

# Oil & Gas/Energy Career Directory



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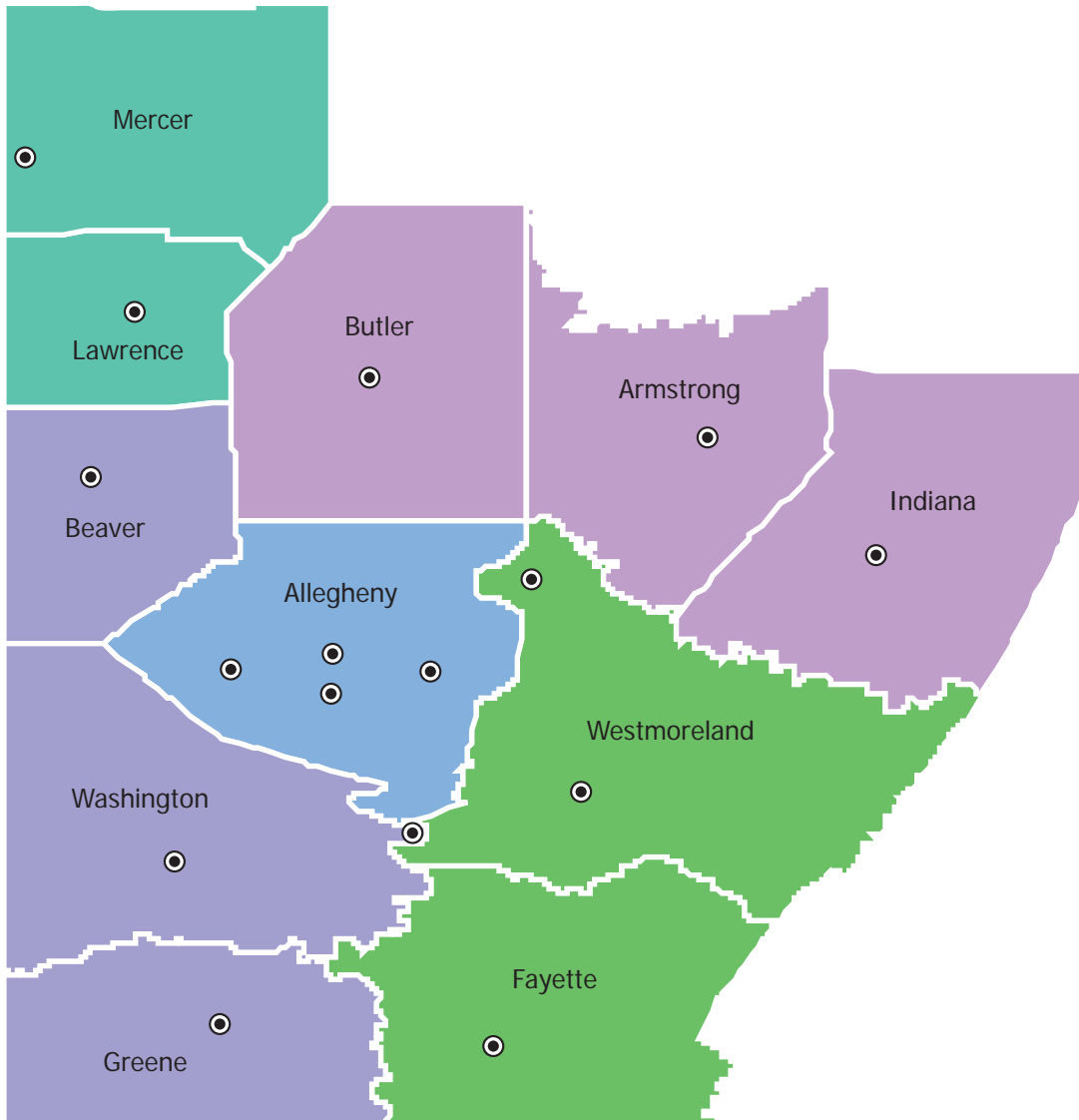
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# Pennsylvania CareerLink® Locations



WIA	County	CareerLink	Location	Phone
West Central	Lawrence	Lawrence County	102 Margaret St   New Castle, PA 16101	(724) 656-3165
	Mercer	Mercer County	217 West State St   Sharon, PA 16146	(724) 347-9257
Tri-County	Armstrong	Armstrong County	77 Glade Dr   Kittanning, PA 16201	(724) 548-5693
	Butler	Butler County	112 Hollywood Dr Suite 101   Butler, PA 16001	(724) 431-4000
	Indiana	Indiana County	300 Indian Springs Rd   Indiana, PA 15701	(724) 471-7220
Westmoreland Fayette	Fayette	Fayette County	135 Wayland Smith Dr   Uniontown, PA 15401	(724) 434-5627
	Westmoreland	Alle-Kiski	1150 5th Ave   New Kensington, PA 15068	(724) 334-8600
	Westmoreland	Westmoreland County	151 Pavilion Lane   Youngwood, PA 15697	(724) 755-2330
Three Rivers	Allegheny	Allegheny East	2040 Ardmore Blvd   Pittsburgh, PA 15219	(412) 436-2225
	Allegheny	Allegheny West	Rte. 60 & Park Manor Dr   Pittsburgh, PA 15205	(412) 809-3500
	Allegheny	CareerLink Affiliate	2600 East Carson St   Pittsburgh, PA 15203	(412) 390-2327
	Allegheny	Downtown Pittsburgh	425 6th Ave   Pittsburgh, PA 15219	(412) 552-7100
Southwest Corner	Beaver	Beaver County	285 Beaver Valley Mall, Route 18   Monaca, PA 15061	(724) 728-4860
	Greene	Greene County	4 West High St   Waynesburg, PA 15370	(724) 852-2900
	Washington	Mon Valley	570 Galiffa Dr   Donora, PA 15033	(724) 379-4750
	Washington	Washington County	90 West Chestnut St   Washington, PA 15301	(724) 223-4500

# Billing & Posting Clerks & Machine Operators

Common Employer Job Titles: Data Processor, Statement Clerk, Statement Distribution Clerk, Statement Services Representative, Data Entry Clerk, Item Processing Clerk, Statement Processor, Reconciling Clerk, Billing Clerk

## Related Occupations

Bank Teller, Medical Record Clerk, Receiving Clerk, Reservation Clerk, Statistical Clerk

## Nature of the Work

Billing & posting clerks & machine operators use calculators and computers to prepare bills, invoices and itemized statements for billing and record keeping purposes

Billing & posting clerks review purchase orders, sales tickets, hospital records, or charge slips in order to calculate the total amount owed by a customer.

Billing machine operators print out the bill that is sent to the customer. After they are printed, the bills are verified one last time by the billing clerks.

Computers and specialized billing software allow many clerks to automatically calculate charges and prepare bills all in one step. However, many workers still keep paper records for reference purposes.

Regardless of the size of the organization, clerical workers are increasingly performing a broader variety of tasks than they did in the past.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$24,530	\$23,000	\$25,320	\$22,480	\$20,470	\$22,830
Annual Average Wage 2011	\$33,150	\$30,490	\$34,310	\$28,860	\$28,550	\$31,250
Experienced Level Wage 2011	\$37,470	\$34,230	\$38,800	\$32,060	\$32,590	\$35,460
Estimated Employment 2008	23,820	660	2,940	600	410	740
Projected Employment 2018	22,420	610	2,740	570	390	710
Percent Change 2008-18	-5.88%	-7.58%	-6.80%	-5.00%	-4.88%	-4.05%
Annual Openings 2008-18	304	8	38	8	5	9

## Knowledge Required

Clerical  
Economics & Accounting  
English Language  
Mathematics

## Skills Required

Active Listening  
Mathematics  
Reading Comprehension  
Speaking  
Writing

# Shipping, Receiving & Traffic Clerks

Common Employer Job Titles: Car Checker, Distributing Clerk, Express Clerk, Freight Clerk, Freight Forwarder, Fuel Oil Clerk, Logistics Coordinator, Material Handler, Package Sorter, Paper Control Clerk, Receiving Clerk

## Related Occupations

Mail Clerk, Production & Planning Clerk, Stock Clerk

## Nature of the Work

Shipping, receiving & traffic clerks keep records of all goods that are shipped and received. Specific duties will depend on the size of the establishment as well as the level of automation.

Shipping clerks are responsible for preparing and verifying all outgoing shipments. Some also move the goods from the plant to the shipping dock.

Receiving clerks use the original orders and accompanying invoice to determine whether orders have been filled correctly. They may route shipments to the proper department, stockroom or warehouse.

Traffic clerks maintain records on the destination, weight and charges of all incoming and outgoing freight.

Computers handle many shipping and receiving duties. However, clerks in smaller companies still maintain records and prepare shipments by hand.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$22,790	\$18,200	\$21,500	\$23,130	\$23,660	\$20,060
Annual Average Wage 2011	\$32,760	\$29,170	\$31,930	\$31,930	\$30,870	\$30,890
Experienced Level Wage 2011	\$37,740	\$34,650	\$37,140	\$36,340	\$34,480	\$36,310
Estimated Employment 2008	29,050	540	2,820	650	490	900
Projected Employment 2018	27,480	520	2,740	590	470	860
Percent Change 2008-18	-5.40%	-3.70%	-2.84%	-9.23%	-4.08%	-4.44%
Annual Openings 2008-18	696	13	68	16	12	12

## Knowledge Required

Clerical  
 Customer & Personal Service  
 English Language  
 Production & Processing  
 Transportation

## Skills Required

Active Listening  
 Mathematics  
 Reading Comprehension  
 Speaking  
 Time Management  
 Writing

# Office Clerks

Common Employer Job Titles: Administration Assistant, Administrative Assistant, Clerk, Office Manager, Receptionist, Secretary, Office Assistant, Office Clerk, Customer Service Representative, Office Coordinator

## Related Occupations

Billing Clerk, Court Clerk, Loan Clerk, Receptionist, Secretary, Typist & Word Processor

## Nature of the Work

The daily responsibilities of general office clerks change constantly. Clerks may spend time filing, typing or entering data. They also operate office equipment, prepare mailings, proofread copies and answer telephones. Experienced office clerks are usually given additional responsibilities. In fact, they may be expected to monitor and direct the work of others.

Specific job duties will depend on the experience level of the clerk as well as the type of office in which they are employed.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$19,200	\$19,420	\$19,140	\$18,470	\$17,520	\$18,160
Annual Average Wage 2011	\$29,440	\$28,010	\$29,420	\$27,260	\$24,890	\$26,100
Experienced Level Wage 2011	\$34,560	\$32,300	\$34,560	\$31,660	\$28,570	\$30,070
Estimated Employment 2008	163,680	4,590	19,900	3,590	2,230	5,250
Projected Employment 2018	166,250	4,680	20,130	3,660	2,280	5,440
Percent Change 2008-18	1.57%	1.96%	1.16%	1.95%	2.24%	3.62%
Annual Openings 2008-18	3,261	93	388	74	46	115

## Knowledge Required

Clerical  
 Customer & Personal Service  
 Economics & Accounting  
 English Language  
 Mathematics

## Skills Required

Active Listening  
 Reading Comprehension  
 Social Perceptiveness  
 Speaking  
 Writing

# Pipelayers

Common Employer Job Titles: Drain Layer, Drain Tiler, Fitter, Irrigation System Installer, Irrigation Technician, Pipe Liner, Pipe Wrapping Machine Operator, Sewer Connector, Sewer Pipe Layer, Tile Conduit Layer

## Related Occupations

Highway Maintenance Workers, Hunters & Trappers, Pipelayer Helpers, Plumbers, Pipefitters & Steamfitters

## Nature of the Work

Pipelayers lay clay, concrete, plastic or cast-iron pipe for drains, sewers, water mains, and oil or gas lines. Before laying the pipe, pipelayers prepare and grade the trenches either manually or with machines. After laying the pipe, they weld, glue, cement or otherwise join the pieces together. They perform a combination of other tasks including grade trenches or culverts, position pipe and seal joints.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$33,500	-	\$33,510	-	-	\$39,580
Annual Average Wage 2011	\$46,610	-	\$43,180	-	-	\$52,690
Experienced Level Wage 2011	\$53,160	-	\$48,010	-	-	\$59,240
Estimated Employment 2008	1,080	10	260	-	10	30
Projected Employment 2018	1,110	10	270	-	10	40
Percent Change 2008-18	2.78%	0.00%	3.85%	-	0.00%	33.33%
Annual Openings 2008-18	26	0	6	-	0	1

## Knowledge Required

Building & Construction  
Mathematics  
Mechanical

## Skills Required

Active Listening  
Equipment Selection  
Learning Strategies  
Monitoring  
Quality Control Analysis  
Speaking



# Extraction Worker Helpers

Common Employer Job Titles: Blaster Helper, Derrick Hand, Jack Setter, Miner Assistant, Pneumatic Jack Operator, Powder Carrier, Pumper Helper, Rotary Drill Helper, Roughneck, Shaft Mechanic, Tailer, Tunnel Mucker

## Related Occupations

Derrick Operators, Roustabouts, Refractory Materials Repairers, Tank Truck & Ship Loaders

## Nature of the Work

Extraction worker helpers repair and maintain automotive and drilling equipment, and observe and monitor equipment operation during the extraction process in order to detect any problems. They are also responsible for loading and organizing materials in order to prepare for use. After extraction activities are complete, they clean up work areas and remove debris.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$24,680	\$23,910	-	\$26,940	-	-
Annual Average Wage 2011	\$30,230	\$32,910	-	\$29,840	-	-
Experienced Level Wage 2011	\$33,010	\$37,420	-	\$31,280	-	-
Estimated Employment 2008	1,010	-	-	-	-	-
Projected Employment 2018	1,040	-	-	-	-	-
Percent Change 2008-18	2.97%	-	-	-	-	-
Annual Openings 2008-18	33	-	-	-	-	-

## Knowledge Required

Law & Government  
 Mechanical  
 Public Safety & Security

## Skills Required

Active Listening  
 Equipment Maintenance  
 Equipment Selection  
 Operation Monitoring  
 Repairing  
 Speaking  
 Troubleshooting

# Installation, Maintenance & Repair Worker Helpers

Common Employer Job Titles: Automobile Mechanic Helper, Diesel Mechanic Helper, Facilities Maintenance Technician, Laborer, Locksmith Helper, Millwright Helper, Power Washer, Service Planner, Trades Helper

## Related Occupations

Control & Valve Installers & Repairers, Mechanical Door Repairers, Mobile Heavy Equipment Mechanics

## Nature of the Work

Installation, maintenance & repair worker helpers provide assistance to more skilled workers involved in the adjustment, maintenance, part replacement and repair of tools, equipment and machines. They perform duties such as furnishing tools, materials, and supplies to other workers such as cleaning the work area, machines and tools, and holding materials or tools for other workers. Installation, maintenance & repair worker helpers may also install or replace machinery, equipment, and new or replacement parts and instruments, using hand or power tools. Some clean or lubricate vehicles, machinery, equipment, instruments, tools, work areas and other objects, using hand tools, power tools and cleaning equipment.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$17,810	\$18,740	\$17,590	\$17,550	\$17,020	\$16,900
Annual Average Wage 2011	\$27,330	\$28,220	\$27,790	\$26,180	\$23,120	\$22,340
Experienced Level Wage 2011	\$32,090	\$32,950	\$32,890	\$30,490	\$26,170	\$25,060
Estimated Employment 2008	6,740	180	520	240	100	320
Projected Employment 2018	6,790	190	520	230	110	330
Percent Change 2008-18	0.74%	5.56%	0.00%	-4.17%	10.00%	3.13%
Annual Openings 2008-18	163	4	12	6	2	9

## Knowledge Required

Engineering & Technology  
Mathematics  
Mechanical  
Public Safety & Security

## Skills Required

Active Listening  
Equipment Maintenance  
Equipment Selection  
Installation  
Operation Monitoring  
Repairing  
Troubleshooting

# Heavy-Truck & Tractor-Trailer Drivers

Common Employer Job Titles: CDL Truck Driver, Class B Driver, Commercial Trailer Truck Driver, Construction Driver, Dump Truck Driver, Highway Truck Driver, Livestock Trucker, Moving Van Driver, Over the Road Driver

## Related Occupations

Bus Drivers, Transit & Intercity, Industrial Truck & Tractor Operators, Truck Drivers, Light or Delivery Services

## Nature of the Work

Truck drivers are responsible for picking up and delivering a wide variety of merchandise. The length of their trips depends on the final destination of the goods.

