

## Advanced Materials and Diversified Manufacturing (AMDM) Industry Cluster

The AMDM cluster includes most durable goods industries. Notable exclusions include food production, tobacco, lumber, paper, pharmaceuticals and manufacturers that produce materials for the building industries, such as roofing materials and cement. These excluded industries can be found within other industry clusters where there exists a significant supply chain or dependence among related industries. This cluster is further refined into five sub-clusters for closer evaluation.

### High Priority Occupations in AMDM

(Highlighted occupations are new additions in 2007)

SOC Code	Occupation	Educational Attainment <sup>1/</sup>	Industry Cluster Wage, 2005	Job Openings		All Industries				Source <sup>2/</sup>
				Industry Cluster	All Industries	Percent Employment Change, 2002-04	Percent Change in Wages, 2003-05	Unempl. Rate, 2004-06	Completers as Percent of Total Openings	
11-1021	General & Operations Managers	BD+	\$ 112,748	212	2797	-0.7%	12.1%	2.3%	92.3%	Criteria Met
11-3051	Industrial Production Managers	BD	\$ 84,839	84	161	-8.1%	22.7%	3.5%	126.7%	Criteria Met
17-2112	Industrial Engineers	BD	\$ 62,669	97	206	-6.9%	11.0%	0.7%	65.0%	Criteria Met
17-2141	Mechanical Engineers	BD	\$ 62,535	111	245	-8.9%	6.0%	3.3%	252.2%	Criteria Met
17-3013	Mechanical Drafters	PS VOC	\$ 44,370	52	121	-2.2%	7.6%	4.7%	261.2%	2006 Petition
17-3023	Electrical & Electronic Engineering Technicians	AD	\$ 41,722	77	175	-12.3%	5.4%	3.1%	272.6%	CWIA added
17-3026	Industrial Engineering Technicians	AD	\$ 45,278	31	62	-5.5%	-6.1%	3.1%	462.9%	2006 Petition
41-4012	Sales Representatives	MT OJT	\$ 61,437	186	2088	-0.4%	9.1%	3.0%	16.1%	Criteria Met
43-4051	Customer Service Representatives	MT OJT	\$ 33,879	146	2396	-2.4%	2.9%	7.7%	4.9%	Criteria Met
43-5061	Production, Planning & Expediting Clerks	ST OJT	\$ 39,413	129	337	-3.6%	2.8%	6.6%	6.2%	Criteria Met
43-5071	Shipping, Receiving & Traffic Clerks	ST OJT	\$ 29,471	131	601	-1.2%	6.6%	6.1%	7.8%	Criteria Met
49-9041	Industrial Machinery Mechanics	LT OJT	\$ 38,492	50	166	0.0%	3.3%	1.0%	4.8%	2006 Petition
49-9042	Maintenance & Repair Workers, General	LT OJT	\$ 37,325	241	1491	-2.4%	3.5%	2.8%	16.2%	2006 Petition & Criteria Met
49-9043	Maintenance Workers, Machinery	LT OJT	\$ 33,879	41	91	-4.9%	1.7%	21.8%	4.4%	2006 Petition
51-1011	Supervisors - Production & Operating Workers	WK EXP	\$ 51,612	322	665	-4.7%	7.5%	3.7%	1.1%	Criteria Met
51-2092	Team Assemblers	MT OJT	\$ 26,438	683	1152	-3.7%	6.4%	8.3%	0.4%	CWIA added
51-4011	Computer-Controlled Machine Tool Operators, Metal & Plastic	LT OJT	\$ 31,953	96	112	-9.1%	2.1%	5.1%	5.4%	Criteria Met
51-4012	Numerical Tool & Process Control Programmers	LT OJT	\$ 45,709	10	12	-3.3%	12.6%	5.1%	58.3%	2006 Petition
51-4041	Machinists	LT OJT	\$ 34,685	297	396	-6.2%	4.5%	3.1%	3.0%	Criteria Met
51-4072	Molding & Casting Machine Oprs, Metal & Plastic	MT OJT	\$ 27,568	106	127	-8.9%	0.8%	2.7%	4.7%	Criteria Met
51-4111	Tool & Die Makers	LT OJT	\$ 39,179	81	91	-8.1%	-1.5%	2.6%	34.1%	CWIA added
51-4121	Welders, Cutters, Solderers & Brazers	PS VOC	\$ 32,973	243	474	-3.5%	6.7%	3.9%	40.9%	WkfChoices & Criteria Met
51-5023	Printing Machine Operators	MT OJT	\$ 33,761	157	274	-7.1%	4.7%	3.9%	11.3%	Criteria Met
51-9061	Inspectors, Testers, Sorters, Samplers & Weighers	MT OJT	\$ 31,609	158	307	-6.3%	6.4%	6.2%	1.0%	Criteria Met
53-7051	Industrial Truck & Tractor Operators	ST OJT	\$ 29,763	171	978	2.4%	0.7%	7.2%	DNA	Criteria Met
53-7062	Laborers & Freight, Stock & Material Movers	ST OJT	\$ 26,272	294	3076	1.0%	2.2%	7.7%	DNA	CWIA added

DNA = Data Not Available

## Printing Industry Sub-Cluster

The Printing sub-cluster includes all manufacturers within the Printing and Related Support Activities industry as defined by the North American Industry Classification System (NAICS) coding structure. Also included are manufacturers of printing machinery and equipment, as their products are critical to the products of the printing industries. This sub-cluster complements the Lumber, Wood and Paper cluster, which does not include industries that add value to the raw material paper.

