75.2%
322	Paper Manufacturing	\$56,797	1.0%	99.0%
324	Petroleum and Coal Products Manufacturing	\$49,083	0.0%	100.0%
221	Utilities	\$41,192	5.9%	94.1%
522	Credit Intermediation and Related Activities	\$41,183	17.4%	82.6%
533	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	\$40,860	0.7%	99.3%
523	Securities, Commodity Contracts, and Other Financial Investments and Related Activities	\$38,915	2.6%	97.4%
313	Textile Mills	\$34,965	3.0%	97.0%
482	Rail Transportation	\$33,423	9.1%	90.9%
517	Telecommunications	\$22,875	15.0%	85.0%
901	Federal Government	\$21,106	27.1%	72.9%
327	Nonmetallic Mineral Product Manufacturing	\$21,029	1.9%	98.1%
518	Data Processing, Hosting, and Related Services	\$20,185	0.5%	99.5%

NAICS	INDUSTRY	AMOUNT	IN-REGION	OUT OF REGION
722	Food Services and Drinking Places	\$19,586	35.7%	64.3%
524	Insurance Carriers and Related Activities	\$16,967	10.6%	89.4%
481	Air Transportation	\$16,849	1.5%	98.5%
493	Warehousing and Storage	\$14,403	9.3%	90.7%
339	Miscellaneous Manufacturing	\$14,149	1.2%	98.8%
811	Repair and Maintenance	\$12,489	27.6%	72.4%
511	Publishing Industries (except Internet)	\$12,108	11.1%	88.9%
531	Real Estate	\$11,876	16.2%	83.8%
519	Other Information Services	\$11,026	0.9%	99.1%
721	Accommodation	\$8,760	10.8%	89.2%
562	Waste Management and Remediation Services	\$8,587	19.1%	80.9%
238	Specialty Trade Contractors	\$6,571	24.8%	75.2%
515	Broadcasting (except Internet)	\$5,951	7.9%	92.1%
532	Rental and Leasing Services	\$5,853	29.1%	70.9%
452	General Merchandise Stores	\$5,303	68.0%	32.0%
323	Printing and Related Support Activities	\$4,356	0.8%	99.2%
711	Performing Arts, Spectator Sports, and Related Industries	\$4,119	3.9%	96.1%
311	Food Manufacturing	\$4,063	3.6%	96.4%
321	Wood Product Manufacturing	\$3,940	6.4%	93.6%
485	Transit and Ground Passenger Transportation	\$3,397	21.0%	79.0%
611	Educational Services	\$3,302	2.6%	97.4%
813	Religious, Grantmaking, Civic, Professional, and Similar Organizations	\$3,233	15.5%	84.5%
446	Health and Personal Care Stores	\$3,024	29.1%	70.9%
454	Nonstore Retailers	\$2,911	8.5%	91.5%
444	Building Material and Garden Equipment and Supplies Dealers	\$2,894	40.7%	59.3%
236	Construction of Buildings	\$2,696	18.6%	81.4%
453	Miscellaneous Store Retailers	\$2,505	37.6%	62.4%
448	Clothing and Clothing Accessories Stores	\$2,414	51.4%	48.6%
483	Water Transportation	\$1,969	0.0%	100.0%
213	Support Activities for Mining	\$1,777	22.5%	77.5%
713	Amusement, Gambling, and Recreation Industries	\$1,748	10.8%	89.2%
211	Oil and Gas Extraction	\$1,748	0.4%	99.6%
237	Heavy and Civil Engineering Construction	\$1,705	17.4%	82.6%
443	Electronics and Appliance Stores	\$1,630	13.6%	86.4%
337	Furniture and Related Product Manufacturing	\$1,524	1.2%	98.8%
447	Gasoline Stations	\$1,297	16.6%	83.4%
314	Textile Product Mills	\$1,210	1.8%	98.2%
442	Furniture and Home Furnishings Stores	\$1,153	20.0%	80.0%
488	Support Activities for Transportation	\$1,107	24.7%	75.3%
445	Food and Beverage Stores	\$1,071	47.6%	52.4%
451	Sporting Goods, Hobby, Musical Instrument, and Book Stores	\$1,065	32.9%	67.1%
621	Ambulatory Health Care Services	\$1,063	20.9%	79.1%
312	Beverage and Tobacco Product Manufacturing	\$1,034	31.8%	68.2%
622	Hospitals	\$1,006	2.4%	97.6%
315	Apparel Manufacturing	\$853	1.6%	98.4%
212	Mining (except Oil and Gas)	\$612	14.7%	85.3%
521	Monetary Authorities-Central Bank	\$310	0.0%	100.0%
486	Pipeline Transportation	\$267	0.7%	99.3%
812	Personal and Laundry Services	\$161	28.4%	71.6%
492	Couriers and Messengers	\$127	19.7%	80.3%
512	Motion Picture and Sound Recording Industries	\$112	2.2%	97.8%
491	Postal Service	\$98	0.0%	100.0%
316	Leather and Allied Product Manufacturing	\$96	0.3%	99.7%
487	Scenic and Sightseeing Transportation	\$48	54.6%	45.4%
624	Social Assistance	\$27	37.2%	62.8%
623	Nursing and Residential Care Facilities	\$25	4.8%	95.2%
712	Museums, Historical Sites, and Similar Institutions	\$18	0.8%	99.2%
525	Funds, Trusts, and Other Financial Vehicles	\$9	0.0%	100.0%
111	Crop Production	\$8	42.8%	57.2%
115	Support Activities for Agriculture and Forestry	\$8	56.7%	43.3%

NAICS	INDUSTRY	AMOUNT	IN-REGION	OUT OF REGION
112	Animal Production and Aquaculture	\$7	5.9%	94.1%

Source: ADE, Inc.; data from EMSI

MEDICAL SERVICES

RECENT TRENDS

The medical services cluster includes all of the industries involved with ambulatory health care, hospitals, and nursing or residential care. In addition, this part of the analysis looks at biopharmaceuticals and medical devices manufacturing. Those clusters were defined using data from the U.S. Cluster Mapping Project.

The medical services cluster shows a long-term job growth trend, with employment increasing by more than 500 jobs (38.0 percent) between 2001 and 2014. This outpaces the overall job growth for Imperial County. However, the shorter-term trend shows that medical services contracted by around 500 jobs between 2009 and 2014 (this might due to an unusual pattern that shows up in home health care services).

The biopharmaceuticals and medical devices manufacturing clusters do not show a significant number of jobs in Imperial County. Because of this, the tables for these manufacturing clusters show data for California. Statewide, the biopharmaceuticals and medical devices clusters grew modestly (3.7 percent) between 2001 and 2014. The growth rate was less than the overall California employment.

According to the Industrial Development Commission of Mexicali, medical products companies on the other side of the border account for over 7,300 jobs.

Table 34 — Medical Services Employment Trend, Imperial County 2001 to 2014

NAICS	DESCRIPTION	2001 JOBS	2009 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 %	2009 TO 2014 CHANGE	2009 TO 2014 %	2014 LOCATION QUOTIENT
621111	Offices of Physicians (except Mental Health Specialists)	542	776	824	282	52.0%	48	6.2%	0.78
621112	Offices of Physicians, Mental Health Specialists	0	0	<10	Insf. Data	Insf. Data	Insf. Data	Insf. Data	Insf. Data
621210	Offices of Dentists	156	235	198	42	27.0%	-37	-15.7%	0.42
621310	Offices of Chiropractors	15	<10	16	1	7.0%	#VALUE!	Insf. Data	0.35
621320	Offices of Optometrists	30	42	40	10	33.0%	-2	-4.8%	0.69
621330	Offices of Mental Health Practitioners (except Physicians)	<10	28	14	Insf. Data	Insf. Data	Insf. Data	Insf. Data	Insf. Data
621340	Offices of Physical, Occupational and Speech Therapists, and Audiologists	20	47	37	17	85.0%	-10	-21.3%	0.34
621391	Offices of Podiatrists	0	<10	19	19	Insf. Data	#VALUE!	Insf. Data	2.09
621399	Offices of All Other Miscellaneous Health Practitioners	20	0	17	-3	-15.0%	17	Insf. Data	0.54
621410	Family Planning Centers	0	0	0	0	0.0%	0	Insf. Data	0.00
621420	Outpatient	<10	30	24	Insf. Data	Insf. Data	Insf. Data	Insf. Data	Insf. Data

NAICS	DESCRIPTION	2001 JOBS	2009 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	2009 TO 2014 CHANGE	2009 TO 2014 % CHANGE	2014 LOCATION QUOTIENT
	Mental Health and Substance Abuse Centers								
621491	HMO Medical Centers	0	0	0	0	0.0%	0	Insf. Data	0.00
621492	Kidney Dialysis Centers	53	58	134	81	153.0%	76	131.0%	2.26
621493	Freestanding Ambulatory Surgical and Emergency Centers	<10	<10	0	Insf. Data	Insf. Data	Insf. Data	Insf. Data	0.00
621498	All Other Outpatient Care Centers	0	50	<10	Insf. Data	Insf. Data	Insf. Data	Insf. Data	Insf. Data
621511	Medical Laboratories	15	12	<10	Insf. Data	Insf. Data	Insf. Data	Insf. Data	Insf. Data
621512	Diagnostic Imaging Centers	<10	<10	<10	Insf. Data	Insf. Data	Insf. Data	Insf. Data	Insf. Data
621610	Home Health Care Services	141	877	142	1	1.0%	-735	-83.8%	0.46
621910	Ambulance Services	63	84	139	76	121.0%	55	65.5%	1.85
621991	Blood and Organ Banks	<10	<10	<10	Insf. Data	Insf. Data	Insf. Data	Insf. Data	Insf. Data
621999	All Other Miscellaneous Ambulatory Health Care Services	0	0	0	0	0.0%	0	Insf. Data	0.00
622110	General Medical and Surgical Hospitals	77	58	27	-50	-65.0%	-31	-53.4%	0.02
622210	Psychiatric and Substance Abuse Hospitals	0	<10	0	0	0.0%	Insf. Data	Insf. Data	0.00
622310	Specialty (except Psychiatric and Substance Abuse) Hospitals	0	0	<10	Insf. Data	Insf. Data	Insf. Data	Insf. Data	Insf. Data
623110	Nursing Care Facilities (Skilled Nursing	141	205	275	134	95.0%	70	34.1%	0.52

NAICS	DESCRIPTION	2001 JOBS	2009 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	2009 TO 2014 CHANGE	2009 TO 2014 % CHANGE	2014 LOCATION QUOTIENT
623210	Facilities) Residential Intellectual and Developmental Disability Facilities	58	<10	<10	Insf. Data	Insf. Data	Insf. Data	Insf. Data	Insf. Data
623220	Residential Mental Health and Substance Abuse Facilities	60	0	0	-60	-100.0%	0	Insf. Data	0.00
623311	Continuing Care Retirement Communities	0	0	0	0	0.0%	0	Insf. Data	0.00
623312	Assisted Living Facilities for the Elderly	37	<10	76	39	105.0%	Insf. Data	Insf. Data	0.36
623990	Other Residential Care Facilities	<10	<10	<10	Insf. Data	Insf. Data	Insf. Data	Insf. Data	Insf. Data
	Medical Services Cluster	1,455	2,532	2,010	555	38.0%	-522	-20.6%	0.37
	Imperial County Total	49,839	57,237	62,780	12,941	26.0%	5,543	9.7%	1.00

Source: ADE, Inc.; data from EMSI

Table 35 — Biopharmaceuticals and Medical Devices Employment Trend, California 2001 to 2014

NAICS	DESCRIPTION	2001 JOBS	2009 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	2009 TO 2014 CHANGE	2009 TO 2014 % CHANGE
325411	Medicinal and Botanical Manufacturing	2,811	2,298	4,412	1,601	57.0%	2,114	92.0%
325412	Pharmaceutical Preparation Manufacturing	27,711	32,132	33,665	5,954	21.5%	1,533	4.8%
325413	In-Vitro Diagnostic Substance Manufacturing	3,764	6,191	6,221	2,457	65.3%	30	0.5%
325414	Biological Product (except Diagnostic) Manufacturing	4,913	2,765	2,865	-2,048	-41.7%	100	3.6%
333314	Optical Instrument and Lens Manufacturing	10,284	3,609	4,232	-6,052	-58.8%	623	17.3%
339112	Surgical and Medical Instrument Manufacturing	21,177	20,936	26,186	5,009	23.7%	5,250	25.1%
339113	Surgical Appliance and Supplies Manufacturing	12,572	12,088	10,804	-1,768	-14.1%	-1,284	-10.6%
339114	Dental Equipment and Supplies Manufacturing	4,558	3,995	3,843	-715	-15.7%	-152	-3.8%
339115	Ophthalmic Goods Manufacturing	6,302	4,024	5,386	-916	-14.5%	1,362	33.8%

NAICS	DESCRIPTION	2001 JOBS	2009 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	2009 TO 2014 CHANGE	2009 TO 2014 % CHANGE
	Biopharmaceuticals and Medical Devices Cluster	94,090	88,038	97,613	3,523	3.7%	9,575	10.9%
	California Total	14,981,888	14,629,958	15,808,156	826,268	5.5%	1,178,198	8.1%

Source: ADE, Inc.; data from EMSI

PROJECTED EMPLOYMENT

Projected employment in the medical services cluster for Imperial County shows projected job growth of about 410 positions (18.0 percent) between 2015 and 2025. Much of the growth will occur in physician's offices. For the biopharmaceuticals and medical devices clusters in California, projected employment is expected to increase by about 13.0 percent.

Table 36 — Medical Services Employment Projection, Imperial County 2015 to 2025

NAICS CODE	INDUSTRY DESCRIPTION	2015 PROJECTED JOBS	2025 PROJECTED JOBS	2015 TO 2025 CHANGE	2015 TO 2025 % CHANGE	2025 PROJECTED LOCATION QUOTIENT
621111	Offices of Physicians (except Mental Health Specialists)	923	1,149	226	24.0%	0.86
621112	Offices of Physicians, Mental Health Specialists	<10	<10	Insf. Data	Insf. Data	Insf. Data
621210	Offices of Dentists	215	218	3	1.0%	0.38
621310	Offices of Chiropractors	20	28	8	40.0%	0.48
621320	Offices of Optometrists	54	56	2	4.0%	0.76
621330	Offices of Mental Health Practitioners (except Physicians)	17	13	-4	-24.0%	0.28
621340	Offices of Physical, Occupational and Speech Therapists, and Audiologists	47	54	7	15.0%	0.38
621391	Offices of Podiatrists	23	32	9	39.0%	2.77
621399	Offices of All Other Miscellaneous Health Practitioners	17	32	15	88.0%	0.79
621410	Family Planning Centers	0	0	0	0.0%	0.00
621420	Outpatient Mental Health and Substance Abuse Centers	28	35	7	25.0%	0.46
621491	HMO Medical Centers	0	0	0	0.0%	0.00
621492	Kidney Dialysis Centers	152	223	71	47.0%	2.95
621493	Freestanding Ambulatory Surgical and Emergency Centers	0	0	0	0.0%	0.00
621498	All Other Outpatient Care Centers	<10	<10	Insf. Data	Insf. Data	Insf. Data
621511	Medical Laboratories	<10	<10	Insf. Data	Insf. Data	Insf. Data
621512	Diagnostic Imaging Centers	<10	<10	Insf. Data	Insf. Data	Insf. Data
621610	Home Health Care Services	157	<10	Insf. Data	Insf. Data	Insf. Data
621910	Ambulance Services	155	234	79	51.0%	2.51
621991	Blood and Organ Banks	<10	<10	Insf. Data	Insf. Data	Insf. Data
621999	All Other Miscellaneous Ambulatory Health Care Services	0	0	0	0.0%	0.00
622110	General Medical and Surgical Hospitals	26	11	-15	-58.0%	0.01
622210	Psychiatric and Substance Abuse Hospitals	0	0	0	0.0%	0.00
622310	Specialty (except Psychiatric and Substance Abuse) Hospitals	<10	<10	Insf. Data	Insf. Data	Insf. Data
623110	Nursing Care Facilities (Skilled Nursing Facilities)	282	398	116	41.0%	0.61
623210	Residential Intellectual and	<10	<10	Insf. Data	Insf. Data	Insf. Data

NAICS CODE	INDUSTRY DESCRIPTION	2015 PROJECTED JOBS	2025 PROJECTED JOBS	2015 TO 2025 CHANGE	2015 TO 2025 % CHANGE	2025 PROJECTED LOCATION QUOTIENT
	Developmental Disability Facilities					
623220	Residential Mental Health and Substance Abuse Facilities	0	0	0	0.0%	0.00
623311	Continuing Care Retirement Communities	0	0	0	0.0%	0.00
623312	Assisted Living Facilities for the Elderly	83	134	51	61.0%	0.51
623990	Other Residential Care Facilities	<10	<10	Insf. Data	Insf. Data	Insf. Data
	Medical Services Cluster	2,232	2,642	410	18.0%	0.39
	Imperial County Total	65,881	77,225	11,344	17.2%	

Source: ADE, Inc.; data from EMSI

Table 37 — Biopharmaceuticals and Medical Devices Employment Projection, California 2015 to 2025

NAICS CODE	INDUSTRY DESCRIPTION	2015 PROJECTED JOBS	2025 PROJECTED JOBS	2015 TO 2025 CHANGE	2015 TO 2025 % CHANGE
325411	Medicinal and Botanical Manufacturing	4,448	6,303	1,855	41.7%
325412	Pharmaceutical Preparation Manufacturing	33,779	39,710	5,931	17.6%
325413	In-Vitro Diagnostic Substance Manufacturing	6,215	7,945	1,730	27.8%
325414	Biological Product (except Diagnostic) Manufacturing	2,829	2,629	-200	-7.1%
333314	Optical Instrument and Lens Manufacturing	4,367	3,649	-718	-16.4%
339112	Surgical and Medical Instrument Manufacturing	26,570	31,446	4,876	18.4%
339113	Surgical Appliance and Supplies Manufacturing	11,019	10,486	-533	-4.8%
339114	Dental Equipment and Supplies Manufacturing	3,952	3,653	-299	-7.6%
339115	Ophthalmic Goods Manufacturing	5,633	5,859	226	4.0%
	Biopharmaceuticals and Medical Devices Cluster	98,811	111,680	12,869	13.0%
	California Total	16,290,996	18,670,052	2,379,056	14.6%

Source: ADE, Inc.; data from EMSI

STAFFING PATTERNS

Staffing patterns for medical services show over 60 percent of the jobs in management, business, and technical occupations (including health care practitioners and support occupations). About 28.2 percent of the jobs are in office and administrative positions. For the biopharmaceuticals and medical devices clusters in California, only about 37.4 percent of the jobs are in production occupations, which is considerably lower than other manufacturing activity. In addition, over 41.5 percent of the jobs are in the higher wage management, business, and technical occupations.