Long-Haul Truck Drivers transport goods from city to city. Employers may choose to use two drivers for trips that last several days. Before leaving their home base, truck drivers inspect their vehicles to make sure that everything is working properly and that necessary safety equipment is aboard.

After these truck drivers reach their destination or complete their operating shift, the U.S. Department of Transportation requires that they complete reports detailing the trip, the condition of the truck and the circumstances of any accidents. In addition, Federal regulations require employers to subject drivers to random alcohol and drug tests while they are on duty.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$29,630	\$26,940	\$30,800	\$27,910	\$28,120	\$30,070
Annual Average Wage 2011	\$41,920	\$37,920	\$43,360	\$38,230	\$37,480	\$44,010
Experienced Level Wage 2011	\$48,070	\$43,410	\$49,640	\$43,400	\$42,160	\$50,970
Estimated Employment 2008	77,960	1,700	5,170	3,260	1,840	3,230
Projected Employment 2018	82,860	1,760	5,480	3,500	1,990	3,430
Percent Change 2008-18	6.29%	3.53%	6.00%	7.36%	8.15%	6.19%
Annual Openings 2008-18	1,873	36	123	82	48	77

## Knowledge Required

- Computers & Electronics
- Geography
- Law & Government
- Mechanical
- Public Safety & Security

## Skills Required

- Equipment Maintenance
- Mathematics
- Operation & Control
- Reading Comprehension
- Speaking
- Writing

# Light or Delivery Services Truck Drivers

Common Employer Job Titles: Bulk Delivery Driver, Courier, Delivery Driver, Escort Vehicle Driver, Food Service Driver, Local Truck Driver, Mail Messenger Contractor, Order Runner, Package Delivery Driver, Route Deliverer

## Related Occupations

Ambulance Driver, Bus Driver, Heavy-Truck & Tractor-Trailer Driver, Industrial Truck & Tractor Operator

## Nature of the Work

Light or delivery services truck drivers deliver or pick up merchandise and packages within a specific area. This may include short "turnarounds" to deliver a shipment to a nearby city, pick up another loaded truck or van, and drive it back to their home base the same day. These services may require use of electronic delivery tracking systems to track the whereabouts of the merchandise or packages.

Some local truck drivers have sales and customer service responsibilities. The primary responsibility of driver/sales workers, or route drivers, is to deliver and sell their firm's products over established routes or within an established territory. They sell goods such as food products, including restaurant takeout items, or pick up and deliver items such as laundry. Their response to customer complaints and requests can make the difference between a large order and a lost customer. Route drivers may also take orders and collect payments.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$18,930	\$17,120	\$19,260	\$16,820	\$17,010	\$17,080
Annual Average Wage 2011	\$31,950	\$32,340	\$31,170	\$28,190	\$28,500	\$27,700
Experienced Level Wage 2011	\$38,460	\$39,940	\$37,130	\$33,880	\$34,240	\$33,000
Estimated Employment 2008	43,210	1,010	4,550	1,130	670	1,560
Projected Employment 2018	42,970	1,000	4,520	1,120	680	1,530
Percent Change 2008-18	-0.56%	-0.99%	-0.66%	-0.88%	1.49%	-1.92%
Annual Openings 2008-18	767	18	81	20	14	28

## Knowledge Required

Clerical  
Geography  
Mechanical  
Public Safety & Security  
Transportation

## Skills Required

Extent Flexibility  
Far Vision  
Reaction Time  
Response Orientation  
Spatial Orientation  
Static Strength

# Industrial Truck & Tractor Operators

Common Employer Job Titles: Forklift Operator, Material Handler, Fork Lift Operator, Truck Driver, Fork Truck Driver, Lift Truck Operator, Forklift Driver, Fork Lift Technician, Spotter Driver, Fork Lift Driver

## Related Occupations

Construction Equipment Operator, Crane & Tower Operator, Farm Equipment Operator, Hoist & Winch Operator

## Nature of the Work

Industrial truck & tractor operators drive and control industrial trucks or tractors equipped to move materials around a warehouse, storage yard, factory or construction site. A typical industrial truck, often called a forklift or lift truck, has a hydraulic lifting mechanism and forks. Industrial truck and tractor operators also may operate tractors that pull trailers loaded with materials, goods or equipment within factories and warehouses, or around outdoor storage areas.

Industrial truck & tractor operators may perform other duties as well. Some operators tend machines that automatically stack, load, package or cut materials. They may also hook tow trucks, using hitches and pins, to other equipment. This may include plows, graders and rollers. They maintain their vehicles by making sure that all parts are oiled and that the vehicles have enough fuel. If there are problems with equipment, forklift operators talk with mechanics about them.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$24,560	\$23,960	\$24,070	\$19,210	\$22,940	\$20,670
Annual Average Wage 2011	\$33,590	\$37,890	\$35,240	\$29,910	\$30,550	\$29,500
Experienced Level Wage 2011	\$38,100	\$44,860	\$40,820	\$35,260	\$34,350	\$33,920
Estimated Employment 2008	32,880	640	1,990	480	490	650
Projected Employment 2018	30,210	580	1,900	460	460	610
Percent Change 2008-18	-8.12%	-9.38%	-4.52%	-4.17%	-6.12%	-6.15%
Annual Openings 2008-18	830	16	50	12	12	17

## Knowledge Required

English Language  
Mathematics  
Transportation

## Skills Required

Active Listening  
Equipment Maintenance  
Mathematics  
Operation & Control  
Reading Comprehension

# Laborers & Material Movers

Common Employer Job Titles: Material Handler, Warehouse Worker, Laborer, Loader, Receiving Associate, Shipping & Receiving Materials Handler, Merchandise Pickup / Receiving Associate, Line Tender, Stock Replenisher

## Related Occupations

Hand Packer & Packager, Janitor & Cleaner, Construction Laborer, Groundskeeping Worker

## Nature of the Work

Laborers & material movers manually move materials or perform other unskilled general labor. These workers move freight, stock and other materials to and from storage and production areas, loading docks, delivery vehicles, ships and containers.

Their specific duties vary by industry and work setting. Specialized workers within this group include baggage and cargo handlers, who work in transportation industries, and truck loaders and unloaders. In factories, they may move raw materials or finished goods between loading docks, storage areas and work areas as well as sort materials and supplies and prepare them according to their work orders.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$19,160	\$18,180	\$17,980	\$17,890	\$18,450	\$19,050
Annual Average Wage 2011	\$28,230	\$27,690	\$26,670	\$25,820	\$25,900	\$27,050
Experienced Level Wage 2011	\$32,770	\$32,440	\$31,010	\$29,780	\$29,620	\$31,060
Estimated Employment 2008	110,730	3,020	9,230	2,500	1,240	4,960
Projected Employment 2018	103,040	2,790	8,790	2,290	1,170	4,600
Percent Change 2008-18	-6.94%	-7.62%	-4.77%	-8.40%	-5.65%	-7.26%
Annual Openings 2008-18	3,544	97	295	80	40	159

## Knowledge Required

Production & Processing

## Skills Required

Equipment Selection  
Installation  
Reading Comprehension

# Surveying & Mapping Technicians

Common Employer Job Titles: Photogrammetrist, Cartographer, Photogrammetric Technician, Compiler, Stereo Compiler, Geographic Information Systems Analyst, Geographic Information Systems Specialist

## Related Occupations

Architects, Engineers, Landscape Architects, Environmental Scientists & Specialists, Social Scientists

## Nature of the Work

Surveying & mapping technicians are responsible for measuring and mapping the earth's surface. Surveyors establish official land, airspace and water boundaries. They write descriptions of land for deeds, leases and other legal documents; define airspace for airports; and take measurements of construction and mineral sites. Other surveyors provide data about the shape, contour, location, elevation or dimension of land or land features. Cartographers and photogrammetrists collect, analyze, interpret and map geographic information using data from surveys and photographs. Surveying and mapping technicians assist these professionals by collecting data in the field, making calculations and helping with computer-aided drafting. Collectively, these occupations play key roles in the field of geospatial information.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$25,760	\$22,040	\$25,620	\$23,880	-	\$35,420
Annual Average Wage 2011	\$38,610	\$24,430	\$41,730	\$32,970	-	\$43,890
Experienced Level Wage 2011	\$45,030	\$25,630	\$49,780	\$37,520	-	\$48,130
Estimated Employment 2008	1,720	60	220	30	10	50
Projected Employment 2018	1,790	60	210	30	10	50
Percent Change 2008-18	4.07%	0.00%	-4.55%	0.00%	0.00%	0.00%
Annual Openings 2008-18	40	1	4	1	0	1

## Knowledge Required

- Geography
- Computers & Electronics
- English Language
- Design
- Mathematics

## Skills Required

- Reading Comprehension
- Active Listening
- Critical Thinking
- Writing
- Active Learning

# Bookkeeping, Accounting & Auditing Clerks

Common Employer Job Titles: Accounting Clerk, Accounting Assistant, Accounts Payables Clerk, Account Clerk, Accounts Payable Clerk, Accounts Receivable Clerk, Account Receivable Clerk, Accounting Associate

## Related Occupations

Bank Teller, Medical Record Clerk, Receiving Clerk, Reservation Clerk, Statistical Clerk

## Nature of the Work

Bookkeeping, accounting & auditing clerks are an organization's financial record-keepers. They update and maintain accounting records, including those which tabulate expenditures, receipts, accounts payable and receivable, and profit and loss.

Bookkeeping clerks, which are usually found in small establishments, handle all aspects of financial transactions. They may also prepare bank deposits and balance receipts.

Accounting clerks perform duties that are more specialized in nature, such as posting transactions and computing interest. Other tasks include reconciling computer reports with manually maintained journals.

Auditing clerks verify the records of transactions that are posted by other workers. They may correct any errors themselves or note the problem and return the work for adjustment.

Computers and specialized accounting software allow clerks to post transactions and balance accounts electronically. As a result, manual posting to general ledgers is becoming obsolete.

Regardless of the size of the organization, clerical workers are increasingly performing a broader variety of tasks than they did in the past.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$23,630	\$22,620	\$14,580	\$21,660	\$20,880	\$21,660
Annual Average Wage 2011	\$36,140	\$33,370	\$34,820	\$32,400	\$31,570	\$32,540
Experienced Level Wage 2011	\$42,400	\$38,750	\$39,930	\$37,770	\$36,920	\$37,990
Estimated Employment 2008	82,980	1,830	11,070	1,740	1,160	2,750
Projected Employment 2018	84,900	1,930	11,260	1,840	1,190	2,800
Percent Change 2008-18	2.31%	5.46%	1.72%	5.75%	2.59%	1.82%
Annual Openings 2008-18	1,491	39	192	36	21	48

## Knowledge Required

Clerical  
Computers & Electronics  
Customer & Personal Service  
Economics & Accounting  
English Language

## Skills Required

Active Learning  
Active Listening  
Critical Thinking  
Learning Strategies  
Mathematics



# Customer Service Representatives

Common Employer Job Titles: Customer Service Representative, Account Manager, Client Services Representative, Account Representative, Customer Service Specialist, Customer Service Agent, Member Services Representative

## Related Occupations

Computer Support Specialist, Information & Record Clerk, Insurance Sales Agent, Retail Salesperson, Teller

## Nature of the Work

Customer service representatives are responsible for ensuring that their company's customers receive an adequate level of service or help with their questions and concerns. These customers may be individual consumers or other companies, and the nature of their service needs can vary considerably.

Some customer service representatives handle general questions and complaints, whereas others specialize in a particular area. They communicate with customers through a variety of means—either in person; by telephone, e-mail or regular mail correspondence or fax; or even over the Internet. In handling customers' complaints, customer service representatives must attempt to resolve the problem according to guidelines established by the company. In some cases, customer service representatives are required to follow up with an individual customer until a question is answered or an issue is resolved.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$22,520	\$22,090	\$20,920	\$23,880	\$22,140	\$20,330
Annual Average Wage 2011	\$34,030	\$32,680	\$32,360	\$33,390	\$31,550	\$31,070
Experienced Level Wage 2011	\$39,780	\$37,980	\$38,080	\$38,150	\$36,250	\$36,440
Estimated Employment 2008	100,840	1,820	14,990	2,580	1,200	3,220
Projected Employment 2018	112,250	2,010	17,390	2,920	1,280	3,680
Percent Change 2008-18	11.31%	10.44%	16.01%	13.18%	6.67%	14.29%
Annual Openings 2008-18	3,949	71	657	106	41	136

## Knowledge Required

Clerical  
Customer & Personal Service  
English Language  
Mathematics

## Skills Required

Active Learning  
Active Listening  
Monitoring  
Service Orientation  
Speaking

# Production, Planning & Expediting Clerks

Common Employer Job Titles: Production Scheduler, Planner, Production Planner, Production Manager, Production Controller, Production Planning Manager, Scheduler, Master Scheduler, Production Control Coordinator

## Related Occupations

Cost Estimator, Freight Handler, Order Clerk, Shipping & Receiving Clerk, Stock Clerk

## Nature of the Work

Production, planning & expediting clerks keep the flow of work and materials running smoothly. They review and deliver production schedules and work orders. Some confer with department supervisors to determine the progress of work and monitor work progress to be sure that the stages of production are completed on time. Clerks also compile reports on the progress of work and any problems that may have slowed down production.