### High Priority Occupations in Printing

(Highlighted occupations are new additions in 2007)

SOC Code	Occupation	Educational Attainment <sup>1/</sup>	Industry Cluster Wage, 2005	Job Openings		All Industries			
				Industry Cluster	All Industries	Percent Employment Change, 2002-04	Percent Change in Wages, 2003-05	Unempl. Rate, 2004-06	Completers as Percent of Total Openings
11-1021	General & Operations Managers	BD+	\$81,458	28	2,717	-3.6%	12.1%	1.4%	96.1%
27-1024	Graphic Designers	BD	\$34,663	19	240	2.6%	-0.1%	3.0%	720.0%
41-4012	Sales Representatives	MT OJT	\$70,430	47	2,102	-7.1%	9.1%	4.0%	19.0%
43-4051	Customer Service Representatives	MT OJT	\$35,039	38	2,289	-4.1%	2.9%	7.6%	15.0%
43-9031	Desktop Publishers	PS VOC	\$42,340	34	65	-22.0%	21.4%	0.0%	7.7%
51-1011	Supervisors - Production & Operating Workers	WK EXP	\$53,669	30	750	-9.8%	7.5%	3.4%	1.1%
51-5021	Job Printers	LT OJT	\$29,690	38	77	18.1%	-4.1%	1.2%	10.4%
51-5022	Prepress Technicians & Workers	LT OJT	\$31,760	44	71	-18.4%	0.0%	9.2%	18.3%
51-5023	Printing Machine Operators	MT OJT	\$34,340	114	250	6.2%	4.7%	6.1%	10.0%

## Agriculture and Food Production (AFP) Industry Cluster

The AFP cluster begins with the growing of food crops, including grains and livestock, and ends with the wholesale and retail distribution of these products. The cluster also includes support industries such as refrigerated warehousing and fertilizer manufacturing as well as public agencies that oversee agricultural programs. A Food Processing sub-cluster is defined to address the unique workforce and economic development needs of industries that use raw agricultural products.

### High Priority Occupations in AFP

(Highlighted occupations are new additions in 2007)

SOC Code	Occupation	Educational Attainment <sup>1/</sup>	Industry Cluster Wage, 2005	Job Openings		All Industries				Source <sup>2/</sup>
				Industry Cluster	All Industries	Percent Employment Change, 2002-04	Percent Change in Wages, 2003-05	Unempl. Rate, 2004-06	Completers as Percent of Total Openings	
11-1021	General & Operations Managers	BD+	\$82,574	158	2,797	-0.7%	11.1%	2.3%	92.3%	Criteria Met
19-1021	Biochemists & Biophysicists	PhD	DNA	0	75	-2.1%	20.9%	0.0%	1,153.3%	DeptAg added
19-2041	Environmental Scientists & Specialists	BD	\$82,250	0	32	-1.4%	12.6%	0.0%	862.5%	DeptAg added
27-3031	Consumer Information Specialists	BD	\$50,928	0	114	11.0%	22.1%	0.0%	1,146.5%	DeptAg added
29-1131	Veterinarians, Large Animals	PROF	\$84,820	27	71	-3.3%	4.6%	0.0%	222.5%	DeptAg added
29-2056	Veterinary Technologists & Technicians	AD	\$26,110	49	106	7.2%	18.4%	0.8%	108.5%	DeptAg added
31-9096	Veterinary Assistants	ST OJT	\$21,650	22	69	5.9%	14.9%	2.7%	137.7%	DeptAg added
41-4011	Sales Representatives, Scientific & Technical	MT OJT	\$58,036	8	557	-2.5%	12.4%	3.0%	6.1%	DeptAg added
41-4012	Sales Representatives	MT OJT	\$51,252	246	2,088	-0.4%	17.0%	3.0%	16.1%	Criteria Met
45-2011	Agricultural Inspectors	WK EXP	\$29,418	2	4	-4.3%	35.9%	0.0%	DNA	DeptAg added
51-3021	Butchers & Meat Cutters	LT OJT	\$27,146	98	107	1.5%	2.3%	3.5%	0.9%	Criteria Met
51-3092	Food Batchmakers	ST OJT	\$28,032	104	131	-3.9%	18.6%	13.7%	0.8%	Criteria Met
51-9111	Packaging & Filling Machine Operators/Tenders	ST OJT	\$27,995	97	197	-5.4%	4.8%	3.1%	1.0%	Criteria Met
53-3031	Driver/Sales Workers	ST OJT	\$33,067	102	426	-5.7%	13.2%	3.0%	0.7%	Criteria Met
53-3032	Truck Drivers, Heavy & Tractor-Trailer	MT OJT	\$36,046	200	2,136	-6.1%	-2.1%	3.0%	29.2%	CWIA added
53-3033	Truck Drivers, Light or Delivery Services	ST OJT	\$26,436	115	1,123	3.0%	0.7%	3.0%	37.9%	CWIA added
53-7051	Industrial Truck & Tractor Operators	ST OJT	\$29,360	134	978	2.4%	3.3%	7.2%	DNA	Criteria Met

DNA = Data Not Available

## Building and Construction (BC) Industry Cluster

The BC cluster includes industries directly involved in the construction of housing, roadways or other physical structures. Industries such as HVAC Equipment Manufacturing, whose products are exclusively used in the construction of these structures, were also included given their significance to the construction industries.