Table 38 — Medical Services Staffing Pattern, Imperial County

SOC CODE	OCCUPATION DESCRIPTION	2001 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	PERCENT OF TOTAL	MEDIAN HOURLY WAGE
11-0000	Management Occupations	44	63	19	43.2%	3.1%	\$41.54
13-0000	Business and Financial Operations Occupations	17	25	8	47.1%	1.3%	\$31.45
15-0000	Computer and Mathematical Occupations	<10	<10	2	66.7%	0.2%	\$28.63
17-0000	Architecture and Engineering Occupations	0	0	0	0.0%	0.0%	\$38.86
19-0000	Life, Physical, and Social Science Occupations	<10	<10	3	100.0%	0.3%	\$35.23
21-0000	Community and Social Service Occupations	46	32	-14	-30.4%	1.7%	\$23.00
23-0000	Legal Occupations	0	0	0	0.0%	0.0%	\$33.78
25-0000	Education, Training, and Library Occupations	<10	<10	1	100.0%	0.1%	\$27.16
27-0000	Arts, Design, Entertainment, Sports, and Media Occupations	<10	<10	0	0.0%	0.1%	\$19.38
29-0000	Healthcare Practitioners and Technical Occupations	449	586	137	30.5%	29.7%	\$39.77
31-0000	Healthcare Support Occupations	358	491	133	37.2%	24.2%	\$13.82
33-0000	Protective Service Occupations	<10	<10	4	100.0%	0.4%	\$39.48
35-0000	Food Preparation and Serving Related Occupations	38	77	39	102.6%	3.6%	\$10.88
37-0000	Building and Grounds Cleaning and Maintenance Occupations	33	61	28	84.8%	2.9%	\$11.03
39-0000	Personal Care and Service Occupations	52	29	-23	-44.2%	1.5%	\$10.80
41-0000	Sales and Related Occupations	<10	<10	2	28.6%	0.5%	\$12.17
43-0000	Office and Administrative Support Occupations	375	568	193	51.5%	28.2%	\$15.13
45-0000	Farming, Fishing, and Forestry Occupations	0	<10	0	0.0%	0.0%	\$9.99
47-0000	Construction and Extraction Occupations	0	0	0	0.0%	0.0%	\$25.11
49-0000	Installation, Maintenance, and Repair Occupations	14	29	15	107.1%	1.4%	\$21.21
51-0000	Production Occupations	<10	<10	1	25.0%	0.3%	\$16.18
53-0000	Transportation and Material Moving Occupations	<10	12	5	71.4%	0.6%	\$13.85

Source: ADE, Inc.; data from EMSI

Table 39 — Biopharmaceuticals and Medical Devices Staffing Pattern, California

SOC CODE	OCCUPATION DESCRIPTION	2001 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	PERCENT OF TOTAL	MEDIAN HOURLY WAGE
11-0000	Management Occupations	9,793	10,624	831	8.5%	10.8%	\$53.68

SOC CODE	OCCUPATION DESCRIPTION	2001 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	PERCENT OF TOTAL	MEDIAN HOURLY WAGE
13-0000	Business and Financial Operations Occupations	6,913	7,626	713	10.3%	7.8%	\$34.91
15-0000	Computer and Mathematical Occupations	3,041	3,044	2	0.1%	3.1%	\$46.00
17-0000	Architecture and Engineering Occupations	7,274	7,627	353	4.9%	7.9%	\$44.67
19-0000	Life, Physical, and Social Science Occupations	7,547	9,880	2,332	30.9%	10.0%	\$35.51
21-0000	Community and Social Service Occupations	0	0	0	Insf. Data	0.0%	\$23.22
23-0000	Legal Occupations	200	225	25	12.7%	0.2%	\$53.58
25-0000	Education, Training, and Library Occupations	12	14	2	18.0%	0.0%	\$26.95
27-0000	Arts, Design, Entertainment, Sports, and Media Occupations	545	587	42	7.7%	0.6%	\$28.08
29-0000	Healthcare Practitioners and Technical Occupations	788	882	94	12.0%	0.9%	\$44.40
31-0000	Healthcare Support Occupations	89	104	15	16.5%	0.1%	\$15.48
33-0000	Protective Service Occupations	104	113	8	8.0%	0.1%	\$25.35
35-0000	Food Preparation and Serving Related Occupations	35	38	2	6.7%	0.0%	\$10.70
37-0000	Building and Grounds Cleaning and Maintenance Occupations	470	492	22	4.7%	0.5%	\$12.89
39-0000	Personal Care and Service Occupations	<10	<10	Insf. Data	Insf. Data	0.0%	\$12.18
41-0000	Sales and Related Occupations	2,529	2,495	-34	-1.3%	2.6%	\$16.97
43-0000	Office and Administrative Support Occupations	11,206	11,226	20	0.2%	11.5%	\$18.14
45-0000	Farming, Fishing, and Forestry Occupations	21	19	-2	-9.1%	0.0%	\$10.62
47-0000	Construction and Extraction Occupations	231	184	-47	-20.5%	0.2%	\$24.95
49-0000	Installation, Maintenance, and Repair Occupations	2,609	2,613	5	0.2%	2.7%	\$23.10
51-0000	Production Occupations	37,265	36,336	-929	-2.5%	37.4%	\$15.88
53-0000	Transportation and Material Moving Occupations	3,411	3,477	66	1.9%	3.6%	\$15.58

Source: ADE, Inc.; data from EMSI

TRAINING REQUIREMENTS

Training requirements for jobs in medical services show that the majority of the jobs (58.0 percent) require at least a college degree or postsecondary award. While 94.9 percent of the jobs in this cluster do not specify a work experience requirement, most of the jobs (55.4 percent) do not entail on-the-job-training. For biopharmaceuticals and medical devices, a similarly high percentage (42.2 percent) of the jobs require at least a college degree of postsecondary award.

Table 40 — Medical Services Training Requirements, Imperial County

TYPICAL ENTRY LEVEL EDUCATION	TOTAL
Less than high school	7.8%
High school diploma or equivalent	34.1%
Some college, no degree	0.1%
Associate's degree	9.1%
Bachelor's degree	5.7%
Master's degree	2.2%

TYPICAL ENTRY LEVEL EDUCATION	TOTAL
Doctoral or professional degree	9.0%
Postsecondary non-degree award	32.0%
WORK EXPERIENCE REQUIRED	TOTAL
None	94.9%
Less than 5 years	4.7%
5 years or more	0.4%
Typical On-The-Job Training	Total
None	55.4%
Short-term on-the-job training	21.8%
Moderate-term on-the-job training	14.8%
Long-term on-the-job training	1.6%
Apprenticeship	0.0%
Internship/residency	6.4%

Source: ADE, Inc.; data from EMSI

Table 41 — Biopharmaceuticals and Medical Devices Training Requirements, California

TYPICAL ENTRY LEVEL EDUCATION	TOTAL
Associate's degree	2.7%
Bachelor's degree	32.7%
Doctoral or professional degree	3.0%
High school diploma or equivalent	51.0%
Less than high school	6.5%
Master's degree	0.6%
N/A	0.0%
Postsecondary non-degree award	3.2%
Some college, no degree	0.3%
WORK EXPERIENCE REQUIRED	TOTAL
5 years or more	6.9%
Less than 5 years	10.3%
None	82.8%
TYPICAL ON-THE-JOB TRAINING	TOTAL
Apprenticeship	0.2%
Internship/residency	0.4%
Long-term on-the-job training	6.0%
Moderate-term on-the-job training	35.2%
N/A	0.0%
None	42.6%
Short-term on-the-job training	15.5%

Source: ADE, Inc.; data from EMSI

SUPPLY CHAIN

The supply chain for medical services in Imperial County shows that the largest inputs are real estate, professional services, insurance, administrative services, and financial services. Aside from chemicals, food, and miscellaneous products, manufacturing inputs generally do not make up most of the top inputs into medical services. The business operations for medical services depend more on services. For biopharmaceuticals and medical devices, the supplier inputs in California largely consist of chemical manufacturing, wholesale trade, management services, miscellaneous manufacturing, plastics, and metals.

Table 42 — Medical Services Supply Chain, Imperial County

NAICS	INDUSTRY	AMOUNT	IN-REGION	OUT OF REGION
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NAICS	INDUSTRY	AMOUNT	IN-REGION	OUT OF REGION
531	Real Estate	\$23,617,527	16.2%	83.8%
541	Professional, Scientific, and Technical Services	\$8,971,787	8.8%	91.2%
524	Insurance Carriers and Related Activities	\$8,292,939	2.8%	97.2%
561	Administrative and Support Services	\$7,552,635	17.3%	82.7%
551	Management of Companies and Enterprises	\$6,662,610	1.2%	98.8%
523	Securities, Commodity Contracts, and Other Financial Investments and Related Activities	\$3,963,734	2.4%	97.6%
325	Chemical Manufacturing	\$3,690,152	0.1%	99.9%
522	Credit Intermediation and Related Activities	\$2,841,284	17.1%	82.9%
311	Food Manufacturing	\$2,837,377	11.5%	88.5%
339	Miscellaneous Manufacturing	\$2,646,563	1.0%	99.0%
722	Food Services and Drinking Places	\$2,590,954	31.7%	68.3%
423	Merchant Wholesalers, Durable Goods	\$2,280,677	7.9%	92.1%
517	Telecommunications	\$2,210,396	14.6%	85.4%
621	Ambulatory Health Care Services	\$2,027,034	16.0%	84.0%
326	Plastics and Rubber Products Manufacturing	\$1,852,716	1.9%	98.1%
424	Merchant Wholesalers, Nondurable Goods	\$1,422,630	14.7%	85.3%
532	Rental and Leasing Services	\$1,299,147	30.3%	69.7%
332	Fabricated Metal Product Manufacturing	\$937,812	2.7%	97.3%
425	Wholesale Electronic Markets and Agents and Brokers	\$924,908	11.5%	88.5%
324	Petroleum and Coal Products Manufacturing	\$914,409	0.0%	100.0%
323	Printing and Related Support Activities	\$860,332	0.8%	99.2%
221	Utilities	\$801,337	2.8%	97.2%
334	Computer and Electronic Product Manufacturing	\$797,364	0.1%	99.9%
811	Repair and Maintenance	\$783,789	26.5%	73.5%
511	Publishing Industries (except Internet)	\$699,696	11.0%	89.0%
336	Transportation Equipment Manufacturing	\$656,087	0.4%	99.6%
492	Couriers and Messengers	\$640,607	19.7%	80.3%
484	Truck Transportation	\$638,984	23.4%	76.6%
721	Accommodation	\$627,865	10.8%	89.2%
481	Air Transportation	\$617,292	1.5%	98.5%
322	Paper Manufacturing	\$557,186	0.6%	99.4%
562	Waste Management and Remediation Services	\$546,964	19.1%	80.9%
321	Wood Product Manufacturing	\$534,729	2.2%	97.8%
519	Other Information Services	\$520,744	0.9%	99.1%
515	Broadcasting (except Internet)	\$486,032	7.9%	92.1%
327	Nonmetallic Mineral Product Manufacturing	\$464,795	9.6%	90.4%
488	Support Activities for Transportation	\$435,209	24.7%	75.3%
901	Federal Government	\$423,143	27.1%	72.9%
812	Personal and Laundry Services	\$406,560	30.0%	70.0%
533	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	\$405,574	0.7%	99.3%
813	Religious, Grantmaking, Civic, Professional, and Similar Organizations	\$362,424	15.5%	84.5%
711	Performing Arts, Spectator Sports, and Related Industries	\$318,758	4.1%	95.9%
333	Machinery Manufacturing	\$270,397	0.5%	99.5%
493	Warehousing and Storage	\$247,720	9.3%	90.7%
485	Transit and Ground Passenger Transportation	\$244,796	21.0%	79.0%
441	Motor Vehicle and Parts Dealers	\$236,793	32.6%	67.4%
611	Educational Services	\$236,288	2.7%	97.3%
331	Primary Metal Manufacturing	\$216,836	1.4%	98.6%
518	Data Processing, Hosting, and Related Services	\$190,967	0.5%	99.5%
512	Motion Picture and Sound Recording Industries	\$189,610	2.3%	97.7%
238	Specialty Trade Contractors	\$180,633	24.8%	75.2%
713	Amusement, Gambling, and Recreation Industries	\$180,030	11.2%	88.8%
482	Rail Transportation	\$154,557	9.1%	90.9%
313	Textile Mills	\$152,418	1.0%	99.0%
335	Electrical Equipment, Appliance, and Component Manufacturing	\$117,650	0.0%	100.0%
337	Furniture and Related Product Manufacturing	\$105,142	1.0%	99.0%
445	Food and Beverage Stores	\$97,381	47.6%	52.4%
236	Construction of Buildings	\$74,104	18.6%	81.4%

NAICS	INDUSTRY	AMOUNT	IN-REGION	OUT OF REGION
622	Hospitals	\$71,810	2.4%	97.6%
314	Textile Product Mills	\$64,143	0.9%	99.1%
212	Mining (except Oil and Gas)	\$58,074	18.4%	81.6%
483	Water Transportation	\$50,475	0.0%	100.0%
452	General Merchandise Stores	\$49,924	68.0%	32.0%
446	Health and Personal Care Stores	\$49,549	29.1%	70.9%
454	Nonstore Retailers	\$47,709	8.5%	91.5%
444	Building Material and Garden Equipment and Supplies Dealers	\$47,420	40.7%	59.3%
237	Heavy and Civil Engineering Construction	\$46,866	17.4%	82.6%
453	Miscellaneous Store Retailers	\$41,049	37.6%	62.4%
448	Clothing and Clothing Accessories Stores	\$39,566	51.4%	48.6%
211	Oil and Gas Extraction	\$34,670	0.4%	99.6%
443	Electronics and Appliance Stores	\$26,706	13.6%	86.4%
521	Monetary Authorities-Central Bank	\$26,000	0.0%	100.0%
312	Beverage and Tobacco Product Manufacturing	\$23,463	39.1%	60.9%
447	Gasoline Stations	\$21,259	16.6%	83.4%
442	Furniture and Home Furnishings Stores	\$18,889	20.0%	80.0%
487	Scenic and Sightseeing Transportation	\$18,780	54.6%	45.4%
451	Sporting Goods, Hobby, Musical Instrument, and Book Stores	\$17,457	32.9%	67.1%
315	Apparel Manufacturing	\$10,836	1.6%	98.4%
623	Nursing and Residential Care Facilities	\$6,803	4.9%	95.1%
114	Fishing, Hunting and Trapping	\$5,713	1.9%	98.1%
486	Pipeline Transportation	\$5,571	0.7%	99.3%
213	Support Activities for Mining	\$5,316	23.0%	77.0%
111	Crop Production	\$4,724	42.8%	57.2%
491	Postal Service	\$1,955	0.0%	100.0%
112	Animal Production and Aquaculture	\$1,868	5.9%	94.1%
316	Leather and Allied Product Manufacturing	\$977	0.3%	99.7%
712	Museums, Historical Sites, and Similar Institutions	\$860	0.8%	99.2%
624	Social Assistance	\$748	37.8%	62.2%
525	Funds, Trusts, and Other Financial Vehicles	\$319	0.00%	100.00%
115	Support Activities for Agriculture and Forestry	\$114	56.71%	43.29%
113	Forestry and Logging	\$89	8.81%	91.19%

Source: ADE, Inc.; data from EMSI

Table 43 – Biopharmaceuticals and Medical Devices Supply Chain, California

NAICS	INDUSTRY	AMOUNT
325	Chemical Manufacturing	\$5,658,647,427
551	Management of Companies and Enterprises	\$5,358,647,464
541	Professional, Scientific, and Technical Services	\$2,451,921,804
423	Merchant Wholesalers, Durable Goods	\$1,373,858,876
424	Merchant Wholesalers, Nondurable Goods	\$856,978,955
339	Miscellaneous Manufacturing	\$805,144,954
326	Plastics and Rubber Products Manufacturing	\$716,831,794
425	Wholesale Electronic Markets and Agents and Brokers	\$557,157,702
331	Primary Metal Manufacturing	\$482,209,809
531	Real Estate	\$447,423,051
561	Administrative and Support Services	\$396,889,909
332	Fabricated Metal Product Manufacturing	\$346,854,404
522	Credit Intermediation and Related Activities	\$294,972,735
484	Truck Transportation	\$282,286,622
533	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	\$281,602,311
311	Food Manufacturing	\$270,134,932
322	Paper Manufacturing	\$232,435,597
334	Computer and Electronic Product Manufacturing	\$177,751,120
333	Machinery Manufacturing	\$172,162,479
519	Other Information Services	\$139,247,065

NAICS	INDUSTRY	AMOUNT
517	Telecommunications	\$138,452,575
493	Warehousing and Storage	\$138,127,345
221	Utilities	\$137,254,838
324	Petroleum and Coal Products Manufacturing	\$122,013,467
336	Transportation Equipment Manufacturing	\$121,922,981
515	Broadcasting (except Internet)	\$115,607,733
523	Securities, Commodity Contracts, and Other Financial Investments and Related Activities	\$108,787,353
327	Nonmetallic Mineral Product Manufacturing	\$106,250,499
313	Textile Mills	\$105,480,940
511	Publishing Industries (except Internet)	\$99,976,247
323	Printing and Related Support Activities	\$99,530,080
335	Electrical Equipment, Appliance, and Component Manufacturing	\$86,067,091
518	Data Processing, Hosting, and Related Services	\$82,488,546
722	Food Services and Drinking Places	\$82,001,424
811	Repair and Maintenance	\$72,186,152
562	Waste Management and Remediation Services	\$67,089,980
524	Insurance Carriers and Related Activities	\$59,154,852
481	Air Transportation	\$58,009,635
482	Rail Transportation	\$46,694,917
721	Accommodation	\$39,231,695
238	Specialty Trade Contractors	\$34,212,626
111	Crop Production	\$28,853,347
321	Wood Product Manufacturing	\$24,504,763
711	Performing Arts, Spectator Sports, and Related Industries	\$22,220,224
441	Motor Vehicle and Parts Dealers	\$21,452,193
337	Furniture and Related Product Manufacturing	\$21,241,210
611	Educational Services	\$20,319,996
446	Health and Personal Care Stores	\$19,182,997
454	Nonstore Retailers	\$18,470,573
444	Building Material and Garden Equipment and Supplies Dealers	\$18,358,462
813	Religious, Grantmaking, Civic, Professional, and Similar Organizations	\$16,040,521
453	Miscellaneous Store Retailers	\$15,891,914
532	Rental and Leasing Services	\$15,434,632
485	Transit and Ground Passenger Transportation	\$15,401,775
448	Clothing and Clothing Accessories Stores	\$15,317,845
452	General Merchandise Stores	\$14,305,721
236	Construction of Buildings	\$14,035,532
211	Oil and Gas Extraction	\$13,661,197
483	Water Transportation	\$12,279,502
812	Personal and Laundry Services	\$11,693,030
488	Support Activities for Transportation	\$11,249,838
443	Electronics and Appliance Stores	\$10,339,279
445	Food and Beverage Stores	\$10,151,446
212	Mining (except Oil and Gas)	\$9,740,839
237	Heavy and Civil Engineering Construction	\$8,876,521
447	Gasoline Stations	\$8,230,308
713	Amusement, Gambling, and Recreation Industries	\$7,416,591
442	Furniture and Home Furnishings Stores	\$7,312,728
451	Sporting Goods, Hobby, Musical Instrument, and Book Stores	\$6,758,518
621	Ambulatory Health Care Services	\$5,890,173
622	Hospitals	\$5,239,901
314	Textile Product Mills	\$3,898,052
312	Beverage and Tobacco Product Manufacturing	\$3,754,816
315	Apparel Manufacturing	\$2,962,483
521	Monetary Authorities-Central Bank	\$2,804,412
213	Support Activities for Mining	\$1,185,275
486	Pipeline Transportation	\$843,966
512	Motion Picture and Sound Recording Industries	\$750,861
487	Scenic and Sightseeing Transportation	\$485,452
492	Couriers and Messengers	\$404,633
316	Leather and Allied Product Manufacturing	\$238,133
901	Federal Government	\$186,242
623	Nursing and Residential Care Facilities	\$161,916

NAICS	INDUSTRY	AMOUNT
112	Animal Production and Aquaculture	\$108,013
712	Museums, Historical Sites, and Similar Institutions	\$93,928
624	Social Assistance	\$67,372
525	Funds, Trusts, and Other Financial Vehicles	\$26,757
115	Support Activities for Agriculture and Forestry	\$2,257
491	Postal Service	\$860
113	Forestry and Logging	\$69
114	Fishing, Hunting and Trapping	\$14

Source: ADE, Inc.; data from EMSI

AGRICULTURE

RECENT TRENDS

The agricultural cluster was analyzed by including all of the sectors that comprise the crop and animal production category (NAICS code 11). This includes farming, livestock, as well as support activities. Because of the report's focus on advanced manufacturing, this part of the analysis also separately includes information on food processing activity in Imperial County.

For Imperial County, the agriculture cluster has seen a long-term decline since 2001, with the employment dropping from 11,330 in 2001 to 10,644 in 2014. However, this employment level represents a recovery of 1,000 jobs compared to 2009. Despite the overall decline in jobs, the concentration of agricultural employment in Imperial County remains more than six times greater than the California average.