Depending on the work setting, production and planning clerks may have a variety of other tasks. They may schedule workers or estimate production costs, such as for labor or materials. They may route or deliver parts to departments so that workers have the materials to meet quotas. Some keep track of the inventory in departments or schedule the shipment of parts so that materials are available and shipped by vendors on time.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$29,820	\$29,100	\$30,440	\$28,290	\$32,540	\$31,970
Annual Average Wage 2011	\$46,470	\$46,340	\$46,610	\$42,310	\$41,620	\$46,670
Experienced Level Wage 2011	\$54,790	\$54,960	\$54,700	\$49,320	\$46,160	\$54,020
Estimated Employment 2008	13,330	320	1,450	310	180	430
Projected Employment 2018	12,910	310	1,470	300	190	420
Percent Change 2008-18	-3.15%	-3.13%	1.38%	-3.23%	5.56%	-2.33%
Annual Openings 2008-18	363	9	42	8	5	12

## Knowledge Required

Clerical  
Economics & Accounting  
Mathematics  
Production & Processing  
Transportation

## Skills Required

Coordination  
Management of Material Resources  
Monitoring  
Reading Comprehension  
Time Management

# Secretaries

Common Employer Job Titles: Secretary, Administrative Assistant, Administrative Secretary, Office Assistant, Clerk Typist, Administrative Technician, Department Secretary, Administrative Associate, Administrative Support Assistant

## Related Occupations

Bookkeeper, Human Resource Specialist, Medical Assistant, Medical Research Technician, Office Manager

## Nature of the Work

To complete their duties, secretaries must be familiar with a wide variety of office equipment, including fax machines, photocopiers, telephone systems and personal computers.

Most secretaries schedule appointments, organize files, provide information, train staff, manage projects and produce correspondence. Specific job duties will vary with experience and title.

Office work can lend itself to alternative or flexible working arrangements, such as part-time work or telecommuting — especially if the job requires extensive computer use.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$22,160	\$20,220	\$22,440	\$20,760	\$19,300	\$18,440
Annual Average Wage 2011	\$31,750	\$29,070	\$31,100	\$29,440	\$27,200	\$27,300
Experienced Level Wage 2011	\$36,550	\$33,490	\$35,430	\$33,780	\$31,160	\$31,730
Estimated Employment 2008	94,060	1,980	12,680	2,240	1,340	2,230
Projected Employment 2018	85,480	1,840	11,810	2,050	1,250	2,100
Percent Change 2008-18	-9.12%	-7.07%	-6.86%	-8.48%	-6.72%	-5.83%
Annual Openings 2008-18	1,498	32	202	36	21	36

## Knowledge Required

- Administration & Management
- Clerical
- Computer & Electronics
- Customer & Personal Service
- English Language

## Skills Required

- Active Listening
- Reading Comprehension
- Social Perception
- Speaking
- Time Management

# Construction Laborers

Common Employer Job Titles: Laborer, Construction Laborer, Cement Finisher, Construction Worker, Helper, Post Framer, Curb and Gutter Laborer, Drain Layer, Drop Crew Laborer, Punch Out Crew Member

## Related Occupations

Forestry Worker, Groundskeeper, Highway Maintenance Worker, Logging Equipment Operator, Roustabout

## Nature of the Work

Construction laborers perform tasks that are needed to make the work of skilled construction, maintenance and production workers flow smoothly. They provide much of the physically demanding labor at construction sites. They may operate hand and power tools like air hammers, earth tampers, cement mixers, small mechanical hoists, survey and measure equipment and a variety of other equipment and instruments. They clean and prepare sites, dig trenches, set braces to support the sides of excavations, erect scaffolding, clean up rubble and debris and remove asbestos, lead and other hazardous waste materials. They also help assist other craft workers.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$21,850	\$21,730	\$22,280	\$23,980	\$21,560	\$23,070
Annual Average Wage 2011	\$34,600	\$30,490	\$37,560	\$35,840	\$30,480	\$35,040
Experienced Level Wage 2011	\$40,980	\$34,870	\$45,210	\$41,780	\$34,940	\$41,030
Estimated Employment 2008	39,010	2,050	5,490	1,040	530	1,810
Projected Employment 2018	40,230	2,150	5,660	1,110	550	1,910
Percent Change 2008-18	3.13%	4.88%	3.10%	6.73%	3.77%	5.52%
Annual Openings 2008-18	416	26	59	14	6	23

## Knowledge Required

Building & Construction  
Design  
Engineering & Technology  
Mathematics  
Mechanical

## Skills Required

Active Learning  
Equipment Selection

# Paving, Surfacing & Tamping Equipment Operators

Common Employer Job Titles: Asphalt Roller Operator, Concrete Finisher, Curb Machine Operator, Form Tamper, Loader Operator, Mud Jack Operator, Road Mixer Operator, Steam Roller Operator, Tamping Machine Operator

## Related Occupations

Industrial Truck & Tractor Operators, Pile-Driver Operators, Rail-Track Laying & Maintenance Operators

## Nature of the Work

Operating engineers and other construction equipment operators work with one or several types of power construction equipment. They may operate excavation and loading machines equipped with scoops, shovels, or buckets that dig sand, gravel, earth, or similar materials. In addition to operating the familiar bulldozer, they operate trench excavators, road graders, and similar equipment. Sometimes, they may drive and control industrial trucks or tractors equipped with forklifts or booms for lifting materials. They also may operate and maintain air compressors, pumps, and other power equipment at construction sites.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$27,180	\$30,440	\$25,430	\$23,240	\$23,990	\$35,870
Annual Average Wage 2011	\$42,460	\$42,080	\$40,110	\$33,020	\$26,790	\$49,560
Experienced Level Wage 2011	\$50,110	\$47,910	\$47,440	\$37,910	\$28,180	\$56,410
Estimated Employment 2008	2,280	50	80	120	90	130
Projected Employment 2018	2,330	50	80	120	90	130
Percent Change 2008-18	2.19%	0.00%	0.00%	0.00%	0.00%	0.00%
Annual Openings 2008-18	51	1	2	3	2	4

## Knowledge Required

- Administration & Management
- Building & Construction
- Customer & Personal Service
- Mechanical
- Production & Processing
- Public Safety and Security
- Transportation

## Skills Required

- Coordination
- Critical Thinking
- Judgment & Decision Making
- Monitoring
- Operation & Control
- Operation Monitoring

# Operating Engineers

Common Employer Job Titles: Equipment Operator, Heavy Equipment Operator, Operating Engineer, Back Hoe Operator, Loader Operator, Machine Operator, Motor Grader Operator, Track Hoe Operator, Excavator Operator

## Related Occupations

General Construction Worker, Heavy Equipment Mechanic, Roustabout

## Nature of the Work

Operating engineers generally use machines to move objects short distances, such as around a factory or construction site. They use equipment to smooth or grade the ground. They may also dump, remove or spread rock and earth. To run the machines, they move hand levers and foot pedals. They also operate switches and turn dials.

Operating engineers may set up and inspect equipment. They often attach hoses, belts and other equipment to tractors. They make adjustments to blades, buckets and booms. They use stakes and guidelines on the ground to help them line up their equipment.

Operating engineers are unique because they know how to operate several different types of equipment, such as cranes, bulldozers and hoists.

Bulldozer operators run tractors equipped with attachments, such as blades and cable winches. They dig out dirt, trees and rocks in order to level the ground.

Crane and tower operators lift and move materials using booms and cables supported by towers. They watch for hand signals or listen to radioed instructions from other workers.

Hoist and winch operators lift and pull loads with their equipment.

In addition to operating these machines, some engineers operate valves on air compressors or pumps at construction sites.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$31,320	\$31,030	\$35,250	\$30,630	\$28,510	\$30,190
Annual Average Wage 2011	\$45,510	\$41,660	\$51,300	\$44,530	\$48,320	\$47,780
Experienced Level Wage 2011	\$52,600	\$46,980	\$59,330	\$51,480	\$58,240	\$56,570
Estimated Employment 2008	16,580	730	1,840	1,070	200	630
Projected Employment 2018	17,100	770	1,920	1,110	210	670
Percent Change 2008-18	3.14%	5.48%	4.35%	3.74%	5.00%	6.35%
Annual Openings 2008-18	373	18	44	25	5	15

## Knowledge Required

Building & Construction  
Mechanical

## Skills Required

Equipment Maintenance  
Equipment Selection  
Operation & Control  
Operation Monitoring  
Repairing

# Oil & Gas Derrick Operators

Common Employer Job Titles: Rotary Derrick Operator, Well Service Derrick Operator

## Related Occupations

Operating Engineers, Rail Car Repairers, Rotary Drill Operators, Roof Bolters, Roustabouts

## Nature of the Work

Oil and gas derrick operators inspect derricks for flaws, clean and oil derricks in order to maintain proper working conditions and inspect derricks prior to being raised or lowered. They also listen to mud pumps and regularly check for vibration and other problems to ensure that rig pumps and drilling mud systems are working properly, and repair the pumps and mud tanks when they are not functioning properly.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$47,240	-	-	\$29,820	-	-
Annual Average Wage 2011	\$52,220	-	-	\$38,030	-	-
Experienced Level Wage 2011	\$54,720	-	-	\$42,140	-	-
Estimated Employment 2008	110	30	10	50	-	-
Projected Employment 2018	110	30	20	50	-	-
Percent Change 2008-18	0.00%	0.00%	100.00%	0.00%	-	-
Annual Openings 2008-18	2	0	0	1	-	-

## Knowledge Required

Education & Training  
 English Composition  
 Mathematics  
 Mechanical

## Skills Required

Active Listening  
 Coordination  
 Equipment Maintenance  
 Equipment Selection  
 Operation Monitoring  
 Repairing  
 Troubleshooting

# Oil & Gas Rotary Drill Operators

Common Employer Job Titles: Equipment Operator, Heavy Equipment Operator, Operating Engineer, Back Hoe Operator, Loader Operator, Machine Operator, Motor Grader Operator, Track Hoe Operator, Excavator Operator

## Related Occupations

Continuous Mining Machine Operators, Derrick Operators, Loading Machine Operators, Operating Engineers

## Nature of the Work

Rotary drill operators observe pressure gauges and move throttles and levers in order to control the speed of rotary tables, and to regulate the pressure of tools at the bottom of boreholes. They also start and examine the operation of slush pumps in order to ensure circulation and consistency of drilling fluid or mud in a well.

Rotary drill operators also use special tools to locate and recover lost or broken bits, casings, and drill pipes from wells. They can also be responsible for maintaining records of footage drilled, location and nature of strata penetrated, materials and tools used, services rendered, and time required.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$28,850	-	-	\$27,600	-	-
Annual Average Wage 2011	\$46,080	-	-	\$35,810	-	-
Experienced Level Wage 2011	\$54,700	-	-	\$39,920	-	-
Estimated Employment 2008	1,070	30	120	280	20	-
Projected Employment 2018	1,120	30	120	290	30	-
Percent Change 2008-18	4.67%	0.00%	0.00%	3.57%	50.00%	-
Annual Openings 2008-18	16	0	1	4	1	-

## Knowledge Required

Administration & Management  
Education & Training  
Mathematics  
Mechanical  
Personnel & Human Resources

## Skills Required

Coordination  
Critical Thinking  
Equipment Maintenance  
Instructing  
Operation Management  
Repairing  
Troubleshooting



# Oil, Gas & Mining Service Unit Operators

Common Employer Job Titles: Cement Pump Operator, Derrick Hand, Driller, Fishing Tool Operator, Pulling Unit Operator, Rigger, Service Unit Operator, Swabber, Well Cleaner, Wireline Operator, Work Over Rig Operator

## Related Occupations

Crane & Tower Operators, Dredge Operators, Geological Sample Test Technicians, Marine Engineers

## Nature of the Work

Service unit operators for oil, gas & mining operate controls that raise derricks and level rigs. They also observe load variations on strain gauges, mud pumps and motor pressure indicators and listen to engines, rotary chains and other equipment in order to detect faulty operations on unusual well conditions.

Service unit operators also direct drilling crews performing such activities as assembling and connecting pipe, applying weights to drill pipes and drilling around lodged obstacles. They may also drive truck mounted units to the well sites.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$28,140	-	\$29,690	\$27,050	-	-
Annual Average Wage 2011	\$48,170	-	\$42,230	\$34,550	-	-
Experienced Level Wage 2011	\$58,190	-	\$48,500	\$38,310	-	-
Estimated Employment 2008	860	180	20	250	10	70
Projected Employment 2018	920	190	30	280	10	80
Percent Change 2008-18	6.98%	5.56%	50.00%	12.00%	0.00%	14.29
Annual Openings 2008-18	14	2	0	6	0	1

## Knowledge Required

Customer & Personal Service  
 English Language  
 Mechanical  
 Public Safety & Security

## Skills Required

Active Listening  
 Coordinating  
 Equipment Maintenance  
 Instructing  
 Operation & Control  
 Repairing  
 Troubleshooting

# Earth Drillers

Common Employer Job Titles: Auger Operator, Blast Hole Driller, Core Drill Operator, Drill Runner, Earth Auger Operator, Jumper, Machine Driller, Stopper, Test Borer, Tunneling Machine Operator, Wagoner, Well Digger

## Related Occupations

Crate & Tower Operators, Farm Equipment Mechanics, Paving, Surfacing & Tamping Equipment Operators

## Nature of the Work

Earth drillers monitor drilling operations, checking gauges and listening to equipment to assess drilling conditions and to determine the need to adjust drilling or alter equipment. They are responsible for selecting the appropriate drill for the job, using knowledge of rock or soil conditions.