### High Priority Occupations in BC

(Highlighted occupations are new additions in 2007)

SOC Code	Occupation	Educational Attainment <sup>1/</sup>	Industry Cluster Wage, 2005	Job Openings		All Industries				Source <sup>2/</sup>
				Industry Cluster	All Industries	Percent Employment Change, 2002-04	Percent Change in Wages, 2003-05	Unempl. Rate, 2004-06	Completers as Percent of Total Openings	
11-1011	Chief Executives	BD+	\$137,722	139	940	-2.4%	4.8%	2.0%	108.3%	Criteria Met
11-1021	General & Operations Managers	BD+	\$95,454	225	2,797	-0.7%	11.1%	2.3%	92.3%	Criteria Met
11-9021	Construction Managers	BD	\$74,275	118	291	5.1%	6.2%	3.1%	93.8%	Criteria Met
13-1051	Cost Estimators	BD	\$54,227	146	250	-1.8%	1.8%	0.0%	5.6%	Criteria Met
41-4012	Sales Representatives	MT OJT	\$57,985	212	2,088	-0.4%	17.0%	3.0%	16.1%	Criteria Met
43-3031	Bookkeeping, Accounting & Auditing Clerks	MT OJT	\$30,525	102	1,430	0.8%	7.3%	2.8%	123.8%	Criteria Met
47-1011	Supervisors - Construction Trades & Extraction Workers	WK EXP	\$57,563	271	453	1.5%	12.2%	3.6%	1.5%	Criteria Met
47-2031	Carpenters	LT OJT	\$37,655	716	1,156	0.5%	0.6%	7.5%	18.6%	Criteria Met
47-2061	Construction Laborers	MT OJT	\$30,486	245	349	0.1%	2.7%	13.1%	DNA	CWIA added
47-2073	Operating Engineers	MT OJT	\$44,111	242	546	-2.5%	0.8%	7.1%	4.2%	Criteria Met
47-2111	Electricians	LT OJT	\$52,943	436	640	-5.6%	8.0%	4.9%	120.8%	Criteria Met
47-2141	Painters, Construction & Maintenance	MT OJT	\$34,756	124	288	-4.0%	3.3%	3.7%	1.0%	Criteria Met
47-2152	Plumbers, Pipefitters & Steamfitters	LT OJT	\$48,555	421	586	-5.1%	11.0%	4.1%	16.0%	Criteria Met
47-2181	Roofers	MT OJT	\$33,075	165	208	-8.0%	5.2%	18.2%	0.5%	Criteria Met
47-2211	Sheet Metal Workers	MT OJT	\$45,202	152	222	-3.4%	14.4%	6.3%	4.1%	Criteria Met
47-2221	Structural Iron & Steel Workers	LT OJT	\$51,564	83	91	0.0%	7.1%	4.1%	1.1%	Criteria Met
49-9021	Heating, A/C & Refrigeration Mechanics & Installers	LT OJT	\$38,961	129	293	-2.3%	3.6%	6.0%	138.9%	DEP added & Criteria Met
51-2092	Team Assemblers	MT OJT	\$27,133	122	1,152	-3.7%	4.3%	8.3%	0.4%	Criteria Met
51-4121	Welders, Cutters, Solderers & Brazers	PS VOC	\$33,095	107	474	-3.5%	4.6%	3.9%	40.9%	Criteria Met
53-7062	Laborers & Freight, Stock & Material Movers	ST OJT	\$26,283	181	3,076	1.0%	0.0%	7.7%	DNA	CWIA added

DNA = Data Not Available

## Business and Financial Services (BFS) Industry Cluster

The BFS cluster includes a wide range of services available to today's businesses from business support services to waste management. Included in this cluster are banking and credit institutions, insurance carriers and brokers, personal and professional business services, advertising and marketing agencies, employment agents and agencies as well as a varied assortment of business support services.

### High Priority Occupations in BFS

(Highlighted occupations are new additions in 2007)

SOC Code	Occupation	Educational Attainment <sup>1/</sup>	Industry Cluster Wage, 2005	Job Openings		All Industries				Source <sup>2/</sup>
				Industry Cluster	All Industries	Percent Employment Change, 2002-04	Percent Change in Wages, 2003-05	Unempl. Rate, 2004-06	Completers as Percent of Total Openings	
11-1021	General & Operations Managers	BD+	\$107,738	529	2,797	-0.7%	11.1%	2.3%	92.3%	Criteria Met
11-2022	Sales Managers	BD+	\$95,342	138	500	-2.6%	12.6%	2.9%	70.8%	Criteria Met
11-3011	Administrative Services Managers	BD+	\$73,653	138	468	2.8%	15.7%	2.8%	78.6%	Criteria Met
11-3021	IT Managers – Programming, Network & DB	BD+	\$100,583	117	456	0.8%	20.4%	3.5%	439.9%	CWIA added
11-3031	Financial Managers	BD+	\$104,988	359	800	-0.8%	33.4%	2.0%	216.3%	Criteria Met
11-9141	Property, Real Estate & Community Association Managers	BD	\$61,861	81	174	10.9%	11.6%	1.8%	104.0%	Criteria Met
13-1031	Claims Adjusters, Examiners & Investigators	LT OJT	\$45,242	148	268	-2.4%	4.8%	2.1%	18.7%	WkfChoices & Criteria Met
13-1071	Employment, Recruitment & Placement Specialists	BD	\$52,434	78	231	2.2%	2.7%	5.5%	76.2%	Criteria Met
13-1073	Training & Development Specialists	BD	\$48,773	93	271	4.4%	3.7%	5.5%	74.2%	Criteria Met
13-1111	Management Analysts	BD+	\$84,624	185	536	-3.8%	12.8%	0.0%	4.9%	Criteria Met
13-2011	Accountants & Auditors	BD	\$64,902	495	1,099	3.3%	18.0%	2.5%	182.3%	Criteria Met
13-2051	Financial Analysts	BD	\$63,650	102	190	3.2%	6.8%	2.4%	192.6%	Criteria Met
13-2052	Personal Financial Advisors	BD	\$93,471	134	196	-4.7%	21.3%	0.6%	173.0%	Criteria Met
13-2072	Loan Officers	BD	\$55,441	126	131	1.7%	13.5%	5.8%	161.8%	Criteria Met
15-1021	Computer Programmers	BD	\$61,715	116	513	-1.8%	7.7%	5.6%	194.3%	Criteria Met
15-1031	Computer Software Engineers, Applications	BD	\$76,823	147	568	7.2%	19.1%	1.9%	138.2%	Criteria Met
15-1041	Computer Support Specialists	AD	\$41,761	122	586	0.1%	1.6%	2.5%	114.5%	Criteria Met
15-1051	Computer Systems Analysts	BD	\$64,998	140	610	0.6%	4.8%	2.7%	204.6%	Criteria Met
15-1071	Network & Computer Systems Administrators	BD	\$62,916	97	399	0.3%	14.6%	1.2%	364.2%	CWIA added
15-1081	Network Systems & Data Communications Analysts	BD	\$63,259	83	328	-8.1%	9.8%	5.8%	163.4%	Criteria Met
23-2011	Paralegals & Legal Assistants	AD	\$39,585	228	274	3.3%	4.4%	0.0%	192.3%	Criteria Met
41-3021	Insurance Sales Agents	BD	\$53,397	292	491	-3.9%	-1.1%	0.9%	5.1%	CWIA added
41-3031	Securities, Commodities & Financial Services Sales Agents	BD	\$76,648	231	256	-1.8%	42.6%	4.3%	21.5%	WkfChoices & Criteria Met
41-3041	Travel Agents	PS VOC	\$30,365	82	93	-3.6%	3.6%	1.7%	30.1%	Criteria Met
41-9022	Real Estate Sales Agents <sup>1</sup>	PS VOC	\$45,161	81	198	-1.3%	19.1%	2.6%	20.2%	Criteria Met
43-1011	Supervisors - Office & Administrative Support Workers	WK EXP	\$45,132	447	1,560	0.5%	13.4%	3.5%	108.9%	Criteria Met