By comparison, food processing activity has not yet developed into a highly concentrated activity in Imperial County. Between 2001 and 2014, food processing employment declined by 36.6 percent to 362 jobs. Most of the food processing occurs in animal food and sugar manufacturing. In addition, the concentration of employment in food processing is below the statewide average.

Food processing companies in Mexicali generate over 1,700 additional jobs.

PROJECTED EMPLOYMENT

Projected employment shows agriculture continuing a long-term decline, with crop production and most of the other leading agriculture sectors losing jobs between 2015 and 2025. Projected food processing employment shows the overall job count largely unchanged. However, sugar manufacturing is expected to decline by 86.0 percent, while animal food manufacturing is projected to more than double.

STAFFING PATTERNS

Staffing patterns data for agriculture shows that 83.5 percent of the occupations are in the farming occupations, while only about 5.2 percent of the occupations are in management, business, and technical categories. For food processing, about 49.7 percent of the occupational distribution is in production occupations, while management, business, and technical occupations make up 6.7 percent of the agriculture jobs.

Table 44 — Agriculture Employment Trend, Imperial County 2001 to 2014

NAICS	DESCRIPTION	2001 JOBS	2009 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	2009 TO 2014 CHANGE	2009 TO 2014 % CHANGE	2014 LOCATION QUOTIENT
111000	Crop Production	4,741	3,474	3,204	-1,538	-32.4%	-271	-7.8%	4.64
112000	Animal Production and Aquaculture	547	526	489	-58	-10.6%	-38	-7.1%	4.37
113110	Timber Tract Operations	0	0	0	0	Insf. Data	0	Insf. Data	0.00
113210	Forest Nurseries and Gathering of Forest Products	20	0	93	72	353.5%	93	Insf. Data	45.02
113310	Logging	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
114111	Finfish Fishing	0	63	0	0	Insf. Data	-63	-100.0%	0.00
114112	Shellfish Fishing	<10	0	0	Insf. Data	Insf. Data	0	Insf. Data	0.00
114119	Other Marine Fishing	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
114210	Hunting and Trapping	0	0	0	0	Insf. Data	0	Insf. Data	0.00
115111	Cotton Ginning	28	<10	0	-28	-100.0%	Insf. Data	Insf. Data	0.00
115112	Soil Preparation, Planting, and Cultivating	312	360	414	102	32.6%	53	14.8%	11.39
115113	Crop Harvesting, Primarily by Machine	625	620	537	-88	-14.1%	-83	-13.4%	20.14
115114	Postharvest Crop Activities (except Cotton Ginning)	316	1,991	1,508	1,192	377.9%	-483	-24.3%	10.53
115115	Farm Labor Contractors and Crew Leaders	4,315	2,572	4,368	52	1.2%	1,796	69.8%	7.82
115116	Farm Management Services	417	31	33	-384	-92.1%	2	6.0%	0.69
115210	Support Activities for Animal Production	<10	0	0	Insf. Data	Insf. Data	0	Insf. Data	0.00
115310	Support Activities for Forestry	0	0	0	0	Insf. Data	0	Insf. Data	0.00
	Agriculture Cluster	11,330	9,644	10,644	-686	-6.1%	1,000	10.4%	6.47
	Imperial County Total	49,839	57,237	62,780	12,941	26.0%	5,543	9.7%	

Source: ADE, Inc.; data from EMSI

Table 45 — Food Processing Employment Trend, Imperial County 2001 to 2014

NAICS	DESCRIPTION	2001 JOBS	2009 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	2009 TO 2014 CHANGE	2009 TO 2014 % CHANGE	2014 LOCATION QUOTIENT
311111	Dog and Cat Food Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
311119	Other Animal Food Manufacturing	18	<10	130	112	619.1%	Insf. Data	Insf. Data	11.18
311211	Flour Milling	<10	<10	0	Insf. Data	Insf. Data	Insf. Data	Insf. Data	0.00
311212	Rice Milling	0	0	0	0	Insf. Data	0	Insf. Data	0.00
311213	Malt Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	Insf. Data
311221	Wet Corn Milling	0	0	0	0	Insf. Data	0	Insf. Data	0.00
311224	Soybean and Other Oilseed Processing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
311225	Fats and Oils Refining and Blending	0	0	0	0	Insf. Data	0	Insf. Data	0.00

NAICS	DESCRIPTION	2001 JOBS	2009 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	2009 TO 2014 CHANGE	2009 TO 2014 % CHANGE	2014 LOCATION QUOTIENT
311230	Breakfast Cereal Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
311313	Beet Sugar Manufacturing	305	305	163	-142	-46.6%	-142	Insf. Data	114.55
311314	Cane Sugar Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
311340	Nonchocolate Confectionery Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
311351	Chocolate and Confectionery Manufacturing from Cacao Beans	0	0	0	0	Insf. Data	0	Insf. Data	0.00
311352	Confectionery Manufacturing from Purchased Chocolate	0	0	0	0	Insf. Data	0	Insf. Data	0.00
311411	Frozen Fruit, Juice, and Vegetable Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
311412	Frozen Specialty Food Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
311421	Fruit and Vegetable Canning	0	0	0	0	Insf. Data	0	Insf. Data	0.00
311422	Specialty Canning	0	0	0	0	Insf. Data	0	Insf. Data	0.00
311423	Dried and Dehydrated Food Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
311511	Fluid Milk Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
311512	Creamery Butter Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
311513	Cheese Manufacturing	0	<10	<10	Insf. Data	Insf. Data	Insf. Data	Insf. Data	Insf. Data
311514	Dry, Condensed, and Evaporated Dairy Product Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
311520	Ice Cream and Frozen Dessert Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
311813	Frozen Cakes, Pies, and Other Pastries Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
311821	Cookie and Cracker Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
311824	Dry Pasta, Dough, and Flour Mixes Manufacturing from Purchased Flour	0	0	0	0	Insf. Data	0	Insf. Data	0.00
311830	Tortilla Manufacturing	58	24	<10	Insf. Data	Insf. Data	Insf. Data	Insf. Data	Insf. Data
311911	Roasted Nuts and Peanut Butter Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
311919	Other Snack Food Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
311920	Coffee and Tea Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
311930	Flavoring Syrup and Concentrate Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
311941	Mayonnaise, Dressing, and Other Prepared Sauce Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
311942	Spice and Extract Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
311991	Perishable Prepared Food Manufacturing	0	0	0	0	Insf. Data	0	Insf. Data	0.00
311999	All Other Miscellaneous Food Manufacturing	0	<10	0	0	Insf. Data	Insf. Data	Insf. Data	0.00
312111	Soft Drink Manufacturing	183	58	50	-133	-72.7%	-8	Insf. Data	1.18
312112	Bottled Water Manufacturing	<10	17	0	Insf. Data	Insf. Data	Insf. Data	Insf. Data	0.00
312113	Ice Manufacturing	<10	16	13	Insf. Data	Insf. Data	Insf. Data	Insf. Data	5.44
312120	Breweries	0	0	0	0	Insf. Data	0	Insf. Data	0.00
312130	Wineries	0	0	0	0	Insf. Data	0	Insf. Data	0.00
312140	Distilleries	0	0	0	0	Insf. Data	0	Insf. Data	0.00
	Food Processing Cluster	571	430	362	-209	-36.6%	-68	Insf. Data	0.64

NAICS	DESCRIPTION	2001 JOBS	2009 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	2009 TO 2014 CHANGE	2009 TO 2014 % CHANGE	2014 LOCATION QUOTIENT
	Imperial County Total	49,839	57,237	62,780	12,941	26.0%	5,543	9.7%	

Source: ADE, Inc.; data from EMSI

Table 46 — Agriculture Employment Projection, Imperial County 2015 to 2025

NAICS CODE	INDUSTRY DESCRIPTION	2015 PROJECTED JOBS	2025 PROJECTED JOBS	2015 TO 2025 CHANGE	2015 TO 2025 % CHANGE	2025 PROJECTED LOCATION QUOTIENT
111000	Crop Production	3,847	2,982	0	0.0%	3.59
112000	Animal Production and Aquaculture	472	372	104	111.0%	2.78
113110	Timber Tract Operations	0	0	0	0.0%	0.00
113210	Forest Nurseries and Gathering of Forest Products	91	98	0	0.0%	40.41
113310	Logging	0	0	0	0.0%	0.00
114111	Finfish Fishing	0	0	0	0.0%	0.00
114112	Shellfish Fishing	0	0	0	0.0%	0.00
114119	Other Marine Fishing	0	0	0	0.0%	Insf. Data
114210	Hunting and Trapping	0	0	0	0.0%	0.00
115111	Cotton Ginning	0	0	-108	-86.0%	0.00
115112	Soil Preparation, Planting, and Cultivating	362	379	0	0.0%	8.55
115113	Crop Harvesting, Primarily by Machine	644	387	0	0.0%	11.90
115114	Postharvest Crop Activities (except Cotton Ginning)	1,661	1,551	0	0.0%	8.89
115115	Farm Labor Contractors and Crew Leaders	4,594	4,779	0	0.0%	7.16
115116	Farm Management Services	33	<10	0	0.0%	Insf. Data
115210	Support Activities for Animal Production	0	0	0	0.0%	0.00
115310	Support Activities for Forestry	0	0	0	0.0%	0.00
	Agriculture Cluster	11,704	10,549	0	0.0%	5.34
	Imperial County Total	65,881	77,225	11,344	17.2%	

Source: ADE, Inc.; data from EMSI

Table 47 — Food Processing Employment Projection, Imperial County 2015 to 2025

NAICS CODE	INDUSTRY DESCRIPTION	2015 PROJECTED JOBS	2025 PROJECTED JOBS	2015 TO 2025 CHANGE	2015 TO 2025 % CHANGE	2025 PROJECTED LOCATION QUOTIENT
311111	Dog and Cat Food Manufacturing	0	0	0	0.0%	0.00
311119	Other Animal Food Manufacturing	94	198	104	111.0%	20.54

NAICS CODE	INDUSTRY DESCRIPTION	2015 PROJECTED JOBS	2025 PROJECTED JOBS	2015 TO 2025 CHANGE	2015 TO 2025 % CHANGE	2025 PROJECTED LOCATION QUOTIENT
311211	Flour Milling	0	0	0	0.0%	0.00
311212	Rice Milling	0	0	0	0.0%	0.00
311213	Malt Manufacturing	0	0	0	0.0%	0.00
311221	Wet Corn Milling	0	0	0	0.0%	0.00
311224	Soybean and Other Oilseed Processing	0	0	0	0.0%	Insf. Data
311225	Fats and Oils Refining and Blending	0	0	0	0.0%	0.00
311230	Breakfast Cereal Manufacturing	0	0	0	0.0%	0.00
311313	Beet Sugar Manufacturing	126	18	-108	-86.0%	22.47
311314	Cane Sugar Manufacturing	0	0	0	0.0%	0.00
311340	Nonchocolate Confectionery Manufacturing	0	0	0	0.0%	0.00
311351	Chocolate and Confectionery Manufacturing from Cacao Beans	0	0	0	0.0%	0.00
311352	Confectionery Manufacturing from Purchased Chocolate	0	0	0	0.0%	0.00
311411	Frozen Fruit, Juice, and Vegetable Manufacturing	0	0	0	0.0%	0.00
311412	Frozen Specialty Food Manufacturing	0	0	0	0.0%	0.00
311421	Fruit and Vegetable Canning	0	0	0	0.0%	0.00
311422	Specialty Canning	0	0	0	0.0%	0.00
311423	Dried and Dehydrated Food Manufacturing	0	0	0	0.0%	0.00
311511	Fluid Milk Manufacturing	0	0	0	0.0%	0.00
311512	Creamery Butter Manufacturing	0	0	0	0.0%	0.00
311513	Cheese Manufacturing	<10	<10	Insf. Data	Insf. Data	Insf. Data
311514	Dry, Condensed, and Evaporated Dairy Product Manufacturing	0	0	0	0.0%	0.00
311520	Ice Cream and Frozen Dessert Manufacturing	0	0	0	0.0%	0.00
311813	Frozen Cakes, Pies, and Other Pastries Manufacturing	0	0	0	0.0%	0.00
311821	Cookie and Cracker Manufacturing	0	0	0	0.0%	0.00
311824	Dry Pasta, Dough, and Flour Mixes Manufacturing from Purchased Flour	0	0	0	0.0%	0.00
311830	Tortilla Manufacturing	<10	<10	Insf. Data	Insf. Data	Insf. Data
311911	Roasted Nuts and Peanut Butter Manufacturing	0	0	0	0.0%	0.00
311919	Other Snack Food Manufacturing	0	0	0	0.0%	0.00
311920	Coffee and Tea Manufacturing	0	0	0	0.0%	0.00
311930	Flavoring Syrup and Concentrate Manufacturing	0	0	0	0.0%	0.00
311941	Mayonnaise, Dressing, and Other Prepared Sauce Manufacturing	0	0	0	0.0%	0.00
311942	Spice and Extract Manufacturing	0	0	0	0.0%	0.00
311991	Perishable Prepared Food Manufacturing	<10	<10	Insf. Data	Insf. Data	Insf. Data
311999	All Other Miscellaneous Food Manufacturing	0	0	0	0.0%	0.00
312111	Soft Drink Manufacturing	46	57	11	24.0%	1.15
312112	Bottled Water Manufacturing	0	0	0	0.0%	Insf. Data
312113	Ice Manufacturing	13	<10	Insf. Data	Insf. Data	Insf. Data
312120	Breweries	0	0	0	0.0%	0.00
312130	Wineries	0	0	0	0.0%	0.00
312140	Distilleries	0	0	0	0.0%	0.00
	Food Processing Cluster	296	285	-11	-4.0%	0.40

NAICS CODE	INDUSTRY DESCRIPTION	2015 PROJECTED JOBS	2025 PROJECTED JOBS	2015 TO 2025 CHANGE	2015 TO 2025 % CHANGE	2025 PROJECTED LOCATION QUOTIENT
	Imperial County Total	65,881	77,225	11,344	17.2%	

Source: ADE, Inc.; data from EMSI

Table 48 — Agriculture Staffing Pattern, Imperial County

SOC CODE	OCCUPATION DESCRIPTION	2001 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	PERCENT OF TOTAL	MEDIAN HOURLY WAGE
11-0000	Management Occupations	559	413	-146	-26.1%	4.1%	\$41.54
13-0000	Business and Financial Operations Occupations	73	57	-16	-21.9%	0.6%	\$31.45
15-0000	Computer and Mathematical Occupations	17	13	-4	-23.5%	0.1%	\$28.63
17-0000	Architecture and Engineering Occupations	<10	<10	-3	-37.5%	0.1%	\$38.86
19-0000	Life, Physical, and Social Science Occupations	36	31	-5	-13.9%	0.3%	\$35.23
21-0000	Community and Social Service Occupations	<10	<10	-1	-100.0%	0.0%	\$23.00
23-0000	Legal Occupations	<10	<10	0	0.0%	0.0%	\$33.78
25-0000	Education, Training, and Library Occupations	<10	<10	-1	-50.0%	0.0%	\$27.16
27-0000	Arts, Design, Entertainment, Sports, and Media Occupations	<10	<10	-2	-28.6%	0.1%	\$19.38
29-0000	Healthcare Practitioners and Technical Occupations	<10	<10	0	0.0%	0.0%	\$39.77
31-0000	Healthcare Support Occupations	<10	<10	0	0.0%	0.0%	\$13.82
33-0000	Protective Service Occupations	<10	<10	1	12.5%	0.1%	\$39.48
35-0000	Food Preparation and Serving Related Occupations	18	13	-5	-27.8%	0.1%	\$10.88
37-0000	Building and Grounds Cleaning and Maintenance Occupations	139	105	-34	-24.5%	1.0%	\$11.03
39-0000	Personal Care and Service Occupations	30	24	-6	-20.0%	0.2%	\$10.80
41-0000	Sales and Related Occupations	97	73	-24	-24.7%	0.7%	\$12.17
43-0000	Office and Administrative Support Occupations	288	223	-65	-22.6%	2.2%	\$15.13
45-0000	Farming, Fishing, and Forestry Occupations	9,212	8,984	-228	-2.5%	83.5%	\$9.99
47-0000	Construction and Extraction Occupations	32	24	-8	-25.0%	0.2%	\$25.11
49-0000	Installation, Maintenance, and Repair Occupations	122	92	-30	-24.6%	0.9%	\$21.21
51-0000	Production Occupations	176	167	-9	-5.1%	1.6%	\$16.18
53-0000	Transportation and Material Moving Occupations	500	396	-104	-20.8%	4.0%	\$13.85

Source: ADE, Inc.; data from EMSI

Table 49 — Food Processing Staffing Pattern, Imperial County

SOC CODE	OCCUPATION DESCRIPTION	2001 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	PERCENT OF TOTAL	MEDIAN HOURLY WAGE
11-0000	Management Occupations	19	<10	Insf. Data	Insf. Data	3.4%	\$41.54
13-0000	Business and Financial Operations Occupations	<10	<10	Insf. Data	Insf. Data	1.4%	\$31.45
15-0000	Computer and Mathematical Occupations	<10	<10	Insf. Data	Insf. Data	0.1%	\$28.63
17-0000	Architecture and Engineering Occupations	<10	<10	Insf. Data	Insf. Data	0.5%	\$38.86
19-0000	Life, Physical, and Social Science Occupations	<10	<10	Insf. Data	Insf. Data	0.9%	\$35.23
21-0000	Community and Social Service Occupations	0	0	0	Insf. Data	0.0%	\$23.00
23-0000	Legal Occupations	0	0	0	Insf. Data	0.0%	\$33.78
25-0000	Education, Training, and Library Occupations	0	0	0	Insf. Data	0.0%	\$27.16
27-0000	Arts, Design, Entertainment, Sports, and Media Occupations	<10	<10	Insf. Data	Insf. Data	0.3%	\$19.38
29-0000	Healthcare Practitioners and Technical Occupations	0	0	0	Insf. Data	0.0%	\$39.77
31-0000	Healthcare Support Occupations	0	0	0	Insf. Data	0.0%	\$13.82
33-0000	Protective Service Occupations	<10	<10	Insf. Data	Insf. Data	0.2%	\$39.48
35-0000	Food Preparation and Serving Related Occupations	14	<10	Insf. Data	Insf. Data	1.1%	\$10.88
37-0000	Building and Grounds Cleaning and Maintenance Occupations	<10	<10	Insf. Data	Insf. Data	0.7%	\$11.03
39-0000	Personal Care and Service Occupations	<10	0	Insf. Data	Insf. Data	0.0%	\$10.80
41-0000	Sales and Related Occupations	59	23	-36	-60.8%	7.8%	\$12.17
43-0000	Office and Administrative Support Occupations	40	20	-20	-50.1%	6.7%	\$15.13
45-0000	Farming, Fishing, and Forestry Occupations	22	13	-8	-38.9%	4.4%	\$9.99
47-0000	Construction and Extraction Occupations	<10	<10	Insf. Data	Insf. Data	0.2%	\$25.11
49-0000	Installation, Maintenance, and Repair Occupations	30	15	-15	-50.8%	5.0%	\$21.21
51-0000	Production Occupations	263	147	-116	-44.1%	49.7%	\$16.18
53-0000	Transportation and Material Moving Occupations	97	52	-45	-46.5%	17.5%	\$13.85

Source: ADE, Inc.; data from EMSI

TRAINING REQUIREMENTS

Training requirements for agriculture generally include neither formal education, nor work experience. About 85.8 percent of the agriculture occupations do not require a high school education, and only 2.7 percent of the jobs require a college degree or postsecondary award. About 93.6 percent of the agriculture jobs do not require work experience, and 88.6 percent of the jobs entail short-term on-the-job training. For food processing, the educational requirement is considerably higher than agriculture, with 32.5 percent of jobs not requiring at least a high school diploma. In addition, about 10.3 percent of the jobs require at least a college degree or postsecondary award.