Earth drillers are responsible for regulating air pressure, rotary speed, and downward pressure, according to the type of rock or concrete being drilled, as well as verifying depths and alignments of boring positions.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$29,270	-	-	\$22,060	-	-
Annual Average Wage 2011	\$44,140	-	-	\$36,280	-	-
Experienced Level Wage 2011	\$51,570	-	-	\$43,400	-	-
Estimated Employment 2008	950	20	30	70	20	150
Projected Employment 2018	980	20	30	80	20	150
Percent Change 2008-18	3.16%	0.00%	0.00%	14.29%	14.29%	0.00%
Annual Openings 2008-18	34	1	1	2	1	6

## Knowledge Required

Administration & Management  
Mathematics  
Mechanical  
Public Safety & Security

## Skills Required

Active Listening  
Equipment Maintenance  
Repairing  
Troubleshooting

# Blasters & Explosives Workers

Common Employer Job Titles: Blast Setter, Bomb Technician, Charger, Demolition Expert, Explosives Detonator, Fuse Cutter, Gun Perforator, Nitro Worker, Oil Well Shooter, Shaft Sinker, Shotblaster, Tunnel Worker, Well Shooter

## Related Occupations

Petroleum Pump Systems Operators, Riggers, Signal & Track Switch Operators, Structural Iron & Steel Workers

## Nature of the Work

Blasters & explosives workers place and detonate explosives to demolish structures or to loosen, remove, or displace earth, rock, or other materials. They may perform specialized handling, storage, and accounting procedures.

Explosive workers insert, pack and pour explosives, such as dynamite, ammonium nitrate, black powder or slurries into blast holes; then shovel drill cuttings, admit water to boreholes and tamp material to compact charges. They tie specified lengths of delaying fuses into patterns in order to time the sequence of explosions.

Explosives workers examine blast areas to determine the amounts and kinds of explosive charges needed and to ensure that safety laws are observed. They are responsible for placing safety cones around blast areas to alert other workers of danger zones, and signal workers as necessary to ensure that they clear blast sites prior to explosions.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$37,490	-	-	-	-	-
Annual Average Wage 2011	\$48,590	-	-	-	-	-
Experienced Level Wage 2011	\$54,140	-	-	-	-	-
Estimated Employment 2008	240	-	-	-	-	-
Projected Employment 2018	240	-	-	-	-	-
Percent Change 2008-18	0.00%	-	-	-	-	-
Annual Openings 2008-18	7	-	-	-	-	-

## Knowledge Required

Administration & Management  
 Customer & Personal Service  
 Engineering & Technology  
 Law & Government  
 Mathematics  
 Public Safety & Security  
 Transportation

## Skills Required

Active Learning  
 Active Listening  
 Critical Thinking  
 Equipment Management  
 Judgment & Decision Making  
 Monitoring  
 Troubleshooting

# Oil & Gas Roustabouts

Common Employer Job Titles: Cathead Operator, Connection Worker, Derrick Worker, Dumper-Bailer Operator, Floor Hand, Gang Worker, Gun Perforator Loader, Oil Field Laborer, Rigger, Roughneck, Roustabout Pusher

## Related Occupations

Control & Valve Installers & Repairers, Derrick Operators, Motorboat Mechanics, Rail Car Repairers

## Nature of the Work

Roustabouts dismantle and repair oil field machinery, boilers, and steam engine parts, using hand tools and power tools. They unscrew or tighten pipes, casing, tubing, and pump rods, using hand and power wrenches and tongs and bolt together pump and engine parts.

They are also responsible for walking flow lines to locate leaks, using electronic detectors and making visual inspections. They may be responsible for keeping the pipe deck and main deck areas clean and tidy, as well as clean up spilled oil by bailing it into barrels.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$24,070	-	\$21,640	\$24,580	-	-
Annual Average Wage 2011	\$35,930	-	\$30,090	\$36,500	-	-
Experienced Level Wage 2011	\$41,850	-	\$34,320	\$42,460	-	-
Estimated Employment 2008	1,450	80	60	310	30	20
Projected Employment 2018	1,620	90	60	350	40	20
Percent Change 2008-18	11.72%	12.50%	0.00%	12.90%	33.33%	0.00%
Annual Openings 2008-18	61	3	3	13	2	1

## Knowledge Required

English Language  
 Mechanical  
 Physics  
 Production & Processing  
 Public Safety & Security  
 Transportation

## Skills Required

Active Listening  
 Critical Thinking  
 Equipment Management  
 Equipment Selection  
 Installation  
 Repairing  
 Troubleshooting

# General Maintenance & Repair Workers

Common Employer Job Titles: Maintenance Technician, Maintenance Mechanic, Maintenance Supervisor, Maintenance Electrician, Maintenance Engineer, Process Technician, Equipment Engineering Technician

## Related Occupations

Carpenter, Electrician, Electronics Installer & Repairer, HVAC Mechanic

## Nature of the Work

General maintenance & repair workers inspect and diagnose problems and determine the best way to correct them, frequently checking blueprints, repair manuals and parts catalogs. They also perform routine preventive maintenance and ensure that machines continue to run smoothly, building systems operate efficiently and the physical condition of buildings does not deteriorate. Those in smaller establishments often do all the repairs except for very difficult or large jobs. In larger workplaces, they may work only in a particular area or do general maintenance.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$23,750	\$22,600	\$23,780	\$20,580	\$20,330	\$23,190
Annual Average Wage 2011	\$36,630	\$35,600	\$36,960	\$33,550	\$32,740	\$37,020
Experienced Level Wage 2011	\$43,070	\$42,100	\$43,550	\$40,040	\$38,940	\$43,930
Estimated Employment 2008	65,710	2,090	6,720	1,580	910	2,050
Projected Employment 2018	66,250	2,070	6,680	1,580	920	2,090
Percent Change 2008-18	0.82%	-0.96%	-0.60%	0.00%	1.10%	1.95%
Annual Openings 2008-18	217	5	17	4	3	9

## Knowledge Required

Building & Construction Design  
 Engineering & Technology Mechanical  
 Public Safety & Security

## Skills Required

Active Listening  
 Critical Thinking  
 Equipment Maintenance  
 Equipment Selection  
 Installation

# Rolling Machine Operators & Tenders

Common Employer Job Titles: Mill Operator, Rolling Mill Operator, Roughing Mill Operator, Calender Operator, Breakdown Mill Operator, Cold Mill Operator, Controller, High Frequency Mill Operator, Roll Form Operator

## Related Occupations

Assembler & Fabricator, Computer Controlled Machine Operator, Machinist, Tool & Die Maker

## Nature of the Work

Rolling machine operators & tenders use a variety of machines to produce metal and plastic items, which are used in many consumer products.

They adjust and correct machine setups to reshape the products according to specified dimensions and tempers. They may install additional equipment to the machine in order to fabricate the required product. They also monitor machine cycles and mill operation to detect jamming. Typically, skilled setup workers are called upon for major adjustments when a problem arises.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$30,050	\$33,370	\$31,830	\$35,110	\$24,830	\$33,290
Annual Average Wage 2011	\$38,650	\$42,800	\$38,270	\$40,190	\$35,090	\$37,880
Experienced Level Wage 2011	\$42,960	\$47,510	\$41,500	\$42,730	\$40,220	\$40,180
Estimated Employment 2008	2,590	250	480	330	260	80
Projected Employment 2018	2,290	200	430	300	220	70
Percent Change 2008-18	-11.58%	-20.00%	-10.42%	-9.09%	-15.38%	-12.50%
Annual Openings 2008-18	54	5	10	7	5	2

## Knowledge Required

Mathematics  
Mechanical  
Production & Processing

## Skills Required

Installation  
Mathematics  
Operation & Control  
Operation Monitoring  
Quality Control Analysis

# Cutting, Punching & Press Machine Operators & Tenders

Common Employer Job Titles: Machine Operator, Press Operator, Set-Up Operator, Saw Operator, Slitter Operator, Punch Press Operator, Die Setter, Adjuster, Die Cutter, Machine Setter

## Related Occupations

Assembler & Fabricator, Computer Controlled Machine Operator, Machinist, Tool & Die Maker

## Nature of the Work

Cutting, punching & press machine operators & tenders use a variety of machines to produce metal and plastic items, which are used in many consumer products.

They load workpieces, plastic material or chemical solutions into machines and determine locations of cutting lines, dimensions and tolerances required. They install, align and lock specified machine tools and adjust ram strokes using hand tools. In addition, cutting, punching & press machine operators may examine workpieces for defects and sort according to type of flaw. Typically, skilled setup workers are called upon for major adjustments when a problem arises.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$24,040	\$29,270	\$26,110	\$25,850	\$25,440	\$23,290
Annual Average Wage 2011	\$33,300	\$35,660	\$33,920	\$31,380	\$34,070	\$32,190
Experienced Level Wage 2011	\$37,930	\$38,860	\$37,820	\$34,140	\$38,380	\$36,640
Estimated Employment 2008	13,290	440	1,110	1,000	380	740
Projected Employment 2018	10,530	350	890	810	320	580
Percent Change 2008-18	-20.77%	-20.45%	-19.82%	-19.00%	-15.79%	-21.62%
Annual Openings 2008-18	318	11	27	24	9	18

## Knowledge Required

Engineering & Technology  
 Mechanical  
 Physics  
 Production & Processing

## Skills Required

Equipment Maintenance  
 Equipment Selection  
 Installation  
 Mathematics  
 Operation & Control

# Metal-Refining Furnace Operators & Tenders

Common Employer Job Titles: Central Melt Specialist, Melt Room Operator, Melt Supervisor, Vessel Operator, Automatic Furnace Operator, Control Room Operator, Direct Casting Operator, Electric Melt Operator

## Related Occupations

Assembler & Fabricator, Computer Controlled Machine Operator, Machinist, Tool & Die Maker

## Nature of the Work

Metal-refining furnace operators & tenders use a variety of machines to produce metal items, which are used in many consumer products.

They load materials to be melted and refined to furnaces. They observe operations inside furnaces using television screens to ensure that problems do not occur. They also adjust air and temperature gauges to maintain required temperatures inside the furnace. In addition, metal-refining furnace operators & tenders may draw samples from the furnaces for analysis and calculate types and amounts of materials needed to ensure that materials meet specifications. Typically, skilled setup workers are called upon for major adjustments when a problem arises.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$23,680	\$25,430	\$21,660	\$21,510	\$29,400	\$21,800
Annual Average Wage 2011	\$36,590	\$36,740	\$33,440	\$30,060	\$41,380	\$31,750
Experienced Level Wage 2011	\$43,040	\$42,390	\$39,320	\$34,330	\$47,370	\$36,720
Estimated Employment 2008	2,240	-	-	330	30	150
Projected Employment 2018	2,050	-	-	300	40	140
Percent Change 2008-18	-8.48%	-	-	-9.09%	33.33%	-6.67%
Annual Openings 2008-18	35	-	-	5	1	2

## Knowledge Required

Mechanical  
Physics  
Production & Processing

## Skills Required

Equipment Maintenance  
Equipment Selection  
Operation & Control  
Operation Monitoring



# Inspectors, Testers, Samplers & Weighers

Common Employer Job Titles: Inspector, Quality Inspector, Quality Technician, Quality Assurance Inspector, Quality Control Inspector, Quality Auditor, Quality Assurance Auditor, Quality Control Supervisor

## Related Occupations

Assemblers, Building Inspector, Compliance Office, Construction Inspector, Machine Operators

## Nature of the Work

Inspectors, testers, samplers & weighers use a number of tools to monitor quality standards for manufactured products. They may use sight, sound, feel, smell or taste to check products. Quality checks are involved at every stage of the production process. Quality control inspectors, as they are otherwise known, may examine raw materials, subassemblies or finished products.

After problems have been identified, quality control inspectors may reject defective items, send them for repair or fix minor problems themselves. They record results, compute defect percentages and prepare reports.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$24,790	\$28,680	\$25,010	\$25,700	\$23,630	\$23,210
Annual Average Wage 2011	\$37,770	\$42,540	\$39,390	\$39,210	\$35,450	\$37,610
Experienced Level Wage 2011	\$44,270	\$49,470	\$46,580	\$45,970	\$41,370	\$44,820
Estimated Employment 2008	23,270	630	2,070	850	350	910
Projected Employment 2018	20,430	540	1,870	840	310	810
Percent Change 2008-18	-12.20%	-14.29%	-9.66%	-1.18%	-11.43%	-10.99%
Annual Openings 2008-18	345	9	31	13	5	13

## Knowledge Required

Computers & Electronics  
 Design  
 Engineering & Technology  
 English Language  
 Mathematics  
 Mechanical

## Skills Required

Operation & Control  
 Operation Monitoring  
 Operations Analysis  
 Quality Control Analysis  
 Science

# Gas Compressor & Gas Pumping Station Operators

Common Employer Job Titles: Gas Booster Engineer, Gas Engineer, Gas Operator, Gas Transfer Operator, Station Engineer

## Related Occupations

Gas Plant Operators, Packer & Packagers, Printing Machine Operators

## Nature of the Work

Gas compressor and gas pumping station operators transmit, compress or recover gases, such as butane, nitrogen, hydrogen and natural gas. They are responsible for monitoring meters and pressure gauges to determine consumption rate variations, temperatures and pressures. They adjust valves and equipment to obtain specified performance levels.