43-3011	Bill & Account Collectors	ST OJT	\$26,337	347	685	-2.6%	5.4%	1.4%	5.0%	CWIA added
43-3031	Bookkeeping, Accounting & Auditing Clerks	MT OJT	\$30,136	348	1,430	0.8%	7.3%	2.8%	123.8%	Criteria Met
43-4051	Customer Service Representatives	MT OJT	\$27,273	1,072	2,396	-2.4%	3.4%	7.7%	4.9%	WkfChoices & Criteria Met
43-4171	Receptionists & Information Clerks	ST OJT	\$21,345	381	1,941	2.0%	5.2%	1.8%	5.5%	WkfChoices
43-6011	Executive Secretaries & Administrative Assistants	MT OJT	\$35,988	469	1,864	0.8%	7.8%	3.1%	30.3%	Criteria Met
43-6012	Legal Secretaries	PS VOC	\$36,954	414	438	3.4%	7.6%	3.1%	32.9%	Criteria Met
43-6014	Secretaries	MT OJT	\$25,888	461	2,296	0.9%	9.7%	3.1%	20.8%	WkfChoices
43-9061	Office Clerks	ST OJT	\$22,658	808	3,576	0.7%	7.3%	5.7%	5.6%	WkfChoices
49-9042	Maintenance & Repair Workers, General	LT OJT	\$29,968	239	1,491	-2.4%	3.9%	2.8%	16.2%	Criteria Met

i - For those obtaining a real estate degree, not continuing education credits.

## Education (ED) Industry Cluster

The ED cluster provides a full view of educational institutions in the commonwealth, encompassing elementary schools through universities as well as technical schools and junior colleges. Museums and historical sites are included as they provide a rich source of educational material for commonwealth residents. Support services such as school bus transportation and child day care services are included given their vital roles in facilitating or beginning one's educational pursuits and/or providing a valuable service to working parents. Finally, public agencies that oversee educational programs are also included.

### High Priority Occupations in ED

(Highlighted occupations are new additions in 2007)