Table 50 — Agriculture Training Requirements, Imperial County

TYPICAL ENTRY LEVEL EDUCATION	TOTAL
Less than high school	85.8%
High school diploma or equivalent	11.5%
Some college, no degree	0.0%
Associate's degree	0.2%
Bachelor's degree	1.5%
Master's degree	0.0%
Doctoral or professional degree	0.0%
Postsecondary non-degree award	1.0%
N/A	0.0%
WORK EXPERIENCE REQUIRED	TOTAL
None	93.6%
Less than 5 years	2.8%
5 years or more	3.6%
TYPICAL ON-THE-JOB TRAINING	TOTAL
None	6.9%
Short-term on-the-job training	88.6%
Moderate-term on-the-job training	3.4%
Long-term on-the-job training	0.9%
Apprenticeship	0.1%
Internship/residency	0.0%

Source: ADE, Inc.; data from EMSI

Table 51 — Food Processing Training Requirements, Imperial County

TYPICAL ENTRY LEVEL EDUCATION	TOTAL
Associate's degree	0.005941
Bachelor's degree	0.05084
Doctoral or professional degree	0.000471
High school diploma or equivalent	0.571825
Less than high school	0.324657
Master's degree	0
Postsecondary non-degree award	0.045863
Some college, no degree	0.000404
WORK EXPERIENCE REQUIRED	TOTAL
5 years or more	0.021116
Less than 5 years	0.061484
None	0.9174
TYPICAL ON-THE-JOB TRAINING	TOTAL
Apprenticeship	0.002095
Internship/residency	0.000339
Long-term on-the-job training	0.054305
Moderate-term on-the-job training	0.45494
None	0.104275
Short-term on-the-job training	0.384046

SUPPLY CHAIN

The supply chain for agriculture consists of a lot of internal trade with agricultural businesses serving as suppliers to other businesses in the cluster. A very high proportion of the crop production, food manufacturing, and support activities inputs are met locally by other Imperial County businesses. Other suppliers include chemical and petroleum products, and all of that supplier demand is imported into Imperial County.

For food processing, the majority of the supplier inputs consists of other food manufacturing products and crops. Other large suppliers include wholesale trade, management services, plastics, chemicals, paper, and transportation.

Table 52 — Agriculture Supply Chain, Imperial County

NAICS	INDUSTRY	AMOUNT	IN-REGION	OUT OF REGION
111	Crop Production	\$54,293,766	42.8%	57.2%
325	Chemical Manufacturing	\$46,952,065	0.0%	100.0%
115	Support Activities for Agriculture and Forestry	\$40,460,667	64.8%	35.2%
324	Petroleum and Coal Products Manufacturing	\$39,226,539	0.0%	100.0%
112	Animal Production and Aquaculture	\$30,226,924	5.9%	94.1%
311	Food Manufacturing	\$22,695,097	32.8%	67.2%
423	Merchant Wholesalers, Durable Goods	\$21,507,108	7.9%	92.1%
524	Insurance Carriers and Related Activities	\$16,531,308	2.3%	97.7%
522	Credit Intermediation and Related Activities	\$15,419,789	17.2%	82.8%
424	Merchant Wholesalers, Nondurable Goods	\$13,415,596	14.7%	85.3%
484	Truck Transportation	\$10,833,435	23.4%	76.6%
425	Wholesale Electronic Markets and Agents and Brokers	\$8,722,016	11.5%	88.5%
541	Professional, Scientific, and Technical Services	\$8,630,770	10.1%	89.9%
532	Rental and Leasing Services	\$7,883,969	30.0%	70.0%
531	Real Estate	\$7,817,823	16.2%	83.8%
221	Utilities	\$6,980,258	7.2%	92.8%
333	Machinery Manufacturing	\$6,453,967	0.1%	99.9%
212	Mining (except Oil and Gas)	\$5,268,059	9.0%	91.0%
326	Plastics and Rubber Products Manufacturing	\$4,857,864	0.1%	99.9%
482	Rail Transportation	\$4,220,195	9.1%	90.9%
483	Water Transportation	\$4,012,753	0.0%	100.0%
238	Specialty Trade Contractors	\$3,982,839	24.8%	75.2%
332	Fabricated Metal Product Manufacturing	\$3,171,872	3.4%	96.6%
561	Administrative and Support Services	\$2,369,921	27.8%	72.2%
493	Warehousing and Storage	\$2,246,900	9.3%	90.7%
336	Transportation Equipment Manufacturing	\$1,917,975	0.4%	99.6%
236	Construction of Buildings	\$1,633,938	18.6%	81.4%
523	Securities, Commodity Contracts, and Other Financial Investments and Related Activities	\$1,569,527	2.5%	97.5%
517	Telecommunications	\$1,432,984	13.0%	87.0%
211	Oil and Gas Extraction	\$1,331,827	0.4%	99.6%
322	Paper Manufacturing	\$1,106,052	0.8%	99.2%
321	Wood Product Manufacturing	\$1,073,384	10.8%	89.2%
237	Heavy and Civil Engineering Construction	\$1,033,354	17.4%	82.6%
611	Educational Services	\$929,200	1.3%	98.7%
533	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	\$837,026	0.7%	99.3%
813	Religious, Grantmaking, Civic, Professional, and Similar Organizations	\$707,465	15.5%	84.5%
445	Food and Beverage Stores	\$649,376	47.6%	52.4%
335	Electrical Equipment, Appliance, and Component	\$624,234	0.0%	100.0%

NAICS	INDUSTRY	AMOUNT	IN-REGION	OUT OF REGION
	Manufacturing			
811	Repair and Maintenance	\$621,722	26.8%	73.2%
481	Air Transportation	\$552,560	1.5%	98.5%
339	Miscellaneous Manufacturing	\$510,518	1.1%	98.9%
314	Textile Product Mills	\$499,529	2.8%	97.2%
722	Food Services and Drinking Places	\$487,059	35.2%	64.8%
334	Computer and Electronic Product Manufacturing	\$486,399	0.2%	99.8%
313	Textile Mills	\$431,069	1.4%	98.6%
511	Publishing Industries (except Internet)	\$390,784	6.6%	93.4%
711	Performing Arts, Spectator Sports, and Related Industries	\$350,494	3.0%	97.0%
486	Pipeline Transportation	\$344,257	0.7%	99.3%
488	Support Activities for Transportation	\$337,600	24.7%	75.3%
331	Primary Metal Manufacturing	\$331,012	0.3%	99.7%
441	Motor Vehicle and Parts Dealers	\$297,415	32.6%	67.4%
901	Federal Government	\$296,305	27.1%	72.9%
518	Data Processing, Hosting, and Related Services	\$250,432	0.5%	99.5%
452	General Merchandise Stores	\$242,009	68.0%	32.0%
312	Beverage and Tobacco Product Manufacturing	\$226,243	9.0%	91.0%
812	Personal and Laundry Services	\$195,727	33.1%	66.9%
323	Printing and Related Support Activities	\$191,114	0.8%	99.2%
327	Nonmetallic Mineral Product Manufacturing	\$187,981	9.1%	90.9%
113	Forestry and Logging	\$187,748	7.9%	92.1%
621	Ambulatory Health Care Services	\$145,602	20.2%	79.8%
521	Monetary Authorities-Central Bank	\$137,328	0.0%	100.0%
713	Amusement, Gambling, and Recreation Industries	\$128,896	11.7%	88.3%
721	Accommodation	\$99,025	10.8%	89.2%
446	Health and Personal Care Stores	\$83,500	29.1%	70.9%
454	Nonstore Retailers	\$80,399	8.5%	91.5%
444	Building Material and Garden Equipment and Supplies Dealers	\$79,911	40.7%	59.3%
622	Hospitals	\$76,271	2.4%	97.6%
562	Waste Management and Remediation Services	\$76,162	19.1%	80.9%
551	Management of Companies and Enterprises	\$70,641	0.8%	99.2%
453	Miscellaneous Store Retailers	\$69,174	37.6%	62.4%
448	Clothing and Clothing Accessories Stores	\$66,675	51.4%	48.6%
519	Other Information Services	\$64,860	0.9%	99.1%
337	Furniture and Related Product Manufacturing	\$58,796	2.0%	98.0%
213	Support Activities for Mining	\$51,898	23.3%	76.7%
315	Apparel Manufacturing	\$45,005	1.6%	98.4%
443	Electronics and Appliance Stores	\$45,005	13.6%	86.4%
447	Gasoline Stations	\$35,825	16.6%	83.4%
442	Furniture and Home Furnishings Stores	\$31,831	20.0%	80.0%
451	Sporting Goods, Hobby, Musical Instrument, and Book Stores	\$29,418	32.9%	67.1%
515	Broadcasting (except Internet)	\$23,318	7.9%	92.1%
487	Scenic and Sightseeing Transportation	\$14,568	54.6%	45.4%
492	Couriers and Messengers	\$13,183	19.7%	80.3%
512	Motion Picture and Sound Recording Industries	\$7,304	2.3%	97.7%
316	Leather and Allied Product Manufacturing	\$6,545	0.3%	99.7%
624	Social Assistance	\$1,791	37.8%	62.2%
623	Nursing and Residential Care Facilities	\$1,615	4.9%	95.1%
491	Postal Service	\$1,369	0.0%	100.0%
712	Museums, Historical Sites, and Similar Institutions	\$1,284	0.8%	99.2%
485	Transit and Ground Passenger Transportation	\$955	21.00%	79.00%
525	Funds, Trusts, and Other Financial Vehicles	\$440	0.00%	100.00%

Source: ADE, Inc.; data from EMSI

Table 53 — Food Processing Supply Chain, Imperial County

NAICS	INDUSTRY	AMOUNT	IN-REGION	OUT OF REGION
311	Food Manufacturing	\$44,865,439	6.3%	93.7%
111	Crop Production	\$29,841,683	42.8%	57.2%
423	Merchant Wholesalers, Durable Goods	\$9,767,395	7.9%	92.1%
551	Management of Companies and Enterprises	\$9,298,362	1.2%	98.8%
424	Merchant Wholesalers, Nondurable Goods	\$6,092,654	14.7%	85.3%
326	Plastics and Rubber Products Manufacturing	\$5,985,679	0.0%	100.0%
325	Chemical Manufacturing	\$5,472,173	0.2%	99.8%
322	Paper Manufacturing	\$4,870,154	1.2%	98.8%
484	Truck Transportation	\$4,389,919	23.4%	76.6%
425	Wholesale Electronic Markets and Agents and Brokers	\$3,961,085	11.5%	88.5%
331	Primary Metal Manufacturing	\$3,934,705	0.0%	100.0%
482	Rail Transportation	\$3,085,671	9.1%	90.9%
541	Professional, Scientific, and Technical Services	\$2,844,019	8.9%	91.1%
312	Beverage and Tobacco Product Manufacturing	\$2,748,706	15.1%	84.9%
483	Water Transportation	\$2,346,792	0.0%	100.0%
332	Fabricated Metal Product Manufacturing	\$2,304,431	4.3%	95.7%
221	Utilities	\$1,721,655	7.7%	92.3%
324	Petroleum and Coal Products Manufacturing	\$1,515,690	0.0%	100.0%
533	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	\$1,289,855	0.7%	99.3%
522	Credit Intermediation and Related Activities	\$1,093,234	17.5%	82.5%
561	Administrative and Support Services	\$1,029,499	26.9%	73.1%
113	Forestry and Logging	\$1,021,610	7.9%	92.1%
212	Mining (except Oil and Gas)	\$974,253	17.6%	82.4%
112	Animal Production and Aquaculture	\$763,052	5.9%	94.1%
336	Transportation Equipment Manufacturing	\$640,394	0.3%	99.7%
445	Food and Beverage Stores	\$606,981	47.6%	52.4%
334	Computer and Electronic Product Manufacturing	\$548,266	0.2%	99.8%
333	Machinery Manufacturing	\$545,767	0.4%	99.6%
722	Food Services and Drinking Places	\$435,501	35.7%	64.3%
517	Telecommunications	\$377,033	15.0%	85.0%
452	General Merchandise Stores	\$375,809	68.0%	32.0%
811	Repair and Maintenance	\$369,849	27.9%	72.1%
327	Nonmetallic Mineral Product Manufacturing	\$350,548	3.8%	96.2%
481	Air Transportation	\$333,422	1.5%	98.5%
562	Waste Management and Remediation Services	\$326,904	19.1%	80.9%
519	Other Information Services	\$285,112	0.9%	99.1%
114	Fishing, Hunting and Trapping	\$260,724	1.9%	98.1%
335	Electrical Equipment, Appliance, and Component Manufacturing	\$260,407	0.0%	100.0%
531	Real Estate	\$258,118	16.2%	83.8%
493	Warehousing and Storage	\$222,235	9.3%	90.7%
518	Data Processing, Hosting, and Related Services	\$218,573	0.5%	99.5%
721	Accommodation	\$204,743	10.8%	89.2%
238	Specialty Trade Contractors	\$200,398	24.8%	75.2%
515	Broadcasting (except Internet)	\$190,729	7.9%	92.1%
511	Publishing Industries (except Internet)	\$189,187	13.0%	87.0%
524	Insurance Carriers and Related Activities	\$188,224	10.5%	89.5%
523	Securities, Commodity Contracts, and Other Financial Investments and Related Activities	\$183,408	2.5%	97.5%
441	Motor Vehicle and Parts Dealers	\$178,267	32.6%	67.4%
532	Rental and Leasing Services	\$152,276	29.6%	70.4%
339	Miscellaneous Manufacturing	\$138,991	1.8%	98.2%
323	Printing and Related Support Activities	\$119,805	0.8%	99.2%
711	Performing Arts, Spectator Sports, and Related Industries	\$98,751	4.0%	96.0%
488	Support Activities for Transportation	\$95,762	24.7%	75.3%
611	Educational Services	\$84,935	2.3%	97.7%
446	Health and Personal Care Stores	\$82,326	29.1%	70.9%
236	Construction of Buildings	\$82,212	18.6%	81.4%
454	Nonstore Retailers	\$79,269	8.5%	91.5%

NAICS	INDUSTRY	AMOUNT	IN-REGION	OUT OF REGION
444	Building Material and Garden Equipment and Supplies Dealers	\$78,788	40.7%	59.3%
485	Transit and Ground Passenger Transportation	\$75,991	21.0%	79.0%
813	Religious, Grantmaking, Civic, Professional, and Similar Organizations	\$75,099	15.5%	84.5%
901	Federal Government	\$74,246	27.1%	72.9%
453	Miscellaneous Store Retailers	\$68,202	37.6%	62.4%
448	Clothing and Clothing Accessories Stores	\$65,739	51.4%	48.6%
314	Textile Product Mills	\$63,530	2.8%	97.2%
237	Heavy and Civil Engineering Construction	\$51,994	17.4%	82.6%
211	Oil and Gas Extraction	\$47,226	0.4%	99.6%
443	Electronics and Appliance Stores	\$44,372	13.6%	86.4%
713	Amusement, Gambling, and Recreation Industries	\$39,178	10.7%	89.3%
447	Gasoline Stations	\$35,321	16.6%	83.4%
442	Furniture and Home Furnishings Stores	\$31,384	20.0%	80.0%
451	Sporting Goods, Hobby, Musical Instrument, and Book Stores	\$29,005	32.9%	67.1%
621	Ambulatory Health Care Services	\$26,552	20.9%	79.1%
337	Furniture and Related Product Manufacturing	\$25,425	2.1%	97.9%
321	Wood Product Manufacturing	\$24,671	9.2%	90.8%
622	Hospitals	\$21,743	2.4%	97.6%
315	Apparel Manufacturing	\$19,816	1.6%	98.4%
213	Support Activities for Mining	\$18,963	22.9%	77.1%
313	Textile Mills	\$11,257	3.4%	96.6%
486	Pipeline Transportation	\$11,129	0.7%	99.3%
521	Monetary Authorities-Central Bank	\$7,638	0.0%	100.0%
492	Couriers and Messengers	\$4,542	19.7%	80.3%
487	Scenic and Sightseeing Transportation	\$4,132	54.6%	45.4%
812	Personal and Laundry Services	\$2,270	23.4%	76.6%
512	Motion Picture and Sound Recording Industries	\$1,765	2.3%	97.7%
316	Leather and Allied Product Manufacturing	\$1,641	0.3%	99.7%
623	Nursing and Residential Care Facilities	\$551	4.7%	95.3%
624	Social Assistance	\$429	37.8%	62.2%
712	Museums, Historical Sites, and Similar Institutions	\$391	0.8%	99.2%
491	Postal Service	\$343	0.00%	100.00%
525	Funds, Trusts, and Other Financial Vehicles	\$7	0.00%	100.00%

Source: ADE, Inc.; data from EMSI

BIOFUELS

RECENT TRENDS AND PROJECTED EMPLOYMENT

The biofuels cluster consists of industries defined using multiple sources, including ADE's work on the Central California Workforce Collaborative (CCWC) cluster analysis, and the California EDD's list of "green" industries. The industries included in the cluster definition include food byproducts, petroleum, and chemical manufacturing, as well as manufacturing industries that supply the energy sector.

Defining this cluster was particularly difficult because biofuels and other alternative energy industries often do not show up in NAICS code based data. In addition, some types of biofuels, such as biodiesel, are often combined with conventional petroleum and chemical industries. Because of these issues, the defined cluster for biofuels did not show significant employment in Imperial County, despite anecdotal accounts and reports of biofuel companies setting up in the region. For biofuels, the analysis uses data from California to illustrate the general growth trends and occupational and supply chain requirements.

Since 2001, the industries that comprise the biofuels cluster have lost employment. It should be noted that much of the job loss occurred in petroleum refining, as well as the various manufacturing industries that supply the energy overall energy sector. Projected employment between 2015 and 2025 shows modest projected employment growth of about 1.9 percent.

Table 54 — Biofuels Employment Trend, California 2001 to 2014

NAICS	DESCRIPTION	2001 JOBS	2009 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	2009 TO 2014 CHANGE	2009 TO 2014 % CHANGE
311224	Soybean and Other Oilseed Processing	656	429	424	-232	-35.4%	-5	-1.2%
311225	Fats and Oils Refining and Blending	355	679	736	381	107.3%	57	8.4%
311613	Rendering and Meat Byproduct Processing	1,141	705	703	-438	-38.4%	-2	-0.3%
322299	All Other Converted Paper Product Manufacturing	1,831	1,054	1,020	-811	-44.3%	-34	-3.2%
324110	Petroleum Refineries	13,447	13,779	10,603	-2,844	-21.1%	-3,176	-23.0%
325110	Petrochemical Manufacturing	935	25	13	-922	-98.6%	-12	-48.0%
325180	Other Basic Inorganic Chemical Manufacturing	3,448	2,640	1,709	-1,739	-50.4%	-931	-35.3%
325193	Ethyl Alcohol Manufacturing	<10	88	187	Insf. Data	Insf. Data	99	112.5%
333132	Oil and Gas Field Machinery and Equipment Manufacturing	1,884	1,598	2,577	693	36.8%	979	61.3%
333249	Other Industrial Machinery Manufacturing	3,424	3,284	4,384	960	28.0%	1,100	33.5%
333414	Heating Equipment (except Warm Air Furnaces) Manufacturing	1,780	944	1,199	-581	-32.6%	255	27.0%
333611	Turbine and Turbine Generator Set Units Manufacturing	4,543	4,580	4,823	280	6.2%	243	5.3%
334512	Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	2,734	1,316	1,120	-1,614	-59.0%	-196	-14.9%
334515	Instrument Manufacturing for Measuring and Testing Electricity and Electrical Signals	27,744	13,197	10,730	-17,014	-61.3%	-2,467	-18.7%
334517	Irradiation Apparatus Manufacturing	1,020	1,176	2,051	1,031	101.1%	875	74.4%
334519	Other Measuring and Controlling Device Manufacturing	4,544	4,017	5,733	1,189	26.2%	1,716	42.7%
335110	Electric Lamp Bulb and Part Manufacturing	720	440	439	-281	-39.0%	-1	-0.2%
335121	Residential Electric Lighting Fixture Manufacturing	4,248	1,459	1,265	-2,983	-70.2%	-194	-13.3%
335122	Commercial, Industrial, and Institutional Electric Lighting Fixture Manufacturing	3,532	2,908	3,261	-271	-7.7%	353	12.1%
335129	Other Lighting Equipment Manufacturing	2,170	2,533	2,176	6	0.3%	-357	-14.1%
335311	Power, Distribution, and Specialty Transformer Manufacturing	2,913	1,951	1,949	-964	-33.1%	-2	-0.1%
335312	Motor and Generator Manufacturing	2,529	1,826	1,412	-1,117	-44.2%	-414	-22.7%
335314	Relay and Industrial Control Manufacturing	2,995	2,567	2,377	-618	-20.6%	-190	-7.4%
335999	All Other Miscellaneous Electrical Equipment and Component Manufacturing	3,912	4,092	4,663	751	19.2%	571	14.0%
	Biofuels and Energy Manufacturing	92,506	67,287	65,551	-26,955	-29.1%	-1,736	-2.6%
	California Total	14,981,888	14,629,958	15,808,156	826,268	5.5%	1,178,198	8.1%

Source: ADE, Inc.; data from EMSI

Notes: Due to limitations in the NAICS code definitions, biofuels industries are generally combined with other activities.