Gas compressor and gas pumping station operators respond to problems by adjusting control room equipment, and/or instructing other personnel to adjust equipment at problem locations or in other control areas. They take samples of gases and conduct chemical tests in order to determine gas quality and sulfur or moisture content, or send samples to laboratories for analysis.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$43,600	-	-	-	-	-
Annual Average Wage 2011	\$52,420	-	-	-	-	-
Experienced Level Wage 2011	\$56,830	-	-	-	-	-
Estimated Employment 2008	250	-	20	-	-	30
Projected Employment 2018	260	-	20	-	-	30
Percent Change 2008-18	4.00%	-	0.00%	-	-	0.00%
Annual Openings 2008-18	11	-	1	-	-	1

## Knowledge Required

Mathematics  
Mechanical  
Production & Processing  
Public Safety & Security

## Skills Required

Critical Thinking  
Equipment Maintenance  
Operation Monitoring  
Repairing  
Troubleshooting

# Pump Operators

Common Employer Job Titles: Pumper, Outside Operator, Pipeline Operator, Day Light Relief Operator, Chemical Operator, Logistics Technician, Process Operator, Purification Operator, Tank Car Loader

## Related Occupations

Utilities Operator, Electrical Power-Line Installers & Repairers, Meter Readers, Plumbers, Pipefitters, Steamfitters

## Nature of the Work

Pump operators tend, control and operate pump and manifold systems that transfer gases, oil or other materials to vessels or equipment. They maintain the equipment and regulate the flow of materials according to a schedule set up by petroleum engineers or production supervisors. Gas compressor and gas pumping station operators operate steam, gas, electric motor or internal combustion engine-driven compressors. They transmit, compress or recover gases, such as butane, nitrogen, hydrogen and natural gas. Wellhead pumpers operate pumps and auxiliary equipment to produce flows of oil or gas from extraction sites.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$24,460	\$37,310	-	-	-	-
Annual Average Wage 2011	\$41,180	\$57,300	-	-	-	-
Experienced Level Wage 2011	\$49,550	\$67,300	-	-	-	-
Estimated Employment 2008	480	50	70	160	-	20
Projected Employment 2018	450	50	60	150	-	10
Percent Change 2008-18	-6.25%	0.00%	-14.29%	-6.25%	-	-50.00%
Annual Openings 2008-18	19	2	3	6	-	1

## Knowledge Required

Public Safety & Security  
 Mechanical  
 Production & Processing  
 Computers & Electronics

## Skills Required

Operation Monitoring  
 Monitoring  
 Critical Thinking  
 Operation & Control  
 Quality Control Analysis

# Wellhead Pumpers

Common Employer Job Titles: Gauger, Head Pumper, Lease Attendant, Lease Operator, Multi-Skilled Operator, Oilfield Plant and Field Operator, Oil Field Pumper, Oil Well Service Operator, Production Operator, Well Tender

## Related Occupations

Gas Compressor & Gas Pumping Station Operators, Utility Meter Readers, Prepress Technicians & Workers

## Nature of the Work

Wellhead pumpers monitor control panels during pumping operations in order to ensure that materials are being pumped at the correct pressure, density, rate and concentration. They also operate engines and pumps in order to shut off wells according to production schedules, and to switch flow of oil into storage tanks.

Wellhead pumpers perform routine maintenance on vehicles and equipment and repair gas and oil meters and gauges. They may also supervise oil pumpers and other workers engaged in producing oil from wells.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$25,090	-	-	\$23,910	-	\$24,920
Annual Average Wage 2011	\$36,430	-	-	\$33,100	-	\$29,370
Experienced Level Wage 2011	\$42,110	-	-	\$37,690	-	\$31,590
Estimated Employment 2008	420	20	-	170	90	-
Projected Employment 2018	470	30	-	200	130	-
Percent Change 2008-18	11.90%	50.00%	-	11.90%	44.44%	-
Annual Openings 2008-18	22	1	-	22	8	-

## Knowledge Required

Mathematics  
Mechanical  
Production & Processing  
Public Safety & Security

## Skills Required

Critical Thinking  
Equipment Maintenance  
Equipment Selection  
Operation Monitoring  
Operation & Control  
Repairing  
Troubleshooting

# Scientific & Technical Sales Representatives

Common Employer Job Titles: Sales Representative, Account Manager, Account Executive, Salesman, Sales Consultant, Account Representative, Customer Account Technician, Inside Sales Person, Marketing Associate

## Related Occupations

Buyers & Purchasing Agents, Insurance Sales Agents, Purchasing Managers, Real Estate Agents & Brokers

## Nature of the Work

Sales representatives market their company's products to manufacturers, wholesale and retail establishments and government agencies. They discuss customers' needs, suggest how their merchandise or services can meet those needs, show samples or catalogs and inform customers about prices and product availability. They may also take orders and resolve any problems or complaints with the merchandise.

Obtaining new accounts is an important part of the sales representatives' job. They also analyze sales statistics, prepare reports and handle administrative duties. They must study literature about new and existing products and monitor the sales, prices and products of their competitors.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$54,240	\$51,030	\$52,190	\$40,120	\$39,620	\$52,980
Annual Average Wage 2011	\$91,890	\$78,470	\$88,420	\$72,550	\$63,540	\$116,090
Experienced Level Wage 2011	\$110,710	\$92,190	\$106,540	\$88,760	\$75,510	\$147,650
Estimated Employment 2008	17,010	190	2,350	250	240	240
Projected Employment 2018	17,380	170	2,280	250	250	240
Percent Change 2008-18	2.18%	-10.53%	-2.98%	0.00%	4.17%	0.00%
Annual Openings 2008-18	413	4	52	6	6	5

## Knowledge Required

Chemistry  
Computers & Electronics  
Design  
Economics & Accounting  
English Language

## Skills Required

Active Listening  
Instructing  
Negotiation  
Persuasion  
Speaking

# Sales Representatives

Common Employer Job Titles: Sales Representative, Account Manager, Sales Manager, Account Development Manager, Account Executive, Channel Sales Director, Marketing Representative, Distribution Sales Manager

## Related Occupations

Buyers & Purchasing Agents, Insurance Sales Agents, Purchasing Managers, Real Estate Agents & Brokers

## Nature of the Work

Sales representatives market their company's products to manufacturers, wholesale and retail establishments and government agencies. They discuss customers' needs, suggest how their merchandise or services can meet those needs, show samples or catalogs and inform customers about prices and product availability. They may also take orders and resolve any problems or complaints with the merchandise.

Depending on where they work, sales representatives have different job titles. However, these titles are often used interchangeably.

Sales representatives are employed directly by a manufacturer or wholesaler.

Manufacturers' agents are self-employed sales workers who contract their services to all types of manufacturing companies.

Sales engineers, or industrial sales workers, sell technical products for manufacturers and wholesalers. Aided by a laptop computer, they can answer technical and non-technical questions.

Sales representatives who lack technical expertise often work with a technical expert. The technical expert will further explain the product and answer any questions or concerns.

Obtaining new accounts is an important part of the sales representatives' job. They also analyze sales statistics, prepare reports and handle administrative duties. They must study literature about new and existing products and monitor the sales, prices and products of their competitors.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$35,610	\$36,840	\$35,250	\$34,550	\$27,650	\$35,700
Annual Average Wage 2011	\$64,760	\$62,540	\$66,630	\$66,910	\$55,720	\$63,190
Experienced Level Wage 2011	\$79,340	\$75,400	\$82,320	\$83,090	\$69,760	\$76,940
Estimated Employment 2008	85,300	2,220	9,890	1,790	840	2,860
Projected Employment 2018	86,550	2,170	9,740	1,780	830	2,770
Percent Change 2008-18	1.47%	-2.25%	-1.52%	-0.56%	-1.19%	-3.15%
Annual Openings 2008-18	2,007	49	218	39	18	63

## Knowledge Required

Communications & Media  
Customer & Personal Service  
Education & Training  
English Language  
Mathematics

## Skills Required

Active Listening  
Coordination  
Critical Thinking  
Management of Material Resources  
Negotiation

# Supervisors of Office & Administrative Support Workers

Common Employer Job Titles: Accounting Administrator, Accounts Receivable Manager, Billing Administrator, Booking Supervisor, Call Center Director, Customer Service Director, Field Service Manager, Technical Coordinator

## Related Occupations

General Manager, Storage & Distribution Manager, Training & Development Specialist, Transportation Manager

## Nature of the Work

Supervisors of office & administrative support workers perform administrative tasks to ensure that their staffs can work efficiently. Duties include allocating assignments, issuing deadlines, overseeing work and evaluating each individual's performance.

Office and administrative support supervisors and managers usually interview and evaluate prospective clerical employees. This includes helping to train new employees in organization and office procedures.

Managers often act as liaisons between the clerical staff and the professional, technical, and managerial staff. Office and administrative support supervisors and managers also may have to resolve interpersonal conflicts among the staff.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$34,630	\$33,060	\$35,040	\$32,470	\$31,600	\$30,200
Annual Average Wage 2011	\$53,290	\$48,730	\$53,900	\$50,580	\$48,040	\$47,580
Experienced Level Wage 2011	\$62,620	\$56,560	\$63,320	\$59,630	\$56,260	\$56,280
Estimated Employment 2008	51,800	1,080	7,250	1,120	580	1,210
Projected Employment 2018	49,460	1,020	6,910	1,080	550	1,180
Percent Change 2008-18	-4.52%	-5.56%	-4.69%	-3.57%	-5.17%	-2.48%
Annual Openings 2008-18	1,069	22	150	23	12	25

## Knowledge Required

Administration & Management  
 Clerical  
 Education & Training  
 English Language  
 Personnel & Human Resources

## Skills Required

Management of Personnel Resources  
 Monitoring  
 Reading Comprehension  
 Speaking  
 Time Management

# Executive Secretaries & Administrative Assistants

Common Employer Job Titles: Administrative Assistant, Executive Assistant, Executive Secretary, Administrative Secretary, Office Manager, Administrative Coordinator, Administrative Aide, Administrative Associate, Secretary

## Related Occupations

Human Resource Assistant, Legal Secretary, Paralegals & Legal Assistant, Receptionists & Information Clerk

## Nature of the Work

Executive secretaries & administrative assistants are responsible for a variety of administrative and clerical duties necessary to run an organization efficiently.

They may supervise other clerical staff who perform the majority of the organization's clerical tasks. In addition, they handle the more complex tasks, such as conducting research, preparing statistical reports and training employees.

To complete their duties, secretaries must be familiar with a wide variety of office equipment, including fax machines, photocopiers, telephone systems and personal computers.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$33,560	\$28,930	\$32,790	\$33,280	\$29,450	\$30,820
Annual Average Wage 2011	\$47,800	\$46,290	\$44,960	\$47,400	\$43,760	\$44,660
Experienced Level Wage 2011	\$54,920	\$54,970	\$51,050	\$54,460	\$50,920	\$51,580
Estimated Employment 2008	42,950	650	6,180	610	320	840
Projected Employment 2018	43,880	670	6,380	640	340	870
Percent Change 2008-18	2.17%	3.08%	3.24%	4.92%	6.25%	3.57%
Annual Openings 2008-18	776	12	118	12	7	16

## Knowledge Required

Administration & Management  
Clerical  
Computers & Electronics  
Customer & Personal Service  
English Language

## Skills Required

Active Listening  
Reading Comprehension  
Speaking  
Time Management  
Writing



# Supervisors of Construction & Extraction Workers

Common Employer Job Titles: Airport Maintenance Chief, Bricklayer Supervisor, Building Construction Superintendent, Field Assembly Supervisor, Highway Maintenance Supervisor, Mine Captain, Quarry Supervisor

## Related Occupations

Aircraft Cargo Handling Supervisor, Landscaping Supervisors, Material Mover Supervisors

## Nature of the Work

Supervisors of construction & extraction workers coordinate and delegate the work tasks of a project and ensure that they are being fulfilled adequately. They inform workers about company policies, provide employee reviews and recommend disciplinary action. They also meet regularly with management to report any problems and discuss possible solutions. In addition, many also perform the same work as other trades workers.

Computers are used to schedule procedures, monitor worker output, track materials, update inventory and perform other supervisory tasks.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$44,010	\$43,940	\$49,980	\$38,560	\$40,710	\$48,150
Annual Average Wage 2011	\$66,410	\$65,970	\$68,560	\$59,330	\$67,650	\$67,300
Experienced Level Wage 2011	\$77,620	\$76,980	\$77,850	\$69,710	\$81,120	\$76,880
Estimated Employment 2008	20,060	850	2,300	520	210	540
Projected Employment 2018	20,550	880	2,310	540	210	560
Percent Change 2008-18	2.44%	3.53%	0.43%	3.85%	0.00%	3.70%
Annual Openings 2008-18	329	15	34	9	4	10

## Knowledge Required

Administration & Management  
 Engineering & Technology  
 English Language  
 Personnel & Human Resources

## Skills Required

Active Listening  
 Coordination  
 Critical Thinking  
 Judgment & Decision Making  
 Management of Personnel Resources  
 Time Management

# Carpenters

Common Employer Job Titles: Carpenter, Lead Carpenter, Assembler, Finish Carpenter, Construction Worker, Custom Stair Builder, Installer, Production Worker, Trim Carpenter, Concrete Carpenter

## Related Occupations

Bricklayer, Construction Helper, Stonemason, Tile Setter

## Nature of the Work

Carpenters cut, fit and assemble wood and other materials in the construction of buildings, highways, bridges, docks and industrial plants. They must be familiar with the local building codes.

Each task is somewhat different but the basic steps are the same. Blueprints and other instructions are used to measure, mark and arrange materials. Carpenters then use hand and power tools to cut and shape materials. When finished, carpenters check the accuracy of their final product and make any necessary adjustments.

Individuals with basic overall training are at a distinct advantage because they can switch from residential building to commercial construction to remodeling work, depending on which offers the best opportunities. Those employed outside of the construction industry perform a variety of installation and maintenance work. In manufacturing firms, they may also assist in moving machinery.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$27,880	\$23,020	\$31,750	\$24,380	\$26,560	\$25,450
Annual Average Wage 2011	\$42,370	\$36,770	\$46,120	\$37,580	\$39,890	\$38,540
Experienced Level Wage 2011	\$49,620	\$43,650	\$53,310	\$44,170	\$46,550	\$45,080
Estimated Employment 2008	55,080	1,610	6,000	1,690	480	1,530
Projected Employment 2018	55,670	1,660	6,020	1,750	490	1,550
Percent Change 2008-18	1.07%	3.11%	0.33%	3.55%	2.08%	1.31%
Annual Openings 2008-18	803	27	84	30	8	24

## Knowledge Required

Building & Construction  
Design  
Engineering & Technology  
Mathematics

## Skills Required

Active Listening  
Equipment Selection  
Installation  
Mathematics  
Operations Analysis

# Plumbers, Pipefitters & Steamfitters

Common Employer Job Titles: Pipe Fitter, Pipefitter, Welder, Steamfitter, Sprinkler Fitter, Equipment Service Associate (ESA), Machine Repairman, Journeyman Pipe Fitter, Millwright, Pipe Welder, Journeyman Plumber

## Related Occupations

Boiler Operator, HVAC & Refrigeration Mechanic, Industrial Machinery Repairer, Pipelayer, Sheet-Metal Worker

## Nature of the Work

Plumbers, pipefitters & steamfitters install, maintain and repair many different types of pipe systems. Workers generally specialize in one of these areas.

Plumbers install and repair the water, waste disposal, drainage and gas systems in homes and buildings. They also install plumbing fixtures and appliances.