SOC Code	Occupation	Educational Attainment <sup>1/</sup>	Industry Cluster Wage, 2005	Job Openings		All Industries				Source <sup>2/</sup>
				Industry Cluster	All Industries	Percent Employment Change, 2002-04	Percent Change in Wages, 2003-05	Unempl. Rate, 2004-06	Completers as Percent of Total Openings	
11-9032	Education Administrators, Elementary & Secondary School	BD+	\$78,118	294	311	3.3%	2.7%	4.1%	200.0%	Criteria Met
11-9033	Education Administrators, Postsecondary	BD+	\$76,174	248	256	2.2%	5.6%	4.1%	182.0%	Criteria Met
19-1042	Medical Scientists	PhD	\$61,710	109	161	2.8%	9.2%	2.1%	333.5%	CWIA added
21-1012	Educational, Vocational & School Counselors	MD	\$49,993	264	389	5.1%	4.0%	4.8%	258.4%	Criteria Met
25-1011	Business Teachers, Postsecondary	PhD	\$67,479	155	156	2.0%	13.2%	1.4%	37.8%	Criteria Met
25-1022	Mathematical Science Teachers, Postsecondary	PhD	\$64,486	102	103	2.0%	5.1%	1.4%	30.1%	Criteria Met
25-1032	Engineering Teachers, Postsecondary	PhD	\$79,303	113	114	2.5%	-1.5%	1.4%	24.6%	CWIA added
25-1042	Biological Science Teachers, Postsecondary	PhD	\$65,869	75	75	2.7%	4.2%	1.4%	29.3%	Criteria Met
25-1071	Health Specialties Teachers, Postsecondary	PhD	\$78,989	86	133	2.1%	37.8%	1.4%	24.8%	Criteria Met
25-1072	Nursing Instructors & Teachers, Postsecondary	MD (MSN)*	\$57,602	54	66	1.3%	7.3%	1.4%	25.8%	Demand
25-1081	Education Teachers, Postsecondary	PhD	\$56,704	106	107	2.5%	-0.4%	1.4%	47.7%	CWIA added
25-1194	Vocational Education Teachers, Postsecondary	WK EXP	\$40,018	122	157	-3.2%	4.1%	1.4%	112.1%	Criteria Met
25-2012	Kindergarten Teachers	BD	\$46,777	77	80	2.6%	9.6%	1.9%	710.0%	CWIA added
25-2021	Elementary School Teachers	BD	\$48,579	1,642	1,687	3.2%	0.4%	1.8%	343.6%	CWIA added
25-2022	Middle School Teachers – Math, Science and Foreign Language	BD	\$50,180	675	678	3.3%	0.8%	1.8%	95.1%	Criteria Met
25-2031	Secondary School Teachers – Math, Science and Foreign Language	BD	\$48,940	1,847	1,856	3.3%	0.8%	1.3%	125.8%	Criteria Met
25-2032	Vocational Education Teachers, Secondary School	BD	\$51,987	192	194	3.2%	4.3%	1.3%	30.4%	Criteria Met
25-2041	Special Education Teachers, Pre-, Kindergarten & Elem.	BD	\$51,387	207	221	3.7%	DNA	1.9%	341.6%	CWIA added
25-2042	Special Education Teachers, Middle School	BD	\$50,011	85	85	3.7%	2.4%	1.9%	327.1%	CWIA added
25-2043	Special Education Teachers, Secondary School	BD	\$52,190	156	160	3.8%	3.9%	1.9%	300.0%	Criteria Met
25-3011	ESL Teachers	BD	\$38,303	35	84	14.7%	16.9%	7.3%	1,019.0%	Demand
25-4021	Librarians	MD	\$50,437	206	275	0.6%	4.1%	3.1%	156.7%	Criteria Met
25-4031	Library Technicians	ST OJT	\$26,123	116	226	-0.6%	2.2%	0.0%	3.1%	CWIA added
25-9041	Teacher Assistants	AD*	\$20,291	1,213	1,404	2.7%	5.8%	4.7%	24.6%	Demand
39-9011	Child Care Workers	AD*	\$16,887	457	1,153	-14.6%	2.3%	8.9%	20.0%	Demand
43-6011	Executive Secretaries & Administrative Assistants	MT OJT	\$35,035	373	1,864	0.8%	7.8%	3.1%	30.3%	Criteria Met
43-6014	Secretaries	MT OJT	\$27,152	438	2,296	0.9%	9.7%	3.1%	20.8%	Criteria Met

DNA = Data Not Available

## Information and Communication Services (ICS) Industry Cluster

The ICS cluster includes businesses engaged in the production and dissemination of information such as motion pictures and newspapers. Also included are information support industries, e.g. computer systems design and Internet service providers. Communication equipment manufacturers are included given their ties to the publication industries. Technical consulting rounds out the cluster.

### High Priority Occupations in ICS

(Highlighted occupations are new additions in 2007)

SOC Code	Occupation	Educational Attainment <sup>1/</sup>	Industry Cluster Wage, 2005	Job Openings		All Industries				Source <sup>2/</sup>
				Industry Cluster	All Industries	Percent Employment Change, 2002-04	Percent Change in Wages, 2003-05	Unempl. Rate, 2004-06	Completers as Percent of Total Openings	
11-1021	General & Operations Managers	BD+	\$118,231	132	2,797	-0.7%	11.1%	2.3%	92.3%	Criteria Met
11-3021	IT Managers – Programming, Network & DB	BD+	\$112,483	92	456	0.8%	20.4%	3.5%	439.9%	CWIA added
13-1111	Management Analysts	BD+	\$64,995	97	536	-3.8%	12.8%	0.0%	4.9%	Criteria Met
15-1021	Computer Programmers	BD	\$60,669	193	513	-1.8%	7.7%	5.6%	194.3%	Criteria Met
15-1031	Computer Software Engineers, Applications	BD	\$80,412	301	568	7.2%	19.1%	1.9%	138.2%	Criteria Met
15-1032	Computer Software Engineers, Systems Software	BD	\$78,797	174	335	-1.3%	9.5%	1.9%	280.0%	Criteria Met
15-1041	Computer Support Specialists	AD	\$41,700	164	586	0.1%	1.6%	2.5%	114.5%	Criteria Met
15-1051	Computer Systems Analysts	BD	\$65,183	167	610	0.6%	4.8%	2.7%	204.6%	Criteria Met
15-1071	Network & Computer Systems Administrators	BD	\$63,614	116	399	0.3%	14.6%	1.2%	364.2%	CWIA added
15-1081	Network Systems & Data Communications Analysts	BD	\$65,712	101	328	-8.1%	9.8%	5.8%	163.4%	Criteria Met
17-2081	Environmental Engineers	BD	\$69,665	18	57	-2.9%	16.8%	0.0%	24.6%	DEP added
41-4012	Sales Representatives	MT OJT	\$51,893	84	2,088	-0.4%	17.0%	3.0%	16.1%	Criteria Met
43-4051	Customer Service Representatives	MT OJT	\$30,336	218	2,396	-2.4%	3.4%	7.7%	4.9%	Criteria Met
43-6011	Executive Secretaries & Administrative Assistants	MT OJT	\$38,431	94	1,864	0.8%	7.8%	3.1%	30.3%	Criteria Met
43-9061	Office Clerks	ST OJT	\$28,175	172	3,576	0.7%	7.3%	5.7%	5.6%	Criteria Met
49-2022	Telecommunications Equipment Installers & Repairers	PS VOC	\$50,869	77	121	-6.6%	2.0%	4.4%	2.5%	Criteria Met
49-9052	Telecommunications Line Installers & Repairers	LT OJT	\$48,045	153	225	-11.9%	5.2%	9.7%	1.3%	CWIA added



## Bio-Medical Industry Sub-Cluster

The Bio-Medical sub-cluster includes industries that are involved in the development and use of technology to enhance life from a health perspective, such as research laboratories, pharmaceutical manufacturing, surgical and medical equipment manufacturing, and imaging centers. This sub-cluster largely represents those industries that employ advanced technology and serve as a foundation for enhanced medical services.