Table 55 — Biofuels Employment Projection, California 2015 to 2025

NAICS CODE	INDUSTRY DESCRIPTION	2015 PROJECTED JOBS	2025 PROJECTED JOBS	2015 TO 2025 CHANGE	2015 TO 2025 % CHANGE
311224	Soybean and Other Oilseed Processing	311	185	-126	-40.5%
311225	Fats and Oils Refining and Blending	603	824	221	36.7%
311613	Rendering and Meat Byproduct Processing	720	674	-46	-6.4%
322299	All Other Converted Paper Product Manufacturing	1,025	758	-267	-26.0%
324110	Petroleum Refineries	10,393	9,030	-1,363	-13.1%
325110	Petrochemical Manufacturing	<10	<10	Insf. Data	Insf. Data
325180	Other Basic Inorganic Chemical Manufacturing	1,528	851	-677	-44.3%
325193	Ethyl Alcohol Manufacturing	171	323	152	88.9%
333132	Oil and Gas Field Machinery and Equipment Manufacturing	2,214	2,754	540	24.4%
333249	Other Industrial Machinery Manufacturing	4,439	6,194	1,755	39.5%
333414	Heating Equipment (except Warm Air Furnaces) Manufacturing	1,100	947	-153	-13.9%
333611	Turbine and Turbine Generator Set Units Manufacturing	4,479	5,092	613	13.7%
334512	Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	1,143	489	-654	-57.2%
334515	Instrument Manufacturing for Measuring and Testing Electricity and Electrical Signals	10,595	5,333	-5,262	-49.7%
334517	Irradiation Apparatus Manufacturing	2,018	3,528	1,510	74.8%
334519	Other Measuring and Controlling Device Manufacturing	6,260	10,638	4,378	69.9%
335110	Electric Lamp Bulb and Part Manufacturing	453	312	-141	-31.1%
335121	Residential Electric Lighting Fixture Manufacturing	1,255	333	-922	-73.5%
335122	Commercial, Industrial, and Institutional Electric Lighting Fixture Manufacturing	3,301	4,608	1,307	39.6%
335129	Other Lighting Equipment Manufacturing	2,164	2,116	-48	-2.2%
335311	Power, Distribution, and Specialty Transformer Manufacturing	1,948	1,510	-438	-22.5%
335312	Motor and Generator Manufacturing	1,377	827	-550	-39.9%
335314	Relay and Industrial Control Manufacturing	2,387	2,336	-51	-2.1%
335999	All Other Miscellaneous Electrical Equipment and Component Manufacturing	4,666	6,105	1,439	30.8%
	Biofuels and Energy Manufacturing	64,559	65,765	1,206	1.9%
	California Total	16,290,996	18,670,052	2,379,056	14.6%

Source: ADE, Inc.; data from EMSI

Notes: Due to limitations in the NAICS code definitions, biofuels industries are generally combined with other activities.

STAFFING PATTERNS

The staffing patterns for biofuels show the largest concentration of jobs in production occupations (38.7 percent) and management, business, and technical occupations (38.1 percent).

Table 56 — Biofuels Staffing Pattern, California

SOC CODE	OCCUPATION DESCRIPTION	2001 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	PERCENT OF TOTAL
11-0000	Management Occupations	6,246	6,266	19	0.3%	9.7%
13-0000	Business and Financial Operations	4,353	4,396	43	1.0%	6.7%

SOC CODE	OCCUPATION DESCRIPTION	2001 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	PERCENT OF TOTAL
	Occupations					
15-0000	Computer and Mathematical Occupations	3,253	3,374	120	3.7%	5.0%
17-0000	Architecture and Engineering Occupations	9,389	9,710	321	3.4%	14.5%
19-0000	Life, Physical, and Social Science Occupations	832	699	-133	-16.0%	1.3%
21-0000	Community and Social Service Occupations	0	0	0	Insf. Data	0.0%
23-0000	Legal Occupations	68	60	-8	-11.2%	0.1%
25-0000	Education, Training, and Library Occupations	<10	<10	Insf. Data	Insf. Data	0.0%
27-0000	Arts, Design, Entertainment, Sports, and Media Occupations	371	380	9	2.3%	0.6%
29-0000	Healthcare Practitioners and Technical Occupations	113	105	-7	-6.4%	0.2%
31-0000	Healthcare Support Occupations	<10	<10	Insf. Data	Insf. Data	0.0%
33-0000	Protective Service Occupations	63	62	-1	-1.5%	0.1%
35-0000	Food Preparation and Serving Related Occupations	<10	<10	Insf. Data	Insf. Data	0.0%
37-0000	Building and Grounds Cleaning and Maintenance Occupations	176	189	13	7.5%	0.3%
39-0000	Personal Care and Service Occupations	0	0	0	Insf. Data	0.0%
41-0000	Sales and Related Occupations	2,207	2,260	53	2.4%	3.4%
43-0000	Office and Administrative Support Occupations	6,351	6,388	37	0.6%	9.8%
45-0000	Farming, Fishing, and Forestry Occupations	25	25	0	1.7%	0.0%
47-0000	Construction and Extraction Occupations	798	756	-42	-5.3%	1.2%
49-0000	Installation, Maintenance, and Repair Occupations	2,667	2,875	208	7.8%	4.1%
51-0000	Production Occupations	24,993	25,625	632	2.5%	38.7%
53-0000	Transportation and Material Moving Occupations	2,651	2,592	-59	-2.2%	4.1%

Source: ADE, Inc.; data from EMSI

Notes: Due to limitations in the NAICS code definitions, biofuels industries are generally combined with other activities.

TRAINING REQUIREMENTS

Job training requirements for industries in this cluster throughout California show about 40.6 percent of the jobs requiring at least a college degree of postsecondary award.

Table 57 — Biofuels Training Requirements, California

TYPICAL ENTRY LEVEL EDUCATION	TOTAL
Less than high school	6.5%
High school diploma or equivalent	52.5%
Some college, no degree	0.4%
Associate's degree	4.3%
Bachelor's degree	32.1%
Master's degree	0.0%
Doctoral or professional degree	0.2%
Postsecondary non-degree award	4.0%
WORK EXPERIENCE REQUIRED	TOTAL
None	84.2%
Less than 5 years	9.6%

TYPICAL ENTRY LEVEL EDUCATION	TOTAL
5 years or more	6.2%
TYPICAL ON-THE-JOB TRAINING	TOTAL
None	40.7%
Short-term on-the-job training	21.1%
Moderate-term on-the-job training	26.5%
Long-term on-the-job training	11.1%
Apprenticeship	0.6%
Internship/residency	0.0%

Source: ADE, Inc.; data from EMSI

Notes: Due to limitations in the NAICS code definitions, biofuels industries are generally combined with other activities.

SUPPLY CHAIN

The supply chain indicates that oil and gas extraction are the largest supplier. It should be noted that the NAICS definitions do not separate renewable sources from nonrenewable. Other prominent supplier industries include management services, petroleum products, chemicals, food manufacturing, wholesale trade, metals, and transportation.

Table 58 — Biofuels Supply Chain, California

NAICS	INDUSTRY	AMOUNT
211	Oil and Gas Extraction	\$52,403,374,241
551	Management of Companies and Enterprises	\$3,529,141,215
324	Petroleum and Coal Products Manufacturing	\$3,079,991,638
423	Merchant Wholesalers, Durable Goods	\$1,959,012,851
325	Chemical Manufacturing	\$1,608,437,651
311	Food Manufacturing	\$1,351,178,780
332	Fabricated Metal Product Manufacturing	\$1,284,331,614
484	Truck Transportation	\$1,262,326,317
424	Merchant Wholesalers, Nondurable Goods	\$1,221,983,183
541	Professional, Scientific, and Technical Services	\$1,138,423,075
331	Primary Metal Manufacturing	\$999,636,626
238	Specialty Trade Contractors	\$920,098,164
486	Pipeline Transportation	\$914,818,628
425	Wholesale Electronic Markets and Agents and Brokers	\$794,461,644
221	Utilities	\$657,141,340
482	Rail Transportation	\$631,693,742
111	Crop Production	\$593,456,107
333	Machinery Manufacturing	\$509,467,071
334	Computer and Electronic Product Manufacturing	\$471,024,755
561	Administrative and Support Services	\$451,326,462
236	Construction of Buildings	\$377,464,685
533	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	\$345,987,113
335	Electrical Equipment, Appliance, and Component Manufacturing	\$335,929,194
112	Animal Production and Aquaculture	\$261,299,634
562	Waste Management and Remediation Services	\$256,152,492
237	Heavy and Civil Engineering Construction	\$238,720,518
522	Credit Intermediation and Related Activities	\$231,398,417
322	Paper Manufacturing	\$222,279,661
336	Transportation Equipment Manufacturing	\$192,064,752
212	Mining (except Oil and Gas)	\$189,457,664
326	Plastics and Rubber Products Manufacturing	\$167,973,458
811	Repair and Maintenance	\$166,452,626
213	Support Activities for Mining	\$165,825,812
517	Telecommunications	\$136,050,184
722	Food Services and Drinking Places	\$127,788,526
493	Warehousing and Storage	\$96,954,226
523	Securities, Commodity Contracts, and Other Financial Investments and Related Activities	\$96,207,464

NAICS	INDUSTRY	AMOUNT
531	Real Estate	\$76,935,824
339	Miscellaneous Manufacturing	\$75,537,149
518	Data Processing, Hosting, and Related Services	\$74,276,555
481	Air Transportation	\$63,999,888
901	Federal Government	\$63,926,686
511	Publishing Industries (except Internet)	\$54,611,023
524	Insurance Carriers and Related Activities	\$48,473,706
813	Religious, Grantmaking, Civic, Professional, and Similar Organizations	\$47,340,249
488	Support Activities for Transportation	\$46,234,169
721	Accommodation	\$45,593,442
532	Rental and Leasing Services	\$45,146,261
519	Other Information Services	\$43,179,311
483	Water Transportation	\$39,124,401
327	Nonmetallic Mineral Product Manufacturing	\$38,497,131
441	Motor Vehicle and Parts Dealers	\$33,344,488
711	Performing Arts, Spectator Sports, and Related Industries	\$28,492,332
611	Educational Services	\$27,397,849
515	Broadcasting (except Internet)	\$24,658,543
323	Printing and Related Support Activities	\$16,029,201
485	Transit and Ground Passenger Transportation	\$15,963,924
445	Food and Beverage Stores	\$13,674,619
713	Amusement, Gambling, and Recreation Industries	\$9,844,888
446	Health and Personal Care Stores	\$9,686,279
454	Nonstore Retailers	\$9,326,545
444	Building Material and Garden Equipment and Supplies Dealers	\$9,269,934
452	General Merchandise Stores	\$8,357,221
453	Miscellaneous Store Retailers	\$8,024,475
448	Clothing and Clothing Accessories Stores	\$7,734,603
622	Hospitals	\$7,442,211
313	Textile Mills	\$7,174,637
621	Ambulatory Health Care Services	\$5,519,876
443	Electronics and Appliance Stores	\$5,220,718
337	Furniture and Related Product Manufacturing	\$5,005,789
321	Wood Product Manufacturing	\$4,158,148
447	Gasoline Stations	\$4,155,831
312	Beverage and Tobacco Product Manufacturing	\$4,153,885
315	Apparel Manufacturing	\$4,109,013
442	Furniture and Home Furnishings Stores	\$3,692,494
451	Sporting Goods, Hobby, Musical Instrument, and Book Stores	\$3,412,650
314	Textile Product Mills	\$2,112,216
492	Couriers and Messengers	\$2,032,218
487	Scenic and Sightseeing Transportation	\$1,995,089
521	Monetary Authorities-Central Bank	\$1,606,818
812	Personal and Laundry Services	\$1,008,261
316	Leather and Allied Product Manufacturing	\$646,057
114	Fishing, Hunting and Trapping	\$550,838
512	Motion Picture and Sound Recording Industries	\$539,801
113	Forestry and Logging	\$424,495
491	Postal Service	\$295,346
624	Social Assistance	\$274,964
623	Nursing and Residential Care Facilities	\$233,322
712	Museums, Historical Sites, and Similar Institutions	\$83,423
525	Funds, Trusts, and Other Financial Vehicles	\$31,516
115	Support Activities for Agriculture and Forestry	\$9,036

Source: ADE, Inc.; data from EMSI

Notes: Due to limitations in the NAICS code definitions, biofuels industries are generally combined with other activities.

WATER TECHNOLOGIES

RECENT TRENDS

For analyzing water technology, the analysis looked at both water flow technology sectors, and water supply utilities. The water flow technology cluster definition was used in the CCWC cluster analysis, and includes piping, machinery, and pumping equipment manufacturing industries. The water supply grouping includes all water and irrigation companies, as well as sewage treatment and steam supply. Because of low employment in water flow technology sectors in Imperial County, and because Imperial County's water utility is a public sector company (supplier and occupational data is not available), the California data was used for the water cluster analysis.

The water flow technology cluster in California has seen employment losses between 2001 and 2014. This trend is consistent with manufacturing losses in California in general, however the commercial and service industry machinery sector lost more than half of its jobs during this period. By comparison, the private sector water supply companies in California saw largely unchanged employment totals during the longer-term period.

PROJECTED EMPLOYMENT

Projected employment for water flow technology shows a modest increase of 1.9 percent between 2015 and 2025. The private sector water supply utility companies in California expect to grow by 17.7 percent.

STAFFING PATTERN

The staffing pattern for water flow technology shows about 46.7 percent of the jobs in production occupations, and 26.7 percent in the management, business, and technical occupations. For water supply utilities in California, the jobs are concentrated in office, production, and installation/maintenance occupations. The management, business, and technical occupations make up 15.2 percent of the jobs for water supply utilities.

TRAINING REQUIREMENTS

Training requirements for water flow technology industries show a higher-than-average 28.8 percent of the jobs requiring at least a college degree or postsecondary award. For water supply utilities, the educational requirements show 19.5 percent of jobs requiring at least a college degree or postsecondary award.

Table 59 — Water Technologies Employment Trend, California 2001 to 2014

NAICS	DESCRIPTION	2001 JOBS	2009 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	2009 TO 2014 CHANGE	2009 TO 2014 % CHANGE
326122	Plastics Pipe and Pipe Fitting Manufacturing	3,644	3,107	2,987	-657	-18.0%	-120	-3.9%
333111	Farm Machinery and Equipment Manufacturing	2,363	2,609	3,239	876	37.1%	630	24.1%
333318	Other Commercial and Service Industry Machinery Manufacturing	12,223	6,010	6,055	-6,168	-50.5%	45	0.7%
333911	Pump and Pumping Equipment Manufacturing	3,317	2,126	2,117	-1,200	-36.2%	-9	-0.4%
	Water Flow Technology Total	21,546	13,851	14,397	-7,149	-33.2%	546	3.9%
221310	Water Supply and Irrigation Systems	5,191	4,453	4,906	-285	-5.5%	453	10.2%
221320	Sewage Treatment Facilities	495	288	274	-221	-44.6%	-14	-4.9%
221330	Steam and Air-Conditioning Supply	59	629	509	450	762.7%	-120	-19.1%
	Water Supply Total	5,745	5,371	5,690	-55	-1.0%	319	5.9%
	California Total	14,981,888	14,629,958	15,808,156	826,268	5.5%	1,178,198	8.1%

Source: ADE, Inc.; data from EMSI

Table 60 — Water Technologies Employment Projection, California 2015 to 2025

NAICS CODE	INDUSTRY DESCRIPTION	2015 PROJECTED JOBS	2025 PROJECTED JOBS	2015 TO 2025 CHANGE	2015 TO 2025 % CHANGE
326122	Plastics Pipe and Pipe Fitting Manufacturing	3,017	3,234	217	7.2%
333111	Farm Machinery and Equipment Manufacturing	3,061	3,351	290	9.5%
333318	Other Commercial and Service Industry Machinery Manufacturing	6,102	5,943	-159	-2.6%
333911	Pump and Pumping Equipment Manufacturing	2,065	1,988	-77	-3.7%
	Water Flow Technology Total	14,245	14,516	271	1.9%
221310	Water Supply and Irrigation Systems	5,539	6,765	1,226	22.1%
221320	Sewage Treatment Facilities	300	176	-124	-41.3%
221330	Steam and Air-Conditioning Supply	600	638	38	6.3%
	Water Supply Total	6,439	7,580	1,141	17.7%
	California Total	16,290,996	18,670,052	2,379,056	14.6%

Source: ADE, Inc.; data from EMSI

Table 61 — Water Flow Technology Staffing Pattern, California

SOC CODE	OCCUPATION DESCRIPTION	2001 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	PERCENT OF TOTAL	MEDIAN HOURLY WAGE
11-0000	Management Occupations	1,822	1,219	-603	-33.1%	8.5%	\$53.68
13-0000	Business and Financial Operations Occupations	1,233	807	-426	-34.5%	5.6%	\$34.91
15-0000	Computer and Mathematical Occupations	886	510	-376	-42.4%	3.6%	\$46.00
17-0000	Architecture and Engineering Occupations	1,984	1,184	-800	-40.3%	8.2%	\$44.67
19-0000	Life, Physical, and Social Science Occupations	42	32	-10	-23.8%	0.2%	\$35.51
21-0000	Community and Social Service Occupations	0	0	0	0.0%	0.0%	\$23.22
23-0000	Legal Occupations	11	<10	-2	-18.2%	0.1%	\$53.58
25-0000	Education, Training, and Library Occupations	0	0	0	0.0%	0.0%	\$26.95
27-0000	Arts, Design, Entertainment, Sports, and Media Occupations	111	75	-36	-32.4%	0.5%	\$28.08
29-0000	Healthcare Practitioners and Technical Occupations	14	11	-3	-21.4%	0.1%	\$44.40
31-0000	Healthcare Support Occupations	0	0	0	0.0%	0.0%	\$15.48
33-0000	Protective Service Occupations	12	<10	-3	-25.0%	0.1%	\$25.35
35-0000	Food Preparation and Serving Related Occupations	0	0	0	0.0%	0.0%	\$10.70
37-0000	Building and Grounds Cleaning and Maintenance Occupations	82	56	-26	-31.7%	0.4%	\$12.89
39-0000	Personal Care and Service Occupations	<10	0	0	0.0%	0.0%	\$12.18
41-0000	Sales and Related Occupations	857	546	-311	-36.3%	3.8%	\$16.97
43-0000	Office and Administrative Support Occupations	2,482	1,644	-838	-33.8%	11.4%	\$18.14
45-0000	Farming, Fishing, and Forestry Occupations	<10	<10	1	100.0%	0.0%	\$10.62
47-0000	Construction and Extraction Occupations	206	141	-65.00	-0.32	1.0%	\$24.95
49-0000	Installation, Maintenance, and Repair Occupations	806	578	-228	-28.3%	4.0%	\$23.10
51-0000	Production Occupations	9,888	6,717	-3,171	-32.1%	46.7%	\$15.88
53-0000	Transportation and Material Moving Occupations	1,109	858	-251	-22.6%	5.9%	\$15.58