Pipefitters install and repair high and low-pressure pipe systems. They also install automatic controls used to regulate these systems.

Steamfitters install pipe systems that move liquids or gases under high pressure.

Sprinkler-fitters install automatic fire sprinkler systems in buildings.

Depending on the type of project, many different materials and construction techniques are used. However, all plumbers, pipefitters & steamfitters must be able to read building plans or blueprints, follow instructions, lay out the job and work efficiently with the materials and tools of the trade.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$34,510	\$39,390	\$36,330	\$35,100	\$32,910	\$31,740
Annual Average Wage 2011	\$52,740	\$57,250	\$51,170	\$54,360	\$42,050	\$48,810
Experienced Level Wage 2011	\$61,860	\$66,170	\$58,600	\$63,990	\$46,620	\$57,340
Estimated Employment 2008	15,030	890	2,460	160	130	490
Projected Employment 2018	15,410	920	2,500	170	140	500
Percent Change 2008-18	2.53%	3.37%	1.63%	6.25%	7.69%	2.04%
Annual Openings 2008-18	348	21	55	3	4	11

## Knowledge Required

Building & Construction  
 Customer & Personal Service  
 Design  
 English Language  
 Mechanical

## Skills Required

Active Learning  
 Active Listening  
 Installation  
 Instructing  
 Mathematics

# Construction & Building Inspectors

Common Employer Job Titles: Building Inspector, Engineering Technician, Construction Inspector, Engineer, Associate Architect, Construction Project Supervisor, Inspector, Plumbing Inspector, Building Code Administrator

## Related Occupations

Appraiser & Assessor, Carpenter, Electrician, Fire Inspector, Fire Investigator, Plumber, Safety Engineer

## Nature of the Work

Construction & building inspectors check for structural quality and fire safety. There are many types of inspectors.

Electrical inspectors check electrical wiring and equipment to be sure they operate properly and safely.

Plumbing inspectors examine pipes, fixtures, water supply and waste systems.

Public works inspectors inspect sewers, dams, bridges and highways.

All inspectors decide if construction complies with building codes. When inspectors find problems, they issue violations or stop-work orders. They notify owners, builders and city building agencies. Inspectors confer with these groups to explain regulations and recommend changes in the construction.

Inspectors may investigate accidents to determine the causes. They then develop ways to prevent future accidents. All inspectors maintain daily logs and inspection records. They also prepare reports.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$34,780	\$36,020	\$35,890	\$37,650	\$22,090	\$32,990
Annual Average Wage 2011	\$48,100	\$51,020	\$50,060	\$48,000	\$37,360	\$43,180
Experienced Level Wage 2011	\$54,760	\$58,520	\$57,150	\$53,170	\$45,000	\$48,280
Estimated Employment 2008	5,690	180	1,040	110	40	230
Projected Employment 2018	6,250	170	1,060	110	40	250
Percent Change 2008-18	9.84%	-5.56%	1.92%	0.00%	0.00%	8.70%
Annual Openings 2008-18	161	3	21	2	1	6

## Knowledge Required

Building & Construction  
Customer & Personal Service  
Design  
Engineering & Technology  
Public Safety & Security

## Skills Required

Active Learning  
Active Listening  
Critical Thinking  
Mathematics  
Reading Comprehension

# Supervisors of Mechanics, Installers & Repairers

Common Employer Job Titles: Airport Maintenance Chief, Buildings and Grounds Superintendent, Chief Power Dispatcher, Dock Supervisor, Facilities Manager, Lead Mechanic, Maintenance Supervisor, Millwright Supervisor

## Related Occupations

Supervisors of Production, Transportation, Construction, Sales, Service, Professional & Clerical Workers

## Nature of the Work

Supervisors of mechanics, installers & repairers coordinate and delegate the work tasks of a project and ensure that they are being fulfilled adequately. They inform workers about company policies, provide employee reviews and recommend disciplinary action. They also meet regularly with management to report any problems and discuss possible solutions. Some also perform the same work as other trades workers.

Computers are used to schedule procedures, monitor worker output, track materials, update inventory and perform other supervisory tasks. Organizational restructuring and downsizing have increased supervisor responsibilities. As a result, on-the-job stress has also increased in certain fields.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$45,390	\$43,210	\$45,070	\$44,400	\$40,490	\$43,360
Annual Average Wage 2011	\$64,720	\$67,430	\$65,470	\$63,590	\$60,050	\$60,340
Experienced Level Wage 2011	\$74,390	\$79,540	\$75,680	\$73,190	\$69,840	\$68,830
Estimated Employment 2008	14,920	550	1,490	450	230	530
Projected Employment 2018	14,760	550	1,460	450	230	540
Percent Change 2008-18	-1.07%	0.00%	-2.01%	0.00%	0.00%	1.89%
Annual Openings 2008-18	350	13	35	11	5	13

## Knowledge Required

- Administration & Management
- Customer & Personal Service
- Engineering & Technology
- Mechanical
- Personnel & Human Resources
- Production & Producing

## Skills Required

- Critical Thinking
- Equipment Maintenance
- Installation
- Management of Personnel Resources
- Reading Comprehension
- Time Management

# Mobile Heavy Equipment Mechanics

Common Employer Job Titles: Mechanic, Heavy Equipment Mechanic, Field Service Technician, Field Mechanic, Equipment Technician, Field Technician, Mobile Heavy Equipment Mechanic, Construction Equipment Mechanic

## Related Occupations

Bus & Truck Mechanic, Construction Equipment Operator, Heating & Cooling System Mechanic, Locksmith

## Nature of the Work

Mobile heavy equipment mechanics perform routine maintenance checks on diesel engines and on fuel, brake and transmission systems to ensure peak performance, safety and longevity of the equipment. Maintenance checks and comments from equipment operators usually alert mechanics to problems. With many types of modern heavy and mobile equipment, mechanics can plug hand-held diagnostic computers into onboard computers to diagnose any component needing adjustment or repair. After locating the problem, they rely on their training and experience to use the best possible technique to solve the problem. If necessary, they may partially dismantle the component to examine parts for damage or excessive wear. Then, using hand-held tools, they repair, replace, clean and lubricate parts as necessary. In some cases, mechanics calibrate systems by typing codes into the onboard computer. After reassembling the component and testing it for safety, they put it back into the equipment and return the equipment to the field.

In addition to conducting routine maintenance checks, mobile heavy equipment mechanics perform a variety of other repairs. They diagnose electrical problems and adjust or replace defective components. They also disassemble and repair undercarriages and track assemblies. Occasionally, mechanics weld broken equipment frames and structural parts, using electric or gas welders.

The technology used in heavy equipment is becoming more sophisticated with the increased use of electronic and computer-controlled components. Training in electronics is essential for these mechanics to make engine adjustments and diagnose problems. Training in the use of hand-held computers also is necessary, because computers help mechanics diagnose problems and adjust the functions of components.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$33,520	\$37,800	\$36,640	\$39,760	\$31,430	\$31,940
Annual Average Wage 2011	\$46,910	\$48,610	\$49,920	\$50,540	\$58,090	\$48,100
Experienced Level Wage 2011	\$53,600	\$54,020	\$56,560	\$55,930	\$71,420	\$56,170
Estimated Employment 2008	5,670	350	870	210	70	260
Projected Employment 2018	6,120	380	920	230	60	280
Percent Change 2008-18	7.94%	8.57%	5.75%	9.52%	-14.29%	7.69%
Annual Openings 2008-18	156	9	22	7	1	7

## Knowledge Required

Customer & Personal Service  
Mathematics  
Mechanical

## Skills Required

Equipment Maintenance  
Equipment Selection  
Installation  
Repairing  
Troubleshooting

# Electrical Power-Line Installers & Repairers

Common Employer Job Titles: Lineman, Journeyman Lineman, Electrical Lineworker, Lineworker, Power Lineman

## Related Occupations

Communications Equipment Mechanic, Electric Motor Repairer, Electrician Helper, Home Electronic Repairer

## Nature of the Work

Electrical power-line installers & repairers first construct poles, towers and underground trenches to carry the wires and cables. To do this, they use a variety of construction equipment. When these structures are completed, line installers string cable along them. For poles or towers, they climb or use truck-mounted buckets to reach the top. Next, they pull up cable by hand from large reels mounted on trucks. Then they set the line in place, and pull it to get the correct amount of tension. Finally, line installers attach the cable to the structure using hand tools. For electrical power lines, they bolt or clamp insulators onto the poles before attaching the cable. They lay underground cable directly in the trench, or string it through pipes to protect it.

Line installers also set up service for customers. To do this, they string a piece of cable between the customer's building and the lines running on poles, towers or in trenches. They place wiring in houses, and check that the signals are strong. Line installers may also install a variety of network equipment to maintain the strength of transmissions. In addition, they install transformers, circuit breakers and switches to control and direct the electrical current.

Line installers and repairers also maintain wires and cables. From time to time, they travel in trucks, helicopters or planes to inspect them. Monitoring equipment can often detect errors on the network. When line repairers identify a problem, they travel to its location. There, they repair or replace defective equipment. Bad weather and other events can cause extensive damage to networks. Line installers & repairers must respond quickly to these emergencies to restore service. Repair and installation work may require splicing, or joining, separate pieces of cable.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$43,370	\$52,080	\$49,490	\$57,940	-	\$42,630
Annual Average Wage 2011	\$59,080	\$63,470	\$63,500	\$64,930	-	\$58,270
Experienced Level Wage 2011	\$66,940	\$69,160	\$70,500	\$68,420	-	\$66,100
Estimated Employment 2008	4,640	160	730	420	70	170
Projected Employment 2018	4,640	150	810	370	70	180
Percent Change 2008-18	0.00%	-6.25%	10.96%	-11.90%	0.00%	5.88%
Annual Openings 2008-18	147	5	31	13	2	6

## Knowledge Required

Building & Construction  
 Mechanical  
 Public Safety & Security  
 Transportation

## Skills Required

Equipment Maintenance  
 Installation  
 Quality Control Analysis  
 Repairing  
 Troubleshooting

# Telecommunications Line Installers

Common Employer Job Titles: Aerial Installer, Block Cableman, Broadband Technician, Cable Installers, Joiner, Line Inspector, Line Installer, Network Cable Installer, Power Line Installer and Repairer, Reel Cart Operator

## Related Occupations

Broadcast & Sound Engineering Technician, Electrician, Home Entertainment Equipment Installer, Radio Mechanic

## Nature of the Work

Telecommunications line installers & repairers construct and maintain vast networks that provide communications services. Line installers, or line erectors, install new lines and string cables along poles, towers and trenches. Other duties may include setting up service for customers and installing a variety of network equipment. In addition to installation, line erectors also maintain and repair telephone and television cable lines.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$37,220	-	\$50,110	\$31,820	\$38,720	\$40,000
Annual Average Wage 2011	\$56,030	-	\$62,190	\$47,620	\$57,060	\$51,800
Experienced Level Wage 2011	\$65,430	-	\$68,230	\$55,510	\$66,230	\$57,700
Estimated Employment 2008	9,420	400	980	800	140	490
Projected Employment 2018	9,130	380	950	820	130	500
Percent Change 2008-18	-3.08%	-5.00%	-3.06%	2.50%	-7.14%	2.04%
Annual Openings 2008-18	245	10	25	23	4	14

## Knowledge Required

Computers & Electronics  
Telecommunications

## Skills Required

Equipment Maintenance  
Equipment Selection  
Installation  
Repairing  
Troubleshooting



# Supervisors of Production & Operating Workers

Common Employer Job Titles: Assembly Supervisor, Casting Supervisor, Chemical Processing Supervisor, Finishing Supervisor, Head Cook, Incinerator Plant General Supervisor, Machine Assembler Supervisor

## Related Occupations

Aircraft Cargo Handling Supervisor, Supervisor of Construction Workers, Supervisor of Landscaping Workers

## Nature of the Work

Supervisors of production & operating workers coordinate and delegate the work tasks of a project and ensure that they are being fulfilled adequately. They inform workers about company policies, provide employee reviews and recommend disciplinary action. They also meet regularly with management to report any problems and discuss possible solutions. In addition, many also perform the same work as other trades workers.

Computers are used to schedule procedures, monitor worker output, track materials, update inventory and perform other supervisory tasks.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$37,000	\$38,290	\$38,390	\$39,140	\$37,130	\$35,720
Annual Average Wage 2011	\$56,440	\$57,730	\$57,820	\$58,550	\$51,640	\$52,770
Experienced Level Wage 2011	\$66,160	\$67,450	\$67,540	\$68,250	\$58,890	\$61,300
Estimated Employment 2008	30,790	950	2,080	890	670	1,340
Projected Employment 2018	27,460	850	1,870	810	630	1,200
Percent Change 2008-18	-10.82%	-10.53	-10.10%	-8.99%	-5.97%	-10.45%
Annual Openings 2008-18	515	16	35	15	11	23

## Knowledge Required

- Administration & Management
- Education & Training
- Mathematics
- Personnel & Human Resources
- Production & Processing

## Skills Required

- Coordination
- Critical Thinking
- Reading Comprehension
- Speaking
- Time Management

# Machinists

Common Employer Job Titles: Machinist, Tool Room Machinist, Machine Operator, Machine Repair Person, Automation Technician, Gear Machinist, Maintenance Specialist, Set-Up Machinist, Utility Operator

## Related Occupations

Computer Programmer, Metal Patternmaker, Metalworking Machine Operator, Tool & Die Maker, Welder

## Nature of the Work

Machinists use tools, such as lathes and drill presses, to produce and repair precision metal parts. Thorough planning and preparation must be completed before any parts are cut.

Many of today's machine tools are computer numerically controlled (CNC). They read computer programs and run the production mechanism automatically. Workers who program these machines are often referred to as numerical control machine tool programmers or CNC programmers.