### High Priority Occupations in Bio-Medical

(Highlighted occupations are new additions in 2007)

SOC Code	Occupation	Educational Attainment <sup>1/</sup>	Industry Cluster Wage, 2005	Job Openings		All Industries				Source <sup>2/</sup>
				Industry Cluster	All Industries	Percent Employment Change, 2002-04	Percent Change in Wages, 2003-05	Unempl. Rate, 2004-06	Completers as Percent of Total Openings	
11-1021	General & Operations Managers	BD+	\$131,274	41	2,797	-0.7%	11.1%	2.3%	92.3%	Criteria Met
15-1011	Computer & Information Scientists, Research	PhD	\$98,387	4	15	-9.3%	24.4%	2.7%	340.0%	DCED added
15-2041	Statisticians	MD	\$69,505	6	21	0.0%	0.0%	DNA	1,742.9%	DCED added
17-2031	Biomedical Engineers	BD	\$80,516	5	17	2.3%	35.6%	DNA	76.5%	DCED added
17-2161	Nuclear Engineers	BD	\$80,920	35	77	-0.7%	1.9%	DNA	11.7%	DCED added
19-1021	Biochemists & Biophysicists	PhD	\$73,931	62	75	-2.1%	20.9%	0.0%	1,153.3%	DCED added
19-1042	Medical Scientists	PhD	\$70,083	38	161	2.8%	9.2%	2.1%	333.5%	DCED added
19-2031	Chemists	BD	\$61,637	56	137	-7.0%	16.4%	1.0%	554.7%	DCED added
19-4021	Biological Technicians	AD	\$34,544	76	91	-0.4%	-8.4%	DNA	79.1%	DCED added
29-2011	Medical & Clinical Laboratory Technologists	BD	\$44,671	40	229	1.4%	12.4%	4.5%	38.4%	DCED added
29-2012	Medical & Clinical Laboratory Technicians	AD	\$30,970	47	361	3.2%	4.2%	4.5%	45.2%	DCED added & Criteria Met
29-2034	Radiologic Technologists & Technicians	AD	\$48,677	28	221	1.5%	13.7%	0.7%	215.8%	DCED added
41-4011	Sales Representatives, Technical & Scientific Products	MT OJT	\$66,661	61	557	-2.5%	12.4%	3.0%	6.1%	Criteria Met
43-4051	Customer Service Representatives	MT OJT	\$32,958	29	2,396	-2.4%	3.4%	7.7%	4.9%	Criteria Met
43-6011	Executive Secretaries & Administrative Assistants	MT OJT	\$42,823	51	1,864	0.8%	7.8%	3.1%	30.3%	Criteria Met
43-6014	Secretaries	MT OJT	\$32,758	44	2,296	0.9%	9.7%	3.1%	20.8%	Criteria Met
51-1011	Supervisors - Production & Operating Workers	WK EXP	\$58,019	26	665	-4.7%	10.9%	3.7%	1.1%	Criteria Met
51-9081	Dental Laboratory Technicians	LT OJT	\$31,610	29	41	-9.8%	7.0%	2.5%	12.2%	DCED added
51-9082	Medical Appliance Technicians	LT OJT	\$28,230	25	30	-9.3%	16.3%	2.5%	66.7%	DCED added

DNA = Data Not Available

## Health Care Industry Sub-Cluster

The Health Care sub-cluster is comprised of industries that provide for the health and well-being of Pennsylvania residents. Direct patient care forms the cornerstone. Also included are industries that support direct patient care such as ambulance services, retail drug stores and health insurance carriers as well as public agencies that oversee health programs.

### High Priority Occupations in Health Care

(Highlighted occupations are new additions in 2007)