Source: ADE, Inc.; data from EMSI

Table 62 — Water Supply Staffing Pattern, California

SOC CODE	OCCUPATION DESCRIPTION	2001 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	PERCENT OF TOTAL	MEDIAN HOURLY WAGE
11-0000	Management Occupations	419	442	23	5.5%	7.6%	\$53.68
13-0000	Business and Financial Operations Occupations	130	140	10	7.7%	2.4%	\$34.91
15-0000	Computer and Mathematical Occupations	47	52	5	10.6%	0.9%	\$46.00
17-0000	Architecture and Engineering Occupations	146	165	19	13.0%	2.9%	\$44.67
19-0000	Life, Physical, and Social Science Occupations	69	75	6	8.7%	1.3%	\$35.51
21-0000	Community and Social Service Occupations	0	0	0	0.0%	0.0%	\$23.22
23-0000	Legal Occupations	0	0	0	0.0%	0.0%	\$53.58
25-0000	Education, Training, and Library Occupations	0	0	0	0.0%	0.0%	\$26.95
27-0000	Arts, Design, Entertainment, Sports, and Media Occupations	0	0	0	0.0%	0.0%	\$28.08
29-0000	Healthcare Practitioners and Technical Occupations	<10	<10	0	0.0%	0.1%	\$44.40
31-0000	Healthcare Support Occupations	0	0	0	0.0%	0.0%	\$15.48

SOC CODE	OCCUPATION DESCRIPTION	2001 JOBS	2014 JOBS	2001 TO 2014 CHANGE	2001 TO 2014 % CHANGE	PERCENT OF TOTAL	MEDIAN HOURLY WAGE
33-0000	Protective Service Occupations	<10	<10	1	16.7%	0.1%	\$25.35
35-0000	Food Preparation and Serving Related Occupations	0	0	0	0.0%	0.0%	\$10.70
37-0000	Building and Grounds Cleaning and Maintenance Occupations	35	39	4	11.4%	0.7%	\$12.89
39-0000	Personal Care and Service Occupations	0	0	0	0.0%	0.0%	\$12.18
41-0000	Sales and Related Occupations	86	83	-3	-3.5%	1.4%	\$16.97
43-0000	Office and Administrative Support Occupations	1,603	1,532	-71	-4.4%	26.7%	\$18.14
45-0000	Farming, Fishing, and Forestry Occupations	93	116	23	24.7%	2.0%	\$10.62
47-0000	Construction and Extraction Occupations	568	541	-27.00	-0.05	9.6%	\$24.95
49-0000	Installation, Maintenance, and Repair Occupations	585	604	19	3.2%	10.7%	\$23.10
51-0000	Production Occupations	1,808	1,746	-62	-3.4%	31.0%	\$15.88
53-0000	Transportation and Material Moving Occupations	145	142	-3	-2.1%	2.5%	\$15.58

Source: ADE, Inc.; data from EMSI

Table 63 — Water Flow Tech Job Requirements, California

TYPICAL ENTRY LEVEL EDUCATION	TOTAL
Less than high school	9.1%
High school diploma or equivalent	61.6%
Some college, no degree	0.5%
Associate's degree	2.7%
Bachelor's degree	22.3%
Master's degree	0.0%
Doctoral or professional degree	0.1%
Postsecondary non-degree award	3.8%
WORK EXPERIENCE REQUIRED	TOTAL
None	85.5%
Less than 5 years	9.6%
5 years or more	5.0%
TYPICAL ON-THE-JOB TRAINING	TOTAL
None	30.0%
Short-term on-the-job training	18.7%
Moderate-term on-the-job training	42.2%
Long-term on-the-job training	8.3%
Apprenticeship	0.9%
Internship/residency	0.0%

Source: ADE, Inc.; data from EMSI

Table 64 — Water Supply Job Requirements, California

TYPICAL ENTRY LEVEL EDUCATION	TOTAL
Associate's degree	1.3%
Bachelor's degree	12.6%
Doctoral or professional degree	0.0%
High school diploma or equivalent	71.8%
Less than high school	8.5%
Master's degree	0.2%
N/A	0.0%
Postsecondary non-degree award	5.4%
Some college, no degree	0.2%
WORK EXPERIENCE REQUIRED	TOTAL
5 years or more	3.3%
Less than 5 years	14.8%
None	81.9%
TYPICAL ON-THE-JOB TRAINING	TOTAL
Apprenticeship	3.4%
Internship/residency	0.0%
Long-term on-the-job training	33.0%
Moderate-term on-the-job training	10.6%
N/A	0.0%
None	24.2%
Short-term on-the-job training	28.8%

Source: ADE, Inc.; data from EMSI

Table 65 — Water Flow Technology Supply Chain, California

NAICS	INDUSTRY	AMOUNT
325	Chemical Manufacturing	\$307,631,779
332	Fabricated Metal Product Manufacturing	\$304,649,533
331	Primary Metal Manufacturing	\$249,700,252
333	Machinery Manufacturing	\$241,149,852
335	Electrical Equipment, Appliance, and Component Manufacturing	\$151,719,169

NAICS	INDUSTRY	AMOUNT
423	Merchant Wholesalers, Durable Goods	\$150,717,973
324	Petroleum and Coal Products Manufacturing	\$143,342,817
326	Plastics and Rubber Products Manufacturing	\$139,051,228
541	Professional, Scientific, and Technical Services	\$133,577,968
551	Management of Companies and Enterprises	\$123,357,116
424	Merchant Wholesalers, Nondurable Goods	\$94,014,087
336	Transportation Equipment Manufacturing	\$82,228,031
425	Wholesale Electronic Markets and Agents and Brokers	\$61,122,444
334	Computer and Electronic Product Manufacturing	\$58,649,494
484	Truck Transportation	\$48,371,993
522	Credit Intermediation and Related Activities	\$35,020,200
322	Paper Manufacturing	\$33,944,660
533	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	\$30,733,006
561	Administrative and Support Services	\$29,940,677
523	Securities, Commodity Contracts, and Other Financial Investments and Related Activities	\$25,188,832
221	Utilities	\$20,900,403
518	Data Processing, Hosting, and Related Services	\$18,714,526
339	Miscellaneous Manufacturing	\$17,975,527
441	Motor Vehicle and Parts Dealers	\$16,612,816
517	Telecommunications	\$16,513,512
482	Rail Transportation	\$16,512,444
327	Nonmetallic Mineral Product Manufacturing	\$14,920,819
531	Real Estate	\$14,488,919
524	Insurance Carriers and Related Activities	\$13,333,184
313	Textile Mills	\$13,103,621
722	Food Services and Drinking Places	\$11,654,990
481	Air Transportation	\$8,538,499
493	Warehousing and Storage	\$7,739,301
519	Other Information Services	\$7,323,632
901	Federal Government	\$7,213,133
511	Publishing Industries (except Internet)	\$7,056,008
811	Repair and Maintenance	\$6,020,203
211	Oil and Gas Extraction	\$5,747,503
562	Waste Management and Remediation Services	\$4,916,305
721	Accommodation	\$4,421,496
515	Broadcasting (except Internet)	\$3,871,886
238	Specialty Trade Contractors	\$3,158,439
711	Performing Arts, Spectator Sports, and Related Industries	\$3,005,897
532	Rental and Leasing Services	\$2,940,343
212	Mining (except Oil and Gas)	\$2,631,344
452	General Merchandise Stores	\$2,409,602
323	Printing and Related Support Activities	\$2,335,729
446	Health and Personal Care Stores	\$2,298,717
454	Nonstore Retailers	\$2,213,348
444	Building Material and Garden Equipment and Supplies Dealers	\$2,199,917
813	Religious, Grantmaking, Civic, Professional, and Similar Organizations	\$2,177,397
321	Wood Product Manufacturing	\$1,951,691
453	Miscellaneous Store Retailers	\$1,904,346
448	Clothing and Clothing Accessories Stores	\$1,835,555
485	Transit and Ground Passenger Transportation	\$1,719,777
311	Food Manufacturing	\$1,557,679
611	Educational Services	\$1,543,592
236	Construction of Buildings	\$1,295,730
443	Electronics and Appliance Stores	\$1,238,968
483	Water Transportation	\$1,218,668
488	Support Activities for Transportation	\$1,184,308
445	Food and Beverage Stores	\$1,111,401
447	Gasoline Stations	\$986,248
713	Amusement, Gambling, and Recreation Industries	\$892,838
442	Furniture and Home Furnishings Stores	\$876,292
237	Heavy and Civil Engineering Construction	\$819,461
451	Sporting Goods, Hobby, Musical Instrument, and Book Stores	\$809,880
486	Pipeline Transportation	\$726,011

NAICS	INDUSTRY	AMOUNT
621	Ambulatory Health Care Services	\$618,589
622	Hospitals	\$504,393
213	Support Activities for Mining	\$422,505
312	Beverage and Tobacco Product Manufacturing	\$392,063
315	Apparel Manufacturing	\$304,926
521	Monetary Authorities-Central Bank	\$296,415
314	Textile Product Mills	\$176,162
337	Furniture and Related Product Manufacturing	\$155,828
512	Motion Picture and Sound Recording Industries	\$79,060
492	Couriers and Messengers	\$55,321
812	Personal and Laundry Services	\$52,834
487	Scenic and Sightseeing Transportation	\$51,105
491	Postal Service	\$33,325
316	Leather and Allied Product Manufacturing	\$24,386
624	Social Assistance	\$17,665
623	Nursing and Residential Care Facilities	\$15,257
712	Museums, Historical Sites, and Similar Institutions	\$11,684
111	Crop Production	\$5,448
112	Animal Production and Aquaculture	\$4,576
115	Support Activities for Agriculture and Forestry	\$1,912
525	Funds, Trusts, and Other Financial Vehicles	\$1,211
113	Forestry and Logging	\$59
114	Fishing, Hunting and Trapping	\$12

Source: ADE, Inc.; data from EMSI

Table 66 — Water Supply Chain, California

NAICS	INDUSTRY	AMOUNT
541	Professional, Scientific, and Technical Services	\$31,392,359
238	Specialty Trade Contractors	\$18,893,512
325	Chemical Manufacturing	\$16,409,355
324	Petroleum and Coal Products Manufacturing	\$15,762,486
221	Utilities	\$11,322,439
236	Construction of Buildings	\$7,750,964
522	Credit Intermediation and Related Activities	\$6,433,025
531	Real Estate	\$5,780,769
237	Heavy and Civil Engineering Construction	\$4,901,951
423	Merchant Wholesalers, Durable Goods	\$4,587,072
212	Mining (except Oil and Gas)	\$4,553,292
493	Warehousing and Storage	\$4,284,106
561	Administrative and Support Services	\$3,243,566
424	Merchant Wholesalers, Nondurable Goods	\$2,861,301
517	Telecommunications	\$2,611,724
533	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	\$1,902,234
425	Wholesale Electronic Markets and Agents and Brokers	\$1,860,251
484	Truck Transportation	\$1,787,465
482	Rail Transportation	\$1,663,932
524	Insurance Carriers and Related Activities	\$1,547,088
811	Repair and Maintenance	\$1,386,324
532	Rental and Leasing Services	\$1,235,406
334	Computer and Electronic Product Manufacturing	\$1,178,731
523	Securities, Commodity Contracts, and Other Financial Investments and Related Activities	\$1,036,731
327	Nonmetallic Mineral Product Manufacturing	\$954,993
488	Support Activities for Transportation	\$904,554
483	Water Transportation	\$848,454
562	Waste Management and Remediation Services	\$788,766
711	Performing Arts, Spectator Sports, and Related Industries	\$778,631
901	Federal Government	\$695,483
211	Oil and Gas Extraction	\$318,931
722	Food Services and Drinking Places	\$291,477
813	Religious, Grantmaking, Civic, Professional, and Similar Organizations	\$272,307

NAICS	INDUSTRY	AMOUNT
481	Air Transportation	\$241,495
721	Accommodation	\$159,303
333	Machinery Manufacturing	\$157,143
511	Publishing Industries (except Internet)	\$110,810
441	Motor Vehicle and Parts Dealers	\$107,117
336	Transportation Equipment Manufacturing	\$99,022
486	Pipeline Transportation	\$84,150
115	Support Activities for Agriculture and Forestry	\$83,123
332	Fabricated Metal Product Manufacturing	\$81,291
519	Other Information Services	\$69,231
331	Primary Metal Manufacturing	\$67,874
446	Health and Personal Care Stores	\$66,994
454	Nonstore Retailers	\$64,506
444	Building Material and Garden Equipment and Supplies Dealers	\$64,114
485	Transit and Ground Passenger Transportation	\$63,896
518	Data Processing, Hosting, and Related Services	\$63,160
621	Ambulatory Health Care Services	\$62,440
521	Monetary Authorities-Central Bank	\$60,351
453	Miscellaneous Store Retailers	\$55,500
448	Clothing and Clothing Accessories Stores	\$53,495
622	Hospitals	\$51,464
551	Management of Companies and Enterprises	\$43,966
515	Broadcasting (except Internet)	\$43,385
611	Educational Services	\$42,177
487	Scenic and Sightseeing Transportation	\$39,033
452	General Merchandise Stores	\$38,291
443	Electronics and Appliance Stores	\$36,109
311	Food Manufacturing	\$35,880
322	Paper Manufacturing	\$33,081
447	Gasoline Stations	\$28,743
339	Miscellaneous Manufacturing	\$28,431
445	Food and Beverage Stores	\$26,204
335	Electrical Equipment, Appliance, and Component Manufacturing	\$25,605
442	Furniture and Home Furnishings Stores	\$25,539
451	Sporting Goods, Hobby, Musical Instrument, and Book Stores	\$23,603
323	Printing and Related Support Activities	\$17,566
313	Textile Mills	\$12,846
326	Plastics and Rubber Products Manufacturing	\$8,623
713	Amusement, Gambling, and Recreation Industries	\$7,632
337	Furniture and Related Product Manufacturing	\$7,580
213	Support Activities for Mining	\$7,426
492	Couriers and Messengers	\$6,370
315	Apparel Manufacturing	\$4,936
512	Motion Picture and Sound Recording Industries	\$4,182
314	Textile Product Mills	\$4,018
491	Postal Service	\$3,213
113	Forestry and Logging	\$2,559
312	Beverage and Tobacco Product Manufacturing	\$2,457
321	Wood Product Manufacturing	\$2,148
623	Nursing and Residential Care Facilities	\$1,874
812	Personal and Laundry Services	\$1,536
114	Fishing, Hunting and Trapping	\$505
316	Leather and Allied Product Manufacturing	\$421
525	Funds, Trusts, and Other Financial Vehicles	\$385
624	Social Assistance	\$335
712	Museums, Historical Sites, and Similar Institutions	\$322
525	Funds, Trusts, and Other Financial Vehicles	\$7

Source: ADE, Inc.; data from EMSI

3. REGIONAL RESOURCES

3.1 REGIONAL RESOURCES WORKFORCE TRAINING

The Imperial Valley has a variety of certification and educational programs available for job training. These programs are generally responsive to needs of industry and meeting anticipated demand for specific technical skills. However, the ability to be proactive in offering new types of workforce training is currently limited, and the private sector options for job training are limited. In addition, Imperial County does not have a campus that offers a full complement of four-year degree programs. Some of the important resources in Imperial County for job training are summarized below.

IMPERIAL VALLEY COLLEGE

IVC is the only community college campus in Imperial County. It has a total enrollment of around 7,000 students, and offers programs for both transferring students and two-year students. The college can also help develop specialized curriculum for workforce training when new businesses or industries are attracted to the region. The certificate and degree programs offered by IVC are based on anticipated demand from projected occupational employment. Under state law, IVC cannot proactively create training programs as a means by which to help attract new businesses.

According to the Labor Market Analysis of “Advanced Manufacturing in Imperial County” by the Center of Excellence (COE), IVC has a total of 14 degree and certificate programs that pertain to advanced manufacturing. These programs include programs for production, drafter/technician, computer/software, and engineering occupations. The report also indicates that relatively few students are graduating in the highly technical certificate programs, such as engineering.

IVROP

The Regional Occupational Program (ROP) is a partnership with eight high schools to offer job training. Some of the programs include skills that are compatible with advanced manufacturing needs. These skills include welding, construction, contracting, food technology, computer repair, agriculture mechanics, and agriculture fabrication.

SAN DIEGO STATE UNIVERSITY – IMPERIAL VALLEY CAMPUS

SDSU operates two branch campuses in Calexico and Brawley. These branches are the only locations in Imperial County that offer four-year degree programs. However, the SDSU programs offered through the branch campuses are limited to non-technical majors, and do not include specific skills training for advanced manufacturing.

ECONOMIC DEVELOPMENT

IVEDC

The business attraction role for Imperial County has largely been appropriated to the Imperial Valley Economic Development Corporation (IVEDC). The IVEDC is a public-private organization with majority private

partners. The EDC serves as the primary point of contact for business clients looking to locate in the Imperial Valley. The organization also follows up with the business clients and cities. The organization engages in both business attraction and direct assistance to existing Imperial Valley businesses.

IMPERIAL COUNTY WORKFORCE DEVELOPMENT

The County operates five “one-stop” employment centers that offer services to job seekers, including assistance with resume writing, interviewing, and finding job listings and training programs. Workforce Development is also the lead agency to implement the “slingshot” initiative, which is a statewide program designed to create pathways for workers to move up from entry level jobs into higher skilled positions. The agency works collaboratively with the EDC and IVC.

SBDC

The Small Business Development Center (SBDC) program operates under the jurisdiction of the Small Business Administration (SBA). The SBDC in the Imperial Valley provides technical assistance to start-ups and existing small businesses. This includes financing expertise, coaching, and other consulting services. The local SBDC currently assists about 100 client businesses, of which the majority are service businesses.

INCENTIVES

Incentives designed to help attract new business investment to the Imperial Valley include programs developed under federal statutes, in addition to programs specific to California and the Imperial Valley region. The content of the programs can include incentives such as tax credits, regulatory relief, or foreign investment.

FOREIGN TRADE ZONE

Imperial County has seven areas that have been designated as foreign trade zones. These areas are considered outside of the United States by U.S. Customs. This means that imports into the FTZ are exempted from duty and excise taxes until they leave the zone. This is designed to encourage activity that would otherwise have not occurred in the U.S. because of customs and related expenses.

NEW MARKETS TAX CREDITS

The NMTC program is designed to benefit low income communities by issuing tax credits for investments made in designated Community Development Entities (CDE). The majority of Imperial County qualifies as a NMTC area.

EB-5 PROGRAM

The EB-5 regional center program is an immigrant investor program designed to attract foreign investors. The investments can be made in a variety of different types of projects, including manufacturing and alternative energy facilities. The U.S. Citizenship and Immigration Services (USCIS) will issue a conditional green card to the immigrant investor in exchange for creating a minimum of 10 jobs as a result of a \$1 million minimum investment (\$500,000 in designated Targeted Employment Areas).

At least three regional centers currently operate in Imperial County, and they have helped fund several development projects in the area, including shopping centers, offices, and industrial projects. The program

currently operates under a one-year extension that extends the current program terms through the end of September 2016.

RECYCLING MARKET DEVELOPMENT ZONE

The RMDZ program is a state program that consists of economic incentives and technical services designed to divert solid waste and produce recycled-content.

California Enterprise Development Initiative

After the elimination of the Enterprise Zone program, California replaced the EZ tax credits with three new programs. The Manufacturers Sales Tax Exemption provides a sales tax exemption for certain types of equipment purchases. California Competes Tax Credit Fund allows for tax credits of up to five years designed to offset California income tax. New Employment Credit provides tax credits for hiring eligible employees within designated Economic Disadvantaged Areas.

INFRASTRUCTURE

ELECTRICAL POWER

The primary electrical utility in Imperial County is the Imperial Irrigation District (IID). The IID works directly with customers and project applicants to determine needs and to provide electrical service. The commercial rates charged by IID for electrical service are generally among the lowest in California. However, the rates are generally higher than in neighboring states. The costs to business customers will vary depending on if the infrastructure is already in place at a particular location. However, the utility can negotiate the costs as an incentive to potential business customers. The IID operates independently and does not pay into the California Independent Service Operator (ISO).