CNC machines enable higher productivity and better quality parts. However, the quality of the product largely depends on the operating program. New programs must be tested to ensure that machinery will function properly and that output will meet specifications.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$28,900	\$30,510	\$28,500	\$30,000	\$24,270	\$31,060
Annual Average Wage 2011	\$40,150	\$39,390	\$39,760	\$40,900	\$35,680	\$41,480
Experienced Level Wage 2011	\$45,780	\$43,840	\$45,390	\$46,360	\$41,380	\$46,690
Estimated Employment 2008	20,660	880	1,830	690	350	1,820
Projected Employment 2018	19,400	830	1,790	680	390	1,750
Percent Change 2008-18	-6.10%	-5.68%	-2.19%	-1.45%	11.43%	-3.85%
Annual Openings 2008-18	319	14	28	11	10	28

## Knowledge Required

Computer & Electronics  
Design  
Engineering & Technology  
Mathematics  
Mechanical

## Skills Required

Equipment Maintenance & Selection  
Operation & Control  
Operation Monitoring  
Quality Control Analysis

# Gas Plant Operators

Common Employer Job Titles: Dispatcher, Gas Operator, Gauger, High Pressure Operator, Liquefaction Plant Operator, Oxygen Plant Operator, Regasification Plant Operator, Tank Terminal Gauger, Water Gas Operator

## Related Occupations

Machine Setters, Petroleum Pump Systems Operators, Power Plant Operators, Stationary Engineers & Boiler Operators

## Nature of the Work

Gas plant operators monitor equipment functioning, observe temperature, level and flow gauges and perform regular unit checks, in order to ensure that all equipment is operating as it should. They also monitor transportation and storage of flammable and other potentially dangerous products to ensure that safety guidelines are followed.

Gas plant operators record, review and compile operations records, test results and gauge readings such as temperatures, pressures, concentrations and flows. They adjust temperature, pressure, vacuum, level, flow rate and/or transfer of gas to maintain processes at required levels or to correct problem

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$43,670	-	\$46,280	\$42,270	\$39,150	-
Annual Average Wage 2011	\$55,890	-	\$57,700	\$49,840	\$52,940	-
Experienced Level Wage 2011	\$62,000	-	\$63,400	\$53,620	\$59,840	-
Estimated Employment 2008	1,210	90	110	-	20	120
Projected Employment 2018	1,260	100	120	-	20	120
Percent Change 2008-18	4.13%	11.11%	9.09%	-	0.00%	0.00%
Annual Openings 2008-18	39	3	3	-	1	3

## Knowledge Required

Computers & Electronics  
 Customer & Personal Service  
 Mechanical  
 Production & Processing  
 Public Safety & Security

## Skills Required

Equipment Maintenance  
 Equipment Selection  
 Operation Monitoring  
 Operation & Control  
 Reading Comprehension  
 Troubleshooting

# Petroleum Pump Systems Operators & Gaugers

Common Employer Job Titles: Absorption Plant Operator, Control Board Operator, Gasoline Plant Operator, Houseman, Petroleum Plant Operator, Petroleum Supply Specialist, Pump System Operator, Refiner

## Related Occupations

Bindery Workers, Gas Plant Operators, Power Plant Operators, Stationary Engineers & Boiler Operators

## Nature of the Work

Petroleum pump system operators, refinery operators and gaugers monitor process indicators, instruments, gauges and meters in order to detect and report any possible problems. They read automatic gauges at specified intervals to determine the flow rate of oil into or from tanks, and the amount of oil in tanks, as well as to verify that incoming and outgoing products are moving through the correct meters, and that meters are working properly.

Petroleum pump system operators read and analyze specifications, schedules, logs, test results and laboratory recommendations to determine how to set equipment controls to produce the required qualities and quantities of products.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$40,860	-	\$45,000	\$50,450	-	-
Annual Average Wage 2011	\$56,360	-	\$56,990	\$62,680	-	-
Experienced Level Wage 2011	\$64,120	-	\$62,990	\$68,800	-	-
Estimated Employment 2008	1,830	60	460	150	10	20
Projected Employment 2018	1,870	60	450	160	20	20
Percent Change 2008-18	2.19%	0.00%	-2.17%	6.67%	100.00%	0.00%
Annual Openings 2008-18	54	2	13	6	1	1

## Knowledge Required

Education & Training  
Mathematics  
Mechanical  
Public Safety & Security

## Skills Required

Critical Thinking  
Equipment Maintenance  
Operation Monitoring  
Operation & Control  
Quality Control Analysis  
Troubleshooting

# Supervisors of Transportation & Vehicle Operators

Common Employer Job Titles: Auto Servicer, Boatswain, Crane Crew Supervisor, Dock Supervisor, Fleet Manager, Hauling Contractor, Load-Out Supervisor, Material Handling Supervisor, Move Coordinator, Rig

## Related Occupations

Aircraft Cargo Handling Supervisor, Supervisor of Construction Workers, Supervisor of Laborers

## Nature of the Work

Supervisors of transportation & vehicle operators coordinate and delegate the work tasks of a project and ensure that they are being fulfilled adequately. They inform workers about company policies, provide employee reviews and recommend disciplinary action. They also meet regularly with management to report any problems and discuss possible solutions. In addition, many also perform the same work as other trades workers.

Computers are used to schedule procedures, monitor worker output, track materials, update inventory and perform other supervisory tasks.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$39,380	\$32,670	\$44,210	\$38,390	\$39,160	\$39,520
Annual Average Wage 2011	\$58,360	\$55,220	\$62,960	\$54,470	\$52,810	\$58,770
Experienced Level Wage 2011	\$67,850	\$66,500	\$72,330	\$62,510	\$59,630	\$68,390
Estimated Employment 2008	9,210	240	870	280	170	450
Projected Employment 2018	9,520	240	910	300	180	460
Percent Change 2008-18	3.37%	0.00%	4.60%	7.14%	5.88%	2.22%
Annual Openings 2008-18	219	5	22	7	4	10

## Knowledge Required

- Administration & Management
- Economics & Accounting
- Mathematics
- Personnel & Human Resources
- Transportation

## Skills Required

- Active Listening
- Coordination
- Critical Thinking
- Instructing
- Mathematics
- Speaking

# Architectural & Civil Drafters

Common Employer Job Titles: Draftsman, Architectural Designer, Architectural Drafter, Architectural Intern, Project Manager, Architectural Draftsman, CAD Technician, Civil Drafter, Computer-Aided Design Designer

## Related Occupations

Cartographer, Designer, Architect, Engineer

## Nature of the Work

Architectural drafters draw structural features of buildings and other structures. They may specialize by the type of structure or material used.

Civil drafters prepare drawings and maps used in major construction or civil engineering projects.

Construction workers use the drawings prepared by the drafters to build buildings, structures and civil engineering projects such as highways, bridges, pipelines, flood control projects and water and sewage control systems. The drawings specify dimensions, materials to be used, and which procedures to follow.

Most drafters now use computer-aided drafting (CAD) systems to prepare drawings. This tool allows drawings to be stored electronically so that revisions or duplications can be made easily. However, manual drafting may still be used for certain applications.

As CAD technology advances and the cost continues to fall, it is likely that almost all drafters will use CAD systems on a regular basis in the future.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$33,410	\$31,840	\$34,180	\$22,130	\$31,950	\$40,530
Annual Average Wage 2011	\$46,740	\$48,590	\$47,830	\$39,670	\$40,910	\$46,460
Experienced Level Wage 2011	\$53,400	\$56,960	\$54,660	\$48,440	\$45,400	\$49,430
Estimated Employment 2008	5,820	110	1,010	160	40	130
Projected Employment 2018	5,320	90	850	130	40	110
Percent Change 2008-18	-8.59%	-18.18%	-15.84%	-18.75%	0.00%	-15.38%
Annual Openings 2008-18	166	3	29	5	1	4

## Knowledge Required

Building & Construction  
Computers & Electronics  
Design  
Engineering & Technology  
Mathematics

## Skills Required

Active Learning  
Active Listening  
Complex Problem Solving  
Coordination  
Mathematics

# Bus, Truck & Diesel Engine Mechanics

Common Employer Job Titles: Mechanic, Diesel Mechanic, Bus Mechanic, General Repair Mechanic, Diesel Technician, Trailer Mechanic, Transit Mechanic, Truck Mechanic, Fleet Mechanic, Service Technician

## Related Occupations

Aircraft Mechanic, Automobile Mechanic, Farm Equipment Mechanic, Heating & Cooling System Mechanic

## Nature of the Work

Bus, truck & diesel engine mechanics are responsible for repairing and maintaining the diesel engines that are found in transportation equipment, such as heavy trucks, buses, locomotives, bulldozers, cranes, road graders, farm tractors and boats.

As more electronic components are used to control diesel engine operation, maintenance becomes more complex. Many diesel mechanics use handheld computers to diagnose problems and adjust engine functions.

It is common for diesel mechanics to perform many different kinds of repairs. They use a variety of tools, including power tools, machine tools, welding equipment, jacks and hoists. Common hand tools are used to work on small parts and hard-to-reach places.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$29,900	\$28,750	\$34,860	\$28,750	\$29,890	\$32,360
Annual Average Wage 2011	\$41,300	\$37,270	\$46,590	\$39,300	\$36,490	\$43,040
Experienced Level Wage 2011	\$46,990	\$41,530	\$52,450	\$44,570	\$39,790	\$48,380
Estimated Employment 2008	12,120	270	750	470	170	440
Projected Employment 2018	12,580	280	760	490	170	450
Percent Change 2008-18	3.80%	3.70%	1.33%	4.26%	0.00%	2.27%
Annual Openings 2008-18	310	7	17	13	5	12

## Knowledge Required

Mechanical  
Public Safety & Security  
Transportation

## Skills Required

Equipment Maintenance  
Installation  
Reading Comprehension  
Repairing  
Troubleshooting

# Industrial Machinery Mechanics

Common Employer Job Titles: Maintenance Mechanic, Maintenance Technician, Engineering Technician, Master Mechanic, Industrial Machinery Mechanic, Machine Adjuster, Industrial Electrician, Industrial Mechanic

## Related Occupations

Aircraft Mechanic, Automobile Mechanic, Farm Equipment Mechanic, Mechanic & Repairer Helper, Millwright

## Nature of the Work

Industrial machinery mechanics, also called industrial machinery repairers or maintenance machinists, are highly skilled workers who maintain and repair machinery in a plant or factory. To do this effectively, they must be able to detect minor problems and correct them before they become major problems. Computerized maintenance, vibration analysis techniques and self-diagnostic systems are aiding in this task, but mechanics still need years of training and experience to perform effectively.

After diagnosing the problem, the industrial machinery mechanic disassembles the equipment to repair or replaces the necessary parts. Once a repair is made, mechanics perform tests to ensure that the machine is running smoothly.

Because factories and other facilities cannot afford to have industrial machinery out of service for long periods, mechanics may be called to the plant at night or on weekends for emergency repairs. Overtime is common among industrial machinery mechanics – about one-third work over 40 hours a week.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$32,900	\$32,030	\$35,030	\$33,700	\$32,120	\$33,140
Annual Average Wage 2011	\$45,570	\$45,020	\$47,550	\$44,020	\$44,300	\$47,550
Experienced Level Wage 2011	\$51,910	\$51,520	\$53,810	\$49,180	\$50,400	\$54,750
Estimated Employment 2008	16,240	620	1,250	420	360	530
Projected Employment 2018	17,540	680	1,370	480	380	580
Percent Change 2008-18	8.01%	9.68%	9.60%	14.29%	5.56%	9.43%
Annual Openings 2008-18	401	16	33	13	8	14

## Knowledge Required

Computers & Electronics  
Engineering & Technology  
Mechanical  
Physics

## Skills Required

Equipment Maintenance & Selection  
Installation  
Operation Monitoring  
Quality Control Analysis  
Repairing



# Welders, Cutters, Solderers & Brazers

Common Employer Job Titles: Butt Welders, Dig Welders, Getter Welders, Lap Welders, Metal Welders, Oxyacetylene Torch Operators, Oxyacetylene Welders, Oxyhydrogen Welders, Underwater Welders

## Related Occupations

Aircraft Mechanic, Metal & Plastic Processing Worker, Tool & Die Maker, Welding & Soldering Machine Operator

## Nature of the Work

Welding is the most common way of permanently joining two or more metal parts. There are several different types of welders, including manual, semi-automatic and automatic.

Manual welders control the entire welding process themselves.

Semi-automatic welders use machinery to help perform welding tasks.

Automatic welders monitor a welding machine, which is responsible for performing all welding tasks.

Both solderers and brazers join together components to assemble fabricated metal products. Solderers commonly use a soldering iron, while brazers use a torch or welding machine and flux.

The work of arc, plasma and flame cutters is closely related to that of welders. Instead of joining metals, cutters use heat or an electric arc to cut and trim metal objects. They also dismantle large objects, such as ships and aircraft. Some operate and monitor cutting machines.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$27,830	\$26,700	\$26,620	\$27,000	\$27,410	\$25,830
Annual Average Wage 2011	\$37,530	\$35,930	\$36,700	\$36,460	\$35,580	\$34,360
Experienced Level Wage 2011	\$42,380	\$40,550	\$41,740	\$41,200	\$39,660	\$38,620
Estimated Employment 2008	18,330	660	1,200	590	620	760
Projected Employment 2018	16,780	630	1,180	560	560	750
Percent Change 2008-18	-8.46%	-4.55%	-1.67%	-5.08%	-9.68%	-1.32%
Annual Openings 2008-18	388	14	25	12	13	16

## Knowledge Required

Building Construction  
Engineering & Technology  
Mechanical  
Production & Processing

## Skills Required

Equipment Maintenance  
Equipment Selection  
Mathematics  
Operation & Control  
Quality Control Analysis

# Civil Engineering Technicians

Common Employer Job Titles: Civil Engineering Designer, Engineering Assistant, Transportation Engineering Technician, Civil Designer, Engineering Specialist, Civil Engineering Assistant, Construction Analyst

## Related Occupations

Cost Estimators, Construction & Building Inspectors, Drafters, Surveyors, Cartographers, Photogrammetrists

## Nature of the Work

Engineering technicians use the principles and theories of science, engineering and mathematics to solve technical problems in research and development, manufacturing, sales, construction, inspection and maintenance. Their work is more narrowly focused and application-oriented than that of scientists and engineers. Many engineering technicians assist engineers and scientists, especially in research and development. Others work in quality control, inspecting products and processes, conducting tests or collecting data. In manufacturing, they may assist in product design, development or production. Although many workers who repair or maintain various types of electrical, electronic or mechanical equipment are called technicians, those workers are covered in the handbook section on installation, maintenance and repair occupations.

Engineering technicians who work in research and development build or set up equipment, prepare and conduct experiments, collect data, calculate or record results and help engineers or scientists in other ways, such as making prototype versions of newly designed equipment. They also assist in design work, often using computer-aided design and drafting (CADD) equipment.