SOC Code	Occupation	Educational Attainment <sup>1/</sup>	Industry Cluster Wage, 2005	Job Openings		All Industries				Source <sup>2/</sup>
				Industry Cluster	All Industries	Percent Employment Change, 2002-04	Percent Change in Wages, 2003-05	Unempl. Rate, 2004-06	Completers as Percent of Total Openings	
11-1021	General & Operations Managers	BD+	\$84,607	233	2,797	-0.7%	11.1%	2.3%	92.3%	Criteria Met
11-9111	Medical & Health Services Managers	BD+	\$72,431	267	374	5.5%	3.1%	1.4%	362.3%	CWIA added
13-1031	Claims Adjusters, Examiners & Investigators	LT OJT	\$44,313	110	268	-2.4%	4.8%	2.1%	18.7%	Criteria Met
21-1011	Substance Abuse & Behavioral Disorder Counselors	MD	\$31,938	98	160	11.6%	1.5%	4.8%	105.0%	Criteria Met
21-1014	Mental Health Counselors	MD	\$29,570	249	357	8.3%	17.9%	4.8%	127.7%	Criteria Met
21-1022	Medical & Public Health Social Workers	BD	\$42,844	103	179	3.8%	2.0%	2.9%	105.6%	Criteria Met
21-1023	Mental Health & Substance Abuse Social Workers	MD	\$34,888	93	218	7.0%	2.1%	2.9%	95.4%	Criteria Met
21-1093	Social & Human Service Assistants	MT OJT	\$24,864	198	637	6.2%	8.3%	5.1%	37.4%	CWIA added
25-1072	Nursing Instructors & Teachers, Postsecondary	MD	\$60,547	11	66	1.3%	7.3%	1.4%	25.8%	Demand
29-1051	Pharmacists	PROF	\$80,998	266	354	-1.5%	11.8%	0.9%	231.9%	Criteria Met
29-1111	Registered Nurses	AD	\$53,913	2,739	3,114	1.2%	9.4%	1.0%	233.1%	Criteria Met
29-1122	Occupational Therapists	BD	\$60,356	97	129	8.4%	9.2%	0.0%	253.5%	Criteria Met
29-1123	Physical Therapists	MD	\$65,003	200	221	5.0%	9.0%	0.0%	459.7%	CWIA added
29-1126	Respiratory Therapists	AD	\$45,893	99	104	0.2%	11.0%	3.2%	87.5%	Criteria Met
29-2011	Medical & Clinical Laboratory Technologists	BD	\$43,970	178	229	1.4%	12.4%	4.5%	38.4%	Criteria Met
29-2012	Medical & Clinical Laboratory Technicians	AD	\$33,630	250	361	3.2%	4.2%	4.5%	45.2%	Criteria Met
29-2021	Dental Hygienists	AD	\$50,758	269	274	1.1%	2.2%	4.0%	87.6%	Criteria Met
29-2034	Radiologic Technologists & Technicians	AD	\$43,390	187	221	1.5%	13.7%	0.7%	215.8%	Criteria Met
29-2041	Emergency Medical Technicians & Paramedics	PS VOC	\$25,677	456	551	2.8%	5.8%	6.1%	14.7%	CWIA added
29-2052	Pharmacy Technicians	MT OJT	\$22,634	237	303	-0.3%	2.1%	0.8%	100.7%	Demand
29-2061	Licensed Practical & Licensed Vocational Nurses	PS VOC	\$37,607	1,213	1,462	0.7%	9.3%	3.4%	114.8%	Criteria Met
29-2071	Medical Records & Health Information Technicians	AD	\$28,493	154	176	1.5%	5.6%	0.0%	223.9%	Criteria Met
31-1011	Home Health Aides	ST OJT	\$19,472	1,037	1,358	9.6%	0.5%	6.2%	1.4%	Demand
31-1012	Nursing Aides, Orderlies & Attendants	ST OJT	\$22,668	1,330	1,630	0.3%	5.2%	6.2%	26.9%	Demand
31-9091	Dental Assistants	MT OJT	\$26,402	448	459	1.4%	5.1%	0.0%	59.7%	CWIA added
31-9092	Medical Assistants	MT OJT	\$25,500	774	805	2.2%	4.6%	2.7%	458.3%	Demand
31-9094	Medical Transcriptionists	PS VOC	\$27,492	199	247	7.4%	3.9%	2.7%	26.7%	Criteria Met

31-9099	Phlebotomists	N/A	\$24,927	319	455	7.1%	-1.3%	2.7%	233.8%	Demand
39-9021	Personal & Home Care Aides	ST OJT	\$19,436	637	1,226	4.3%	-0.3%	3.1%	26.4%	Demand
43-1011	Supervisors - Office & Administrative Support Workers	WK EXP	\$44,111	269	1,560	0.5%	13.4%	3.5%	108.9%	Criteria Met
43-3021	Billing & Posting Clerks & Machine Operators	ST OJT	\$27,585	127	345	5.9%	3.5%	6.9%	38.8%	Criteria Met
43-6011	Executive Secretaries & Administrative Assistants	MT OJT	\$33,152	262	1,864	0.8%	7.8%	3.1%	30.3%	Criteria Met
43-6013	Medical Secretaries	PS VOC	\$26,181	407	446	1.4%	3.1%	3.1%	47.3%	CWIA added
43-6014	Secretaries	MT OJT	\$27,378	245	2,296	0.9%	9.7%	3.1%	20.8%	Criteria Met

## Logistics and Transportation (LT) Industry Cluster

The LT cluster isolates industries that are related to the storage, transportation and distribution of goods. This cluster includes all modes of transportation including pipelines as well as logistics consulting and other supporting industries.

### High Priority Occupations in LT

(Highlighted occupations are new additions in 2007)

SOC Code	Occupation	Educational Attainment <sup>1/</sup>	Industry Cluster Wage, 2005	Job Openings		All Industries				Source <sup>2/</sup>
				Industry Cluster	All Industries	Percent Employment Change, 2002-04	Percent Change in Wages, 2003-05	Unempl. Rate, 2004-06	Completers as Percent of Total Openings	
11-1021	General & Operations Managers	BD+	\$88,089	68	2,797	-0.7%	11.1%	2.3%	92.3%	Criteria Met
43-4051	Customer Service Representatives	MT OJT	\$29,217	62	2,396	-2.4%	3.4%	7.7%	4.9%	Criteria Met
49-3031	Bus, Truck & Diesel Engine Mechanics	PS VOC	\$35,324	117	535	1.6%	2.5%	2.1%	11.8%	Criteria Met
53-1031	Supervisors - Transportation & Vehicle Operators	WK EXP	\$53,224	102	314	1.6%	14.6%	2.3%	8.9%	WkfChoices & Criteria Met
53-3032	Truck Drivers, Heavy & Tractor-Trailer	MT OJT	\$37,707	977	2,136	-6.1%	-2.1%	3.0%	29.2%	CWIA added
53-3033	Truck Drivers, Light or Delivery Services	ST OJT	\$31,105	194	1,123	3.0%	0.7%	3.0%	37.9%	Criteria Met
53-7051	Industrial Truck & Tractor Operators	ST OJT	\$28,639	348	978	2.4%	3.3%	7.2%	DNA	Criteria Met
53-7062	Laborers & Freight, Stock & Material Movers	ST OJT	\$27,093	728	3,076	1.0%	0.0%	7.7%	DNA	Criteria Met