Imperial County has become a leader in renewable energy production, with significant assets in solar, wind, biomass, and geothermal energy. The state's renewable portfolio standard (RPS) implements a 25 percent renewable energy mandate and has power companies outside of the area looking to tap into Imperial County's renewable energy resources. For companies that place value on minimizing their carbon footprint, the renewable energy resources in Imperial County can be viewed as an advantage.

WATER

The IID also functions as a water utility. The agency provides raw water to customers and holds rights to the majority of the Colorado River water that flows into California. About 25,000 acre-feet of IID water is allocated to non-agricultural business customers. According to the IID, this allocation is not close to being tapped out, and the majority of IID's water goes to agricultural customers.

BROADBAND

Time Warner Cable and AT&T provide wired broadband network services to the Imperial Valley.

PARTNERSHIPS

IVEDC AND SAN DIEGO EDC

The IVEDC partners with the San Diego EDC to share business leads. In cases where a business contact in San Diego County might be better suited to the locational characteristics of Imperial County, the SDEDC will refer the client over to the IVEDC. Currently, about one lead per week is generated in Imperial County as a result of this partnership.

BI-NATIONAL INITIATIVES

The CaliBaja Mega-Region Initiative was created in 2008 when SDEDC and IVEDC received an EDA grant to create the first bi-national strategy. The initiative was formalized in 2011 in a memorandum of understanding between six economic development organizations that serve San Diego County, Imperial County, Mexicali, Tijuana, Ensenada, and Tecate. The Mega Region serves as a marketing presence for the region.

In 2013, the Imperial-Mexicali Binational Alliance was formed as a partnership of transportation, economic development, and planning organizations in Imperial County, Mexicali, and Baja California.

More recently, the City of Calexico entered into a partnership with the Industrial Development Commission of Mexicali to create a task force that will help promote the region and look into investment and business opportunities.

4. ADVANCED MANUFACTURING SITE REQUIREMENTS

4.1 SITE SELECTION FACTORS

This section of the report summarizes key site selection factors for the various industry clusters of interest to officials in Imperial County. The section of the report discusses site selection factors for specific industry clusters, information for which come from a variety of sources, such as Site Selection Magazine, Area Development, and academic analyses. The industry clusters are aerospace cluster, automotive cluster, biofuels, medical devices, and food processing.

AEROSPACE INDUSTRY CLUSTER SITE SELECTION FACTORS

According to Goldsmith, "the aerospace industry includes the following sub-segments: aircraft and related parts; guided missiles, space vehicles and related parts, and search, detection, and navigation instruments. In addition, there are related aerospace and aviation services such as air transportation services, air courier services, airport and airport terminal services, satellite communication services, and space research and technology services."¹ In other words, aerospace industry is focused on making aircraft and related parts and products, while the aviation industry entails the use of these products, including the maintenance, repair and operations (MRO) of existing aircraft, especially with respect to airlines, airports, freight carriers and other flight operations.² For purposes of this site selection discussion, the aerospace industry cluster does not include aviation.

A critical site selection factor for the aerospace industry cluster is the availability of skilled labor that is also certified to work on aircraft, or in a position to be certified. Roberts and Pittman report, "In order to work for a civilian aircraft a mechanic must possess an Airframe or Power-plant Certificate. Consequently, for a community or region to be successful in creating more jobs it must have access to these trained mechanics. Such 'Part 147' schools are expensive to run and maintain, but if a community or region wants to sustain an aerospace cluster they are critical."³ Other factors: proximity to aviation-related military base; good STEM education and programs in local schools; proximity to university offering graduate programs; proximity to university with aerospace engineering, chemical or polymer/composites engineering or related fields; proximity to 2-year community college or technical training facility, especially MRO (aviation maintenance,

¹Jeanette Goldsmith, "Site Selection in the Aerospace Industry" (Trade and Development)(Spring 2004)(<http://bit.ly/1Vusk8t>)

²Amy Holloway and Ed McCallum, "Aerospace and Aviation"(Trade and Industry Magazine)(May 31,2013)(<http://bit.ly/1PWckbh>)

³Tucson Roberts and Robert Pittman, "Aerospace Industry Demands New Locations" (Site Selection Magazine)(unknown volume)(July 2014) (<http://bit.ly/1nqVAST>)

repair, and overhaul); convenient airport access; good weather; good site aesthetics-most aerospace companies prefer an attractive well-kept site or business park to make a good impression.⁴

Similar to Roberts and Pittman, Dennis Donovan also emphasized ample supply of qualified workers as critical to where the aerospace industry tends to locate. Donovan also identified emerging factors that aerospace companies are looking for.⁵ These are:

1. At least a small critical mass (i.e., industry presence)
2. Surplus labor market enhanced by technical training/education (offering certifications and degrees)
3. Adequate site/building offerings and fast track construction
4. Nonunion
5. Superior utility and transportation infrastructure
6. Enlightened leadership investing in:
 - Removal of entry barriers (e.g., onerous taxes/regulations)
 - Aerospace education/training (elementary school through college)
 - Physical infrastructure including certified sites, utility capacity and highways
 - Partnerships to oversee the industry's needs

On a final note, since aircraft products are significantly more expensive than automobile parts, Roberts and Pittman report that suppliers are not so tightly tethered to an assembly facility, and that parts can be transported economically from a longer distance. Thus, aviation parts manufacturers have more leeway as to where they locate.⁶

AUTOMOTIVE CLUSTER SITE SELECTION FACTORS

When looking for places to locate, among other things, auto supply manufacturers are looking for sites ranging from ten to 100 acres.⁷ Other critical site selection factors are low development\ facility construction cost, access to skilled labor, infrastructure, and access to a transportation network that facilitates just-in-time manufacturing and delivery. With respect to infrastructure, Cuneo specifically mentioned the need for a water \sewerage system that can handle at least 200,000 gallons of water per day, as well as a system that allows

⁴Tucson Roberts and Robert Pittman (July 2014)

⁵Dennis Donovan, "Aerospace Site Selection Trends (Trade and Industry Development)(May 2011)(<http://bit.ly/1Sepret>)

⁶Tucson Roberts and Robert Pittman, "The Aerospace Industry: The Goose that Lays the Golden Economic Eggs" (Site Selection Magazine)(unknown volume)(December 2013)(<http://bit.ly/1SMC2W0>)

⁷Tom Carruthers, "Site Selection for the Automotive Sector" (Trade and Industry Development")(Spring 2003)(<http://bit.ly/1UtTLix>)

for a non-interruptible electricity supply of 11,000 KVA.⁸ Automotive suppliers also look to locate close to other OEM and suppliers, according to Mark Williams.⁹

Below is a list of site selection factors automotive parts and supplies manufacturers look for when seeking for places to locate.¹⁰ In addition to the factors below, automotive suppliers want to locate in places where cost per unit of output produced is lowest. "Being the nominal low-cost leader in land prices and wage rates does not automatically give a region a competitive advantage," according to Murray, Dowell, and Mayes.¹¹

- Facility development costs are minimized
- Industrial zoning with no nearby housing
- Necessary infrastructure
- Highway access and back-up route
- Easily trainable workforce
- Proximity to OEMs, Suppliers
- Availability of utilities
- Disaster Risk
- Business Climate
- Start-up and Operational Costs
- Value of Incentives

BIOFUELS CLUSTER SITE SELECTION FACTORS

Companies seeking to build a biofuel plant tend to locate in close proximity to feedstock. This is so because feedstock alone represents 50 to 60 percent of the cost of producing one gallon of ethanol.¹² Robertson reports that biofuel companies will locate in areas with a 30-mile radius where they know that they can

⁸Dennis Cuneo, "Site Selection for Auto Suppliers: Keeping the Whole Picture in Mind" (Area Development)(2012)(<http://bit.ly/1PWopxc>)

⁹Mark Williams, "Special Report: Site Location Factors for Automotive Suppliers"(Business Facilities)(May/June 2013)(<http://bit.ly/1nr4IXq>)

¹⁰Mark Williams (May/June 2013) and Larry Gigerich, "The Automotive Industry and Site Selection Issues in North America" (Ginovus)(May, 2011)(<http://bit.ly/23wBpn5>)

¹¹Matthew Murray, Paula Dowell, and David Mayes, "The Location Decision of Automotive Suppliers in Tennessee and the Southeast" (Center for Business and Economic Research)(August 1999)(<http://bit.ly/1TqplWq>)

¹² Justin Sabrula, "Site Selection for Biofuels Industry" (Trade and Industry Development)(December 2007)(<http://bit.ly/1SmiGpg>)

gather at least 590,000 corn stover bales per year, for a plant generating annually 30 million gallons of ethanol. For biofuels based on switchgrass, Yu et al report that plants generating 50 million gallons of ethanol will need to gather 658,000 tons of large bales of switchgrass from an area with a 50-mile radius. A plant generating 75 million gallons of switchgrass-based biofuels needs to gather 987,000 tons of bales of switchgrass from farms within 50-miles of the plant.¹³

Firms also seek to find the area that represents the sweet spot between the plant and source of feedstock, and the plant and major markets. Highway access is key because ethanol is corrosive to traditional petroleum pipelines and must be trucked.¹⁴

According to Christopherson, access to water is another key factor: "Available water sources, the reliability of those sources, and the water discharge options need to be a priority in site selection for the plant."¹⁵ Water, along with natural gas and electricity, represent 20 to 30 percent of the cost of producing a gallon of ethanol.¹⁶

MEDICAL DEVICES SITE SELECTION FACTORS

According to Dennis Donovan, locational determinants for new medical device facilities vary by type of product manufactured. For instance, high volume/ commodity oriented goods such as disposable instruments will opt for lower cost locations. Products with heavier engineering content and/or a high degree of customization will need proximity to medical/engineering schools and a highly skilled workforce.¹⁷ Donovan also reports that wholesalers will site distribution centers close to customer agglomerations. R&D operations will gravitate to areas where there is a critical mass of requisite resources. These embody similar operations (R&D and to a lesser extent manufacturing), medical schools, engineering schools, and specific talent (e.g., biomedical engineers).

For manufacturing plants, the following criteria will often be accorded a status of important or very important, according to Donovan.

1. Sufficient availability of experienced talent, e.g.,

- Precision assembler
- Instrument technician

¹³ T. Edward Yu, Joshua S. Fu, James A. Larson, Burton C. English, "Feedstock Costs and Transportation Emissions and their Impact on Site Selection of a Switchgrass-Based Bio-refinery: a Case Study of Tennessee" (DARE, Univer. Of TN) (2012?) (<http://bit.ly/20w2fJA>)

¹⁴ Sabrsula (2007)

¹⁵ Dave Christopherson, "Water Considerations in Ethanol or Biodiesel: Site Selection and Plant Design" (22nd Annual International Fuel Ethanol Workshop and Expo) (2006) (<http://bit.ly/1ZXfj8M>)

¹⁶ Sabrsula (2007)

¹⁷ Dennis Donovan, "Latest medical devices site selection trends,"(Expansion Solutions) (January/February 2014)(<http://bit.ly/219jtNk>)

- • Clean room technician
- • Quality assurance technician
- • Biomedical engineer

2. Excess supply of qualified entry level workers for the above positions and others such as

- • Packaging machine operator
- • Shipping/receiving clerk
- • Warehouse worker

3. Moderate labor cost (often prefer less than the U.S. average)

4. Educated workforce (above average 12-15 years and for some operations, college educated)

5. Nonunion

6. Proximity to

- • Medical schools
- • Teaching hospitals
- • Engineering schools

7. Community college with programs to support the industry (e.g., regulatory standards, wireless technologies, medical robotics)

8. Frequently a modern, vacant building which might include a Class 1000 or Class 100 clean room

9. Attractive business park with all utilities in place (dual electric power feed from two substations a plus)

10. Reliable electric power

11. Fast track construction

12. Four lane highway access

13. Within 45-60 minutes of a commercial airport

14. Array of motor carriers with local terminals

15. For some companies proximity to a small package processing hub (within 60-90 minutes)

16. Moderate taxation, especially sales and property

17. Stable state/local fiscal status

18. Meaningful incentives package such as payroll tax rebates and refundable capital investment tax credits

FOOD PROCESSING SITE SELECTION FACTORS

When looking for places to locate, small to mid-sized food processing plants want to build in areas where they can be in operations in a 6 to 12month period.¹⁸ Other critical factors include proximity to supplies, which is often a primary driver when sensitive products like fruits and produce are involved in manufacturing.

"Transporting delicate products like fresh, ripe tomatoes for our Cobb salad or oranges for juicing to a distant processing plant can be inefficient and expensive," says a CEO in Vaught's analysis.¹⁹ The growth of sophisticated intermodal distribution facilities has provided greater flexibility regarding where to locate food processing facility. Vaught provides examples of modern intermodal facilities: truck-to-rail transfers involving an acre-size refrigerated facility where eight boxcars can be unloaded at once in a seamless manner connecting rail and trucks. Another example in Vaught is a modern warehousing that can accommodate advanced shipping notification and system-directed replenishment, with dock door arranges with highest efficiency and delivery to destination in mind.²⁰ Finally, the availability of water and sewer capacity and lines to industrial sites is crucial, as is strong existing local pool of high-demand occupations.²¹

As an emerging trend, Kupperman notes that larger demographic changes and eating habits driving need for food manufacturers to be ever on-guard to innovate, which is resulting in a demand for space that can be altered quickly. Food processors want "quickly modify [food processing] lines inside a facility where there is ample column spacing, clear height, utility distribution, water and sewer supply and discharge locations, structural capacity (floor and ceiling) dock locations, and exterior space for large process utility equipment and vehicular movement should all be considered competitive advantages that support innovative manufacturing."²²

¹⁸ David Sours, "The art and science of locating a new food plant" (Area Development) (2015) (<http://bit.ly/24b8dm8>)

¹⁹ John Vaught, "Keep it Fresh: Re-evaluating the food manufacturing supply chain"(Area Development)(2015)(<http://bit.ly/1oL7VSp>)

²⁰ Vaught (2015)

²¹Area Development Research Desk,"Food and Beverage Processing Firms Drawn by the Right Mix of Assets in Lehigh Valley, PA" (Area Development (2015)(<http://bit.ly/1Oh1zil>)

²²Scott Kupperman, "Consumer demographics and preference drive food industry location decisions" (Area Development) (2015)(<http://bit.ly/20F38Or>)

5. SWOT ANALYSIS

5.1 SWOT ANALYSIS

This section summarizes the strengths, weaknesses, opportunities, and threats in Imperial County, as they pertain to cluster development and growth in advanced manufacturing. Information in this section draws from stakeholder interviews, reference materials, and the SWOT analysis from the Imperial County CEDS (2014-2015 Update).

STRENGTHS

- Strong recent and projected job growth
- High concentration of jobs and economic activity in agriculture
- Strong recent and projected job growth in medical services and logistics/transportation
- Established Foreign Trade Zones (FTZ)
- Established EB-5 investor pool
- New incentive programs aimed at recycling, sales tax exemptions, and tax credits
- Economic development organization partnerships, including Bi-National Mega Region
- Progress with making regulations more transparent on new development projects
- Strong momentum with alternative energy projects, and streamlining the approval process
- Strong existing community college programs for job training related to advanced manufacturing
- Proximity to Mexico and San Diego markets
- Advanced manufacturing activity already occurring in Mexicali
- Strong R&D activity in San Diego County
- External transportation connections to West Coast markets
- Weather and climate conducive to alternative energy production
- Alternative energy mandates have created momentum for alternative energy production
- Strong water rights
- Available and affordably priced land

- Affordable housing
- Available labor force
- New state incentive programs including recycling market development zone,
- Strong retail activity growth

WEAKNESSES

- Job growth largely driven by population and income growth, and consumer spending from Mexicali residents
- Traded cluster employment is relatively low, and projected to remain low
- Existing manufacturing base remains small and not well diversified
- Most clusters currently have low to zero employment
- Elimination of Enterprise Zones and Redevelopment Agencies in California limit the incentives available compared to other states
- Utility rates are still considered high, compared to other states
- Labor force has comparatively low skill and education level
- Comparatively low wages in the same occupations
- Strength in agriculture off-set by comparative lack of higher value processing activity
- Community college job training are limited by state law to those occupations with an established need, and programs cannot be developed proactively
- Technical programs at community college are currently underutilized, even though employers indicate a high demand for those skills
- University degree programs are limited to satellite campuses, with no four-year business or engineering degrees
- Complicated regulatory environment in California, compared to Arizona and Nevada

OPPORTUNITIES

- Bi-National trade
- Prototyping and small scale manufacturing
- Supply chain “leakage” provides opportunities for new business development or expansion

- Potential partnerships and supplier relationships with San Diego County and Mexicali businesses
- Strong base of jobs in Mexicali in the industry clusters of interest
- High concentration of technical training and university campuses in Mexicali
- Proposed expansion of Ports of Entry will reduce bottlenecks to cross-border trade
- Proposed raising of renewable portfolio standard (RPS) will create more market demand for alternative energy produced in Imperial Valley

THREATS

- Market for renewable energy in the short-term still depends on national and state government policies that are subject to change
- Increasingly advanced education and skill levels needed for advanced manufacturing jobs does not line up with existing labor force
- Changes to or elimination of EB-5 program would remove a prominent channel for foreign capital
- Volatility in the energy markets
- Low technical skill level and education will continue to impede innovation-driven needs in the short-term
- Lack of four-year and advanced degree programs will continue to force the best students to leave the region for their education

6. IMPLEMENTATION ACTIONS

6.1 IMPLEMENTATION

This section summarizes some initial implementation actions that can be undertaken as steps to develop clusters in Imperial County, and attract advanced manufacturing and other related activities to the Imperial Valley.

BEGIN CLUSTER IMPLEMENTATION WITH CORE INDUSTRIES THAT ALREADY EXIST IN THE IMPERIAL VALLEY

Focused development of cluster-based actions typically begins with identifying the core industries, and those sectors that currently lead or are expected to lead the economy forward, and create net wealth for the region. Among the individual clusters in the analysis, only agriculture has an existing critical mass of core sectors, related service sectors, and a downstream supply chain relationship with manufacturers.

Focusing on the agriculture cluster at the outset would allow for Imperial County to form a cluster group that collaborates the efforts of businesses, education and training agencies, economic development organizations, municipal and county governments, infrastructure providers, and other stakeholders. The cluster group could also look into collaboration opportunities with companies in Mexicali. The initial cluster group would potentially form the framework for developing other clusters.

Other areas of focus that could occur in the short-term include biofuels and related renewable energy producers.

EXPLORE OPPORTUNITIES FOR PROACTIVE JOB TRAINING PARTNERSHIPS, INCLUDING TECHNICAL SCHOOLS AND UNIVERSITIES IN MEXICALI

The skill and technical education shortage in the Imperial Valley also includes limitations in the existing education and job training system. This in turn creates potential obstacles to developing a robust advanced manufacturing economy. First, there are limited opportunities to pursue a four-year degree or advanced training in the Imperial Valley. SDSU has satellite campuses in Calexico and Brawley. These are the only schools in Imperial County that offer four-year degrees. However, the selection of degree programs is very limited and does not include business or engineering degrees.

Concurrently, Mexicali has a high concentration of technical training and university campuses. This provides a potential option for addressing job training and educational shortcomings in Imperial County, by either sending students to study in Mexicali or bringing programs to the U.S. There have already been discussions about these types of partnership. But, there are potential issues with aligning the curriculum to U.S. certifications, and having awards and degrees recognized in the U.S. Resolving these issues would open up a wide range of new education and training options that would otherwise require students and job seekers to go outside of the county.

In addition, IVC and the Workforce Development are required to structure their programs around projected demand. They cannot create programs proactively, without a business or anticipated facility already committed to operating in Imperial County. It should be noted that the Center of Excellence study of advanced manufacturing found that existing advanced technical training programs are underutilized. This results from a lack of awareness of existing programs in Imperial County. However, enrollment at IVC has been on the increase, and there is only one private sector job training provider operating in the county.