DNA = Data Not Available

## Lumber, Wood & Paper (LWP) Industry Cluster

The LWP cluster begins with logging and moves through sawmills to the manufacturing of wood furniture and paper products. The retail sales of building materials are included as it represents an increasingly larger market for the products of this cluster. Although home centers often provide materials not derived from the tree, the inability to determine what percentage of their workforce and sales is from lumber and wood products requires us to consider their significance to the LWP cluster.

### High Priority Occupations in LWP

(Highlighted occupations are new additions in 2007)

SOC Code	Occupation	Educational Attainment <sup>1/</sup>	Industry Cluster Wage, 2005	Job Openings		All Industries				Source <sup>2/</sup>
				Industry Cluster	All Industries	Percent Employment Change, 2002-04	Percent Change in Wages, 2003-05	Unempl. Rate, 2004-06	Completers as Percent of Total Openings	
11-1021	General & Operations Managers	BD+	\$93,642	64	2,797	-0.7%	11.1%	2.3%	92.3%	Criteria Met
41-4012	Sales Representatives	MT OJT	\$54,435	126	2,088	-0.4%	17.0%	3.0%	16.1%	Criteria Met
43-5071	Shipping, Receiving & Traffic Clerks	ST OJT	\$27,403	36	601	-1.2%	7.9%	6.1%	7.8%	Criteria Met
47-2031	Carpenters	LT OJT	\$29,680	51	1,156	0.5%	0.6%	7.5%	18.6%	Criteria Met
49-9042	Maintenance & Repair Workers, General	LT OJT	\$34,736	35	1,491	-2.4%	3.9%	2.8%	16.2%	Criteria Met
51-1011	Supervisors - Production & Operating Workers	WK EXP	\$49,516	46	665	-4.7%	10.9%	3.7%	1.1%	Criteria Met
51-5023	Printing Machine Operators	MT OJT	\$33,489	47	274	-7.1%	10.8%	3.9%	11.3%	Criteria Met
51-7011	Cabinetmakers & Bench Carpenters	LT OJT	\$28,810	80	159	-1.8%	9.6%	3.8%	10.1%	WkfChoices & Criteria Met
51-7021	Furniture Finishers	LT OJT	\$25,230	2	6	0.6%	3.9%	5.3%	66.7%	WkfChoices
51-7042	Woodworking Machine Oprs/Tenders	MT OJT	\$25,202	50	80	-1.1%	10.0%	7.3%	16.3%	WkfChoices
51-9196	Paper Goods Machine Oprs/Tenders	MT OJT	\$30,299	58	64	-7.8%	-3.8%	1.2%	1.6%	WkfChoices
53-3032	Truck Drivers, Heavy & Tractor-Trailer	MT OJT	\$32,700	68	2,136	-6.1%	-2.1%	3.0%	29.2%	CWIA added
53-3033	Truck Drivers, Light or Delivery Services	ST OJT	\$25,840	44	1,123	3.0%	0.7%	3.0%	37.9%	CWIA added
53-7051	Industrial Truck & Tractor Operators	ST OJT	\$27,998	101	978	2.4%	3.3%	7.2%	DNA	Criteria Met

DNA = Data Not Available

Footnotes:

1/ Educational Attainment Abbreviations:

Short-term, Moderate-term and Long-term training (**ST OJT**, **MT OJT** and **LT OJT**) – basic tasks and skills are learned through a period of on-the-job training.

Work experience in a related occupation (**WK EXP**) – training is gained through hands-on work in a similar occupation.

Post-secondary vocational training (**PS VOC**) – training is gained through a vocational training program.

Associate's Degree (**AD**) – degree completed after two years of full-time schooling beyond high school.

Associate's Degree (**AD\***) – for HPO purposes only – a two year associate's degree such as child development associate.

Bachelor's Degree (**BD**) – degree completed after four years of full-time schooling beyond high school.

Bachelor's Degree plus experience (**BD+**) – a four-year bachelor's degree plus experience gained through hands-on experience.

Master's (**MD**), Masters of Science in Nursing (**MD\***), Doctoral (**PhD**) or First Professional Degree (**PROF**) – training at the college or university level beyond a four-year bachelor's degree.

2/ Source Definitions:

**Criteria Met** – Occupations met all of the data screens established for the HPO process.

**CWIA added** – Occupations failing only one criteria screen that were evaluated and added by the Center for Workforce Information & Analysis.

**DCED added** – The Department of Community & Economic Development requested that these occupations be added due to known demand or future need.

**Demand** – The Human Capital Workgroup added these occupations to the 2005 HPO list because they represented a good commonwealth investment. Some are also the first-step in a career ladder and can lead to career advancement.

**DEP added** – The Department of Environmental Protection requested that these occupations be added due to known demand or future need.

**DeptAg added** – The Department of Agriculture requested that these occupations be added due to known demand or future need.

**PA petition** – These occupations were added to the 2005 HPO list after being petitioned for statewide inclusion. All approved petitions were valid for three years.

**WkfChoices** – Occupations that were added to the 2005 HPO list by industry experts working on the *Workforce Choices* chapters, which analyze the occupational make-up of each targeted industry cluster. Some of these occupations were added because they represent the first-step in a career ladder and can lead to career advancement.