DEVELOP A BUSINESS ATTRACTION STRATEGY BEGINNING WITH THE EXISTING SUPPLY CHAIN LEAKAGE

In general, the majority of supplier inputs for nearly all industry sectors in Imperial County are met by importing those goods and services from outside of the county. In particular, the limited breadth of Imperial County's manufacturing economy means that nearly all of the supplier needs for manufactured goods do not have a local business available.

The supply chain tables for the clusters show existing needs for most of the clusters in Imperial County. These indicate that cluster businesses have supplier relationships with a broad range of different industries, and often have significant purchase requirements from non-manufacturing industries, such as transportation services, professional and technical services, and wholesale trade.

These tables can serve as a starting point for quantifying existing supplier needs that currently require importing of goods and services. This will identify the extent to which existing purchase patterns might potentially support new business development in Imperial County.

In addition, for those clusters that do not currently exist in Imperial County, the supplier purchase patterns shown for the California statewide averages, serve as an indicator for the types of commodities that would grow in demand as an industry cluster emerges.

FOR ASPIRATIONAL CLUSTERS, LOOK INTO PARTNERSHIPS WITH SAN DIEGO AND MEXICALI REGIONS

Many of the clusters of interest analyzed in this report do not have a large base of existing employment. However, Mexicali in particular already has a large base of establishments and jobs in areas such as aerospace, automobiles, food products, and metal products. These activities exist in Imperial County generally at a low concentration.

However, the large scale of the operations in Mexicali creates potential needs for suppliers and other potential partnerships. With the Mega Region already established, an administrative relationship already exists between the economic development organizations. This represents an opportunity to strengthen the bi-national ties and increase trade by treating the international border as a window into new opportunities rather than as a barrier.

APPENDIX A – LIST OF BUSINESSES

Table A-1— Business List by Cluster, Imperial County

CLUSTER	NAICS	DESCRIPTION	ESTABLISHMENT	ADDRESS	CITY	EMPLOY- MENT
Medical Services	62111107	Offices Of Physicians (Exc Mental Health Specs)	Anz Clinics Inc	1600 S Imperial Ave # 3	El Centro	20
Medical Services	62149301	Freestanding Ambulatory Surgical & Emergency Ctrs	Calexico Health Ctr	450 E Birch St	Calexico	33
Medical Services	62211002	General Medical & Surgical Hospitals	Calexico Hospital	601 Heber Ave	Calexico	38
Medical Services	62111107	Offices Of Physicians (Exc Mental Health Specs)	California Retina Assoc	1452 S LA Brucherie Rd # A	El Centro	20
Medical Services	62149301	Freestanding Ambulatory Surgical & Emergency Ctrs	Clinicas De Salud Del Pueblo	1166 K St	Brawley	300
Medical Services	62149301	Freestanding Ambulatory Surgical & Emergency Ctrs	Clinicas De Salud Del Pueblo	900 Main St	Brawley	60
Medical Services	62149301	Freestanding Ambulatory Surgical & Emergency Ctrs	Clinicas De Salud Del Pueblo	223 W Cole Blvd	Calexico	50
Medical Services	62149301	Freestanding Ambulatory Surgical & Emergency Ctrs	Clinicas De Salud Del Pueblo	651 Wake Ave # A	El Centro	25
Medical Services	62111107	Offices Of Physicians (Exc Mental Health Specs)	Desert Valley Dialysis Ctr	408 E 3rd St # A	Calexico	24
Medical Services	62149202	Kidney Dialysis Centers	Desert Valley Dialysis Inc	408 E 3d	Calexico	20
Medical Services	62149301	Freestanding Ambulatory Surgical & Emergency Ctrs	Ehman Womens Ctr	197 W Legion Rd # 300	Brawley	20
Medical Services	62211002	General Medical & Surgical Hospitals	El Centro Regional Medical Ctr	1415 Ross Ave	El Centro	750
Medical Services	62149301	Freestanding Ambulatory Surgical & Emergency Ctrs	El Centro Regional Medical Ctr	1745 S Imperial Ave # 106	El Centro	99
Medical Services	33451209	Automatic Environmental Control Manufacturing	Enalaysys Corp	250 Campillo St # A	Calexico	42
Medical Services	62211002	General Medical & Surgical Hospitals	Fort Yuma Indian Hospital		Winterhaven	70
Medical Services	62161001	Home Health Care Services	Gentiva Home Health	1503 N Imperial Ave # 104	El Centro	40
Medical Services	62149301	Freestanding Ambulatory Surgical & Emergency Ctrs	Imperial County Health	935 Broadway Ave	El Centro	150
Medical Services	62211002	General Medical & Surgical Hospitals	Imperial Heights Health Care	320 Cattle Call Dr	Brawley	38
Medical Services	62211003	General Medical & Surgical Hospitals	Outpatient Centers El Centro	495 E Birch St	Calexico	20
Medical Services	62111107	Offices Of Physicians (Exc Mental Health Specs)	Pioneers Memorial Hosp-Doctors	207 W Legion Rd	Brawley	630
Medical Services	45211101	Department Stores (Except Discount Dept Stores)	Walmart Supercenter	2150 N Waterman Ave	El Centro	410

CLUSTER	NAICS	DESCRIPTION	ESTABLISHMENT	ADDRESS	CITY	EMPLOY- MENT
Biopharmaceuticals	44619904	All Other Health & Personal Care Stores	Apria Healthcare	1201 S Hope St	El Centro	5
Biopharmaceuticals	33441902	Other Electronic Component Manufacturing	Creation Technologies	621 E Heil Ave	El Centro	19
Biopharmaceuticals	33911401	Dental Equipment & Supplies Manufacturing	Ortho Dental Intl Inc	1000 Porton Dr	Calexico	2
Biopharmaceuticals	44819035	Other Clothing Stores	Phoenix Uniforms	935 N Imperial Ave	El Centro	10
Agriculture	11299013	All Other Animal Production	Asa Braga Ranch	817 W Hackleman Rd	El Centro	25
Agriculture	11199803	All Other Miscellaneous Crop Farming	Bornt & Sons Inc	2307 E US Highway 98	Holtville	50
Agriculture	11199801	All Other Miscellaneous Crop Farming	Crop Production Svc	305 Larsen Rd	Imperial	50
Agriculture	11299013	All Other Animal Production	Elmore Co	550 W Main St	Brawley	35
Agriculture	11299013	All Other Animal Production	Fifield Land Co	4307 Fifield Rd	Brawley	40
Agriculture	11211201	Cattle Feedlots	Foster Feed Yard	3403 Casey Rd	Brawley	20
Agriculture	11199803	All Other Miscellaneous Crop Farming	Grimmway Farms	2105 Anderholt Rd	Holtville	60
Agriculture	11511505	Farm Labor Contractors & Crew Leaders	J Y Harvesting	524 Holt Ave # A	Holtville	200
Agriculture	11199803	All Other Miscellaneous Crop Farming	Kelomar Inc	3949 Austin Rd	Brawley	20
Agriculture	11199803	All Other Miscellaneous Crop Farming	Kevin Grizzle Farms	1395 Bonds Corner Rd	Holtville	50
Agriculture	11199803	All Other Miscellaneous Crop Farming	LA Brucherie Ranch	1407 S LA Brucherie Rd	El Centro	50
Agriculture	11199803	All Other Miscellaneous Crop Farming	Lance Reeves Farming	1122 Orchard Ln	Brawley	20
Agriculture	11199803	All Other Miscellaneous Crop Farming	Lawrence Cox Ranches	5204 Dietrich Rd	Brawley	25
Agriculture	11199803	All Other Miscellaneous Crop Farming	Mainas Farms	1535 Barbara Worth Rd	Holtville	60
Agriculture	11199803	All Other Miscellaneous Crop Farming	Mike Morgan Farms	3949 Austin Rd	Brawley	49
Agriculture	11211201	Cattle Feedlots	Moiola Brothers	1594 Gonder Rd	Brawley	35
Agriculture	11199803	All Other Miscellaneous Crop Farming	Phil Rutherford Office & Ranch	113 S Plaza St	Brawley	21
Agriculture	11211201	Cattle Feedlots	Phillips Cattle Co Inc	910 Nichols Rd	El Centro	50
Agriculture	11299013	All Other Animal Production	Quail Mesa	550 W Main St	Brawley	20
Agriculture	11199803	All Other Miscellaneous Crop Farming	Rick Young Ranches	174 W Main St	Calipatria	20
Agriculture	11511505	Farm Labor Contractors & Crew Leaders	Rolling R Enterprises Inc	628 US Highway 78 # B	Brawley	50
Agriculture	11511505	Farm Labor Contractors & Crew Leaders	SMD Logistics Inc	101 E Main St	Heber	40
Agriculture	11199803	All Other Miscellaneous Crop Farming	South Valley Inc	2065 Mets Rd	Holtville	50
Agriculture	11199803	All Other Miscellaneous Crop Farming	Strahm Farms	2605 Holt Rd	Holtville	30
Agriculture	11211201	Cattle Feedlots	Superior Cattle Feeders Inc	6050 US Highway 111	Calipatria	60
Agriculture	11211201	Cattle Feedlots	Tamarack Feedyard Inc	PO Box 1108	Calexico	20
Agriculture	11199801	All Other Miscellaneous Crop Farming	Western Sun Products Inc	3502 US Highway 86	Imperial	20
Automotive	33621101	Motor Vehicle Body Manufacturing	A & A Auto Dismantlers	30 W US Highway 98	Calexico	4
Automotive	33331816	Other Commercial &	A M Copier Svc	301 Wake Ave # 313	El Centro	5

CLUSTER	NAICS	DESCRIPTION	ESTABLISHMENT	ADDRESS	CITY	EMPLOY- MENT
		Service Industry Machinery Mfg				
Automotive	33632010	Motor Vehicle Electrical & Electronic Equip Mfg	Danny's Auto Elec Mobile Rpr	327 W D St	Brawley	1
Automotive	33311103	Farm Machinery & Equipment Manufacturing	Dowden Welding	1668 Main St	Brawley	3
Automotive	33639018	Other Motor Vehicle Parts Manufacturing	J & A Truck Sales	25 2nd St # E	Calexico	5
Automotive	33399921	All Other Misc General Purpose Machinery Mfg	J & J Indl Supply	110 W 7th St	Calexico	5
Automotive	33291901	Other Metal Valve & Pipe Fitting Manufacturing	J & S Ag Supply	519 Pine Ave	Holtville	1
Automotive	33392405	Indl Truck, Tractor, Trailer & Stacker Mach Mfg	Jordan Central Implement Co	1280 Main St	Brawley	40
Automotive	33331872	Other Commercial & Service Industry Machinery Mfg	Mandy's Tire Shop	565 Highway 111	Calexico	1
Automotive	33311111	Farm Machinery & Equipment Manufacturing	RDO Water	1620 Jones St	Brawley	25
Automotive	33399920	All Other Misc General Purpose Machinery Mfg	Stiff Equipment Inc	1321 Main St	Brawley	11
Automotive	33391303	Measuring & Dispensing Pump Manufacturing	Valley Petroleum	506 Industry Way	Imperial	10
Automotive	33311111	Farm Machinery & Equipment Manufacturing	Water Gate Co	6131 E Heil Ave	El Centro	6
Automotive	33312009	Construction Machinery Manufacturing	Westwater Equipment Co	1545 Dogwood Rd	El Centro	1
Biofuels	33451209	Automatic Environmental Control Manufacturing	Enalasis Corp	250 Campillo St # A	Calexico	42
Biofuels	33451204	Automatic Environmental Control Manufacturing	George Mitchell Builders Inc	1680 Jones St	Brawley	5
Biofuels	33599903	All Other Misc Electrical Equip & Component Mfg	Light & Power Co	2310 M L King St	Calexico	11
Biofuels	32519301	Ethyl Alcohol Manufacturing	Pacific Ethanol Inc	305 E Yocum Rd	Calipatria	6
Biofuels	32411006	Petroleum Refineries	Western Refining Inc	345 W Aten Rd	Imperial	10
Food processing	31211101	Soft Drink Manufacturing	Coca-Cola Bottling Co	126 S 3rd St	El Centro	32
Food processing	31211101	Soft Drink Manufacturing	Ds Waters	763 W State St	El Centro	10
Food processing	31131403	Cane Sugar Manufacturing	Holly Sugar Corp	395 W Keystone Rd	Brawley	85
Food processing	31181102	Retail Bakeries	Holsum Bakery	325 E Ross Ave	El Centro	5
Food processing	31111903	Other Animal Food Manufacturing	Imperial Pre-Mix Co	330 W Aten Rd	Imperial	3
Food processing	31111903	Other Animal Food Manufacturing	Imperial Pre-Mix Co	422 E Barioni Blvd	Imperial	12
Food processing	31181102	Retail Bakeries	Jolene Dessert	837 Oleander Ave	El Centro	6
Food processing	31181102	Retail Bakeries	Las Conchitas Bakery	643 S 4th St	El Centro	10
Food processing	31181202	Commercial Bakeries	Oroweat Baking Co	449 W Aten Rd	Imperial	3

CLUSTER	NAICS	DESCRIPTION	ESTABLISHMENT	ADDRESS	CITY	EMPLOY- MENT
Food processing	31181102	Retail Bakeries	Panaderia Karen	210 E Cole Blvd # 1	Calexico	6
Food processing	31181102	Retail Bakeries	Panaderia Royal	1103 Main St	Brawley	6
Food processing	31211101	Soft Drink Manufacturing	Pepsi Bottling Group	602 H St	Brawley	20
Food processing	31211302	Ice Manufacturing	Reddy Ice	462 N 8th St	Brawley	10
Food processing	31131403	Cane Sugar Manufacturing	Spreckels Sugar Co Inc	395 W Keystone Rd	Brawley	350
Food processing	31111903	Other Animal Food Manufacturing	Westway Feed Products LLC	515 N 3rd St	El Centro	5
Food processing	31111905	Other Animal Food Manufacturing	Wilbur-Ellis Feed	45 Danenberg Dr	El Centro	34
Water Flow Tech	33331816	Other Commercial & Service Industry Machinery Mfg	A M Copier Svc	301 Wake Ave # 313	El Centro	5
Water Flow Tech	33311103	Farm Machinery & Equipment Manufacturing	Dowden Welding	1668 Main St	Brawley	3
Water Flow Tech	33331872	Other Commercial & Service Industry Machinery Mfg	Mandy's Tire Shop	565 Highway 111	Calexico	1
Water Flow Tech	33311111	Farm Machinery & Equipment Manufacturing	RDO Water	1620 Jones St	Brawley	25
Water Flow Tech	33311111	Farm Machinery & Equipment Manufacturing	Water Gate Co	6131 E Heil Ave	El Centro	6
Water Supply	22131003	Water Supply & Irrigation Systems	Bard Water District	1473 Ross Rd	Winterhaven	15
Water Supply	22131003	Water Supply & Irrigation Systems	Brawley Water Billing & Svc	400 Main St # 1	Brawley	3
Water Supply	22131003	Water Supply & Irrigation Systems	Calexico Water Dept	608 Heber Ave	Calexico	10
Water Supply	22131003	Water Supply & Irrigation Systems	Coyote Valley Mutual Water Co	1161 N Imperial Hwy	Ocotillo	8
Water Supply	22131003	Water Supply & Irrigation Systems	El Centro Water Dept	1275 W Main St	El Centro	8
Water Supply	22131003	Water Supply & Irrigation Systems	Golden State Water Co	631 S Sorenson Ave	Calipatria	5
Water Supply	22131003	Water Supply & Irrigation Systems	Holtville Water Dept	121 W 5th St	Holtville	3
Water Supply	22131003	Water Supply & Irrigation Systems	Metropolitan Water District	107 S 5th St	El Centro	57
Water Supply	22131006	Water Supply & Irrigation Systems	Robert Melendrez Backhoe Svc	197 E Ross Rd	El Centro	3
Water Supply	22131003	Water Supply & Irrigation Systems	Seeley County Water District	1898 W Main St	Seeley	7
Utilities	22111804	Other Electric Power Generation	Brawley Power Plant	475 Dogwood Rd	Brawley	1
Utilities	22111804	Other Electric Power Generation	C E Turbo L L C	7001 Gentry Rd	Calipatria	1
Utilities	22111804	Other Electric Power Generation	Cal Energy	7030 Gentry Rd	Calipatria	210
Utilities	22111804	Other Electric Power Generation	Cal Energy Generation	551 W Main St # 1	Brawley	2
Utilities	22111804	Other Electric Power Generation	Centinela Solar Energy LLC	319 Brockman Rd	Calexico	200
Utilities	22111804	Other Electric Power Generation	Del Ranch Power Plant	7029 Gentry Rd	Calipatria	1
Utilities	22111804	Other Electric Power Generation	Double Weir Power Plant	Highway 111	Calexico	1

CLUSTER	NAICS	DESCRIPTION	ESTABLISHMENT	ADDRESS	CITY	EMPLOY- MENT
Utilities	22111804	Other Electric Power Generation	Drop 1 Power Plant	Interstate 8	Imperial	1
Utilities	22111804	Other Electric Power Generation	Drop 4 Power Plant	3675 E US Highway 98	Holtville	1
Utilities	22111804	Other Electric Power Generation	Drop 5 Power Plant	CA Hwy 7 & CA Hwy 98	Imperial	1
Utilities	22111804	Other Electric Power Generation	East Highline Power Plant	2898 E US Highway 98	Holtville	1
Utilities	22112202	Electric Power Distribution	GEO East Mesa LP	3300 E Evan Hewes Hwy	Holtville	52
Utilities	22111804	Other Electric Power Generation	Heber Geothermal Power Plant	825 Pitzer Rd	Heber	1
Utilities	22111804	Other Electric Power Generation	Heber Solar Energy	855b Dogwood Rd	Heber	1
Utilities	22112202	Electric Power Distribution	Imperial Irrigation District	135 S Plaza St	Brawley	13
Utilities	22112202	Electric Power Distribution	Imperial Irrigation District	1285 Broadway Ave	El Centro	50
Utilities	22111804	Other Electric Power Generation	Imperial Irrigation District	485 W Villa Rd	El Centro	1
Utilities	22111804	Other Electric Power Generation	Imperial Solar Energy Ctr	147 Pulliam Rd	Calexico	1
Utilities	22111804	Other Electric Power Generation	Imperial Solar Energy Ctr	Pulliam Rd & Anza Rd	El Centro	1
Utilities	22111804	Other Electric Power Generation	John L Featherstone Plant	409 W McDonald St	Calipatria	1
Utilities	22111804	Other Electric Power Generation	Niland Gas Turbine Plant	402 E Beal Rd	Niland	1
Utilities	22111804	Other Electric Power Generation	Ocotillo Express LLC	1377 W Imperial Hwy	Ocotillo	1
Utilities	22111804	Other Electric Power Generation	Ormesa II	3300 E Evan Hewes Hwy	Holtville	1
Utilities	22111804	Other Electric Power Generation	Pilot Knob Power Plant	350 Algodones Rd	Winterhaven	1
Utilities	22111804	Other Electric Power Generation	Rockwood Power Plant	4195 Dogwood Rd	Brawley	1
Utilities	22111804	Other Electric Power Generation	Salton Sea Power Gen Co Unit 1	6920 Lack Rd	Calipatria	1
Utilities	22111804	Other Electric Power Generation	Second Imperial Geothermal	855 Dogwood Rd	Heber	1
Utilities	22121002	Natural Gas Distribution	Sempra Energy	627 Joshua Tree St	Imperial	11
Utilities	22111804	Other Electric Power Generation	Siphon Drop Power Plant		Winterhaven	1
Utilities	22111804	Other Electric Power Generation	Sun Peak Solar LLC	440 East Beal Rd	Niland	1
Utilities	22121002	Natural Gas Distribution	USA Gas	201 W Main St	Brawley	4
Utilities	22111804	Other Electric Power Generation	Vulcan-Bn Geothermal Power	7001 Gentry Rd	Calipatria	1

Source: Info USA

Notes: For medical services and agriculture, the businesses in the table comprise only the largest employers in Imperial County.