Civil engineering technicians help civil engineers plan and oversee the construction of highways, buildings, bridges, dams, wastewater treatment systems and other structures. Some estimate construction costs and specify materials to be used, and some may even prepare drawings or perform land-surveying duties. Others may set up and monitor instruments used to study traffic conditions.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$33,350	\$37,570	\$34,180	\$35,360	\$27,230	\$37,260
Annual Average Wage 2011	\$47,440	\$53,190	\$46,210	\$47,240	\$33,570	\$51,990
Experienced Level Wage 2011	\$54,490	\$61,000	\$52,220	\$53,180	\$36,740	\$59,360
Estimated Employment 2008	2,940	120	750	30	10	50
Projected Employment 2018	2,920	110	680	30	10	50
Percent Change 2008-18	-0.68%	-8.33%	-9.33%	0.00%	0.00%	0.00%
Annual Openings 2008-18	57	2	15	1	0	1

## Knowledge Required

Building & Construction  
Engineering & Technology  
Mathematics  
Design  
Public Safety & Security

## Skills Required

Reading Comprehension  
Active Listening  
Critical Thinking  
Writing  
Complex Problem Solving

# Chemical Technicians

Common Employer Job Titles: Laboratory Technician (Lab Tech), Laboratory Analyst (Lab Analyst), Research Technician, Analytical Lab Technician, Laboratory Tester (Lab Tester), Research and Development Technician

## Related Occupations

Broadcast & Sound Engineering Technicians, Clinical Laboratory Technologists & Technicians

## Nature of the Work

Chemical technicians work with chemists and chemical engineers, developing and using chemicals and related products and equipment. Generally, there are two types of chemical technicians: research technicians who work in experimental laboratories and process control technicians who work in manufacturing or other industrial plants. Many chemical technicians working in research and development conduct a variety of laboratory procedures, from routine process control to complex research projects. For example, they may collect and analyze samples of air and water to monitor pollution levels, or they may produce compounds through complex organic synthesis. Most process technicians work in manufacturing, testing packaging for design, integrity of materials and environmental acceptability. Often, process technicians who work in plants focus on quality assurance, monitoring product quality or production processes and developing new production techniques. A few work in shipping to provide technical support and expertise.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$29,310	\$33,480	\$29,300	\$26,660	\$30,370	\$26,830
Annual Average Wage 2011	\$44,090	\$46,920	\$38,880	\$39,100	\$39,190	\$35,510
Experienced Level Wage 2011	\$51,480	\$53,640	\$43,670	\$45,320	\$43,600	\$39,850
Estimated Employment 2008	4,620	240	460	80	60	250
Projected Employment 2018	4,740	220	460	80	50	250
Percent Change 2008-18	2.60%	-8.33%	0.00%	0.00%	-16.67%	0.00%
Annual Openings 2008-18	166	8	15	3	2	9

## Knowledge Required

Mathematics  
Chemistry  
Computers & Electronics  
English Language  
Food Production

## Skills Required

Operation Monitoring  
Operation & Control  
Monitoring  
Quality Control Analysis  
Critical Thinking

# General & Operations Managers

Common Employer Job Titles: Operations Manager, General Manager, Director of Operations, Plant Manager, Store Manager, Facilities Manager, Plant Superintendent, Vice President of Operations, Warehouse Manager

## Related Occupations

Administrative Services Manager, Chief Executive, Financial Manager, Legislator, Marketing & Sales Manager

## Nature of the Work

General & operations managers duties and responsibilities include formulating policies, managing daily operations and planning the use of materials and human resources, but are too diverse and general in nature to be classified in any one functional area of management or administration, such as personnel, purchasing or administrative services. In some organizations, the duties of general and operations managers may overlap the duties of chief executive officers.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$55,810	\$57,020	\$59,840	\$57,690	\$49,200	\$53,870
Annual Average Wage 2011	\$111,730	\$120,930	\$115,110	\$99,870	\$91,680	\$101,120
Experienced Level Wage 2011	\$139,690	\$152,890	\$142,740	\$120,960	\$112,920	\$124,750
Estimated Employment 2008	40,110	860	4,690	900	530	1,240
Projected Employment 2018	36,970	790	4,370	840	500	1,140
Percent Change 2008-18	-7.83%	-8.14%	-6.82%	-6.67%	-5.66%	-8.06%
Annual Openings 2008-18	967	21	113	22	13	30

## Knowledge Required

Administration & Management  
Customer & Personal Service  
English Language  
Law & Government  
Personnel & Human Resources

## Skills Required

Active Listening  
Judgment & Decision Making  
Management of Personnel Resources  
Monitoring  
Time Management

# Construction Managers

Common Employer Job Titles: Project Manager, Construction Manager, Construction Superintendent, Estimator, Concrete Foreman, Construction Area Manager, Construction Foreman, General Contractor, Job Superintendent

## Related Occupations

Architect, Civil Engineer, Cost Estimator, Engineering Manager, Landscape Architect

## Nature of the Work

Construction managers oversee the organization, scheduling and implementation of various construction projects. They may have job titles such as constructor, construction superintendent, general superintendent, project engineer, project manager, general construction manager or executive construction manager.

Managers evaluate possible construction methods and determine the most cost-effective plan. They coordinate all construction activities and schedule the time required to meet established deadlines. They also oversee the laborers and tradesman and are responsible for ensuring the safety of employees and the general public.

Meetings are held regularly with owners, trade contractors, architects and other design professionals to monitor and coordinate all phases of the project.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$60,690	\$63,810	\$64,440	\$62,580	\$57,550	\$51,510
Annual Average Wage 2011	\$101,430	\$102,690	\$104,670	\$82,900	\$70,420	\$90,920
Experienced Level Wage 2011	\$121,800	\$122,130	\$124,780	\$93,060	\$76,850	\$110,630
Estimated Employment 2008	10,270	590	1,630	130	30	300
Projected Employment 2018	11,280	610	1,700	140	40	310
Percent Change 2008-18	9.83%	3.39%	4.29%	7.69%	33.33%	3.33%
Annual Openings 2008-18	259	11	32	3	1	6

## Knowledge Required

Administration & Management  
 Building & Construction  
 Design  
 English Language  
 Mathematics

## Skills Required

Active Listening  
 Coordination  
 Critical Thinking  
 Instructing  
 Mathematics

# Architectural & Engineering Managers

Common Employer Job Titles: Engineering Manager, Project Engineer, Project Engineering Manager, Project Manager, Director of Engineering, Civil Engineering Manager, Principal Engineer, Process Engineering Manager

## Related Occupations

Systems Administrator, Computer Programmer, Mechanical Engineer, Nuclear Engineer

## Nature of the Work

Engineering managers plan, direct or coordinate activities in such fields as architecture and engineering or research and development.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$83,330	\$78,360	\$91,880	\$78,800	\$62,400	\$75,550
Annual Average Wage 2011	\$127,660	\$115,320	\$135,820	\$126,750	\$99,440	\$110,540
Experienced Level Wage 2011	\$149,820	\$133,800	\$157,800	\$150,730	\$117,950	\$128,040
Estimated Employment 2008	5,530	200	790	90	80	180
Projected Employment 2018	5,350	180	750	80	70	160
Percent Change 2008-18	-3.25%	-10.00%	-5.06%	-11.11%	-12.50%	-11.11%
Annual Openings 2008-18	112	4	16	2	2	4

## Knowledge Required

Engineering & Technology  
Mathematics  
Computers & Electronics  
Chemistry  
Physics

## Skills Required

Critical Thinking  
Coordination  
Tool Selection  
Equipment Maintenance  
Judgment & Decision Making

# Cost Estimators

Common Employer Job Titles: Estimator, Cost Estimator, Estimator Project Manager, Project Manager, Construction Estimator, Cost Analyst, Design Consultant, Operations Manager, Sales Engineer

## Related Occupations

Budget Analyst, Economist, Financial Analyst, Insurance Underwriter, Operations Research Analyst

## Nature of the Work

Cost estimators compile and analyze data on all the factors that can influence project costs. Job duties vary widely depending on the type and size of the project.

Within the construction industry, the cost estimation process begins with the decision to submit a bid. After reviewing drawings and specifications, a visit is made to the proposed site. With the information gathered “on-site”, the cost estimator determines equipment needs, sequence of operations and crew size. All of these findings are included in the cost summary.

In manufacturing firms, cost estimators determine the costs associated with making a product. A job usually begins with a request from management. Information is then gathered and analyzed by the cost estimator. The cost of purchasing parts is compared with the cost of manufacturing them to determine which is cheaper.

Although computers cannot be used for the entire estimating process, they can be used for complex mathematical calculations.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$39,050	\$44,850	\$42,470	\$39,690	\$34,820	\$37,280
Annual Average Wage 2011	\$60,170	\$59,610	\$61,040	\$57,240	\$69,010	\$56,140
Experienced Level Wage 2011	\$70,730	\$66,990	\$70,320	\$66,010	\$86,110	\$65,570
Estimated Employment 2008	11,080	360	1,590	300	130	440
Projected Employment 2018	11,860	390	1,760	320	150	470
Percent Change 2008-18	7.04%	8.33%	10.69%	6.67%	15.38%	6.82%
Annual Openings 2008-18	304	11	49	8	4	12

## Knowledge Required

Active Listening  
 Mathematics  
 Reading Comprehension  
 Time Management  
 Writing

## Skills Required

Deductive Reasoning  
 Inductive Reasoning  
 Information Ordering  
 Mathematical Reasoning  
 Oral Comprehension

# Accountants & Auditors

Common Employer Job Titles: Certified Public Accountant (CPA), Staff Accountant, Accounting Manager, Cost Accountant, General Accountant, Accounting Officer, Business Analyst, Accounting Supervisor, Internal Auditor

## Related Occupations

Actuary, Appraiser, Bank & Loan Officer, Financial Analyst

## Nature of the Work

Accountants & auditors prepare, analyze and verify financial documents in order to provide information to their clients.

Public accountants perform a broad range of accounting services for corporations, governments, nonprofit organizations or individuals.

Management accountants record and analyze the financial information of the companies for which they work. Other duties include budgeting, cost management and performance evaluation.

Government accountants & auditors maintain and examine the records of government agencies as well as businesses and individuals whose activities are subject to government regulations.

Internal auditors verify the accuracy of an organization's records. They also check for mismanagement, waste or fraud.

Computers are rapidly changing the nature of accounting work. Special software packages greatly reduce the amount of time spent on tedious manual calculations.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$42,340	\$44,890	\$41,550	\$42,280	\$36,400	\$37,390
Annual Average Wage 2011	\$70,650	\$73,710	\$69,330	\$66,010	\$57,450	\$61,600
Experienced Level Wage 2011	\$84,800	\$88,110	\$83,220	\$77,880	\$67,970	\$73,700
Estimated Employment 2008	55,770	1,170	9,910	790	510	1,410
Projected Employment 2018	58,530	1,250	10,330	850	550	1,450
Percent Change 2008-18	4.95%	6.84%	4.24%	7.59%	7.84%	2.84%
Annual Openings 2008-18	1,256	29	217	20	13	29

## Knowledge Required

Computers & Electronics  
Customer & Personal Service  
Economics & Accounting  
Law & Government  
Mathematics

## Skills Required

Critical Thinking  
Judgment & Decision Making  
Monitoring  
Reading Comprehension  
Systems Analysis



# Architects

Common Employer Job Titles: Architect, Project Architect, Project Manager, Architectural Project Manager, Principal, Design Architect

## Related Occupations

Construction Managers, Engineers, Landscape Architects, Urban & Regional Planners, Interior Designers

## Nature of the Work

Architects are responsible for designing these places, whether they are private or public; indoors or out; rooms, buildings or complexes. Architects are licensed professionals trained in the art and science of building design who develop the concepts for structures and turn those concepts into images and plans.

Architects create the overall look of buildings and other structures, but the design of a building involves far more than its appearance. Buildings also must be functional, safe and economical and must suit the needs of the people who use them. Architects consider all these factors when they design buildings and other structures.

Architects may be involved in all phases of a construction project, from the initial discussion with the client through the final delivery of the completed structure. Their duties require specific skills—designing, engineering, managing, supervising and communicating with clients and builders. Architects spend a great deal of time explaining their ideas to clients, construction contractors and others. Successful architects must be able to communicate their unique vision persuasively.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$55,530	\$51,270	\$46,800	-	-	\$47,950
Average Annual Wage 2011	\$82,620	\$80,720	\$71,280	-	-	\$60,230
Experienced Level Wage 2011	\$96,160	\$95,450	\$83,520	-	-	\$66,370
Estimated Employment 2008		20	1,060	220	10	100
Projected Employment 2018	5,390	20	980	200	10	100
Percent Change 2008-18	3.15%	0.00%	-7.55%	-9.09%	0.00%	0.00%
Annual Openings 2008-18	119	0	20	4	0	2

## Knowledge Required

Design  
Building & Construction  
Engineering & Technology  
Customer & Personal Service  
Administration & Management

## Skills Required

Active Listening  
Critical Thinking  
Complex Problem Solving  
Judgment & Decision Making

# Surveyors

Common Employer Job Titles: City Surveyor, Engineering Technician, Geodesist, Land Examiner, Licensed Land Surveyor, Mine Surveyor, Photogrammetric Engineer, Port Surveyor, Survey Coordinator, Topographical Surveyor

## Related Occupations

Architects, Engineers, Landscape Architects

## Nature of the Work

Surveyors measure distances, directions and angles between points on, above and below the Earth's surface. In the field, they select known survey reference points and determine the precise location of important features in the survey area using specialized equipment. Surveyors also research legal records, look for evidence of previous boundaries and analyze data to determine the location of boundary lines. They are sometimes called to provide expert testimony in court regarding their work or the work of other surveyors. Surveyors also record their results, verify the accuracy of data and prepare plots, maps and reports.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$35,070	\$27,720	\$32,730	\$43,760	\$40,010	\$29,260
Annual Average Wage 2011	\$53,570	\$39,900	\$53,570	\$52,740	\$49,410	\$41,400
Experienced Level Wage 2011	\$62,820	\$46,000	\$63,990	\$57,230	\$54,110	\$47,470
Estimated Employment 2008	2,100	110	320	30	40	140
Projected Employment 2018	2,280	100	320	40	50	150
Percent Change 2008-18	8.57%	-9.09%	0.00%	33.33%	25.00%	7.14%
Annual Openings 2008-18	83	3	10	1	2	5

## Knowledge Required

Building and Construction Design  
Engineering and Technology  
Geography  
Law & Government

## Skills Required

Active Listening  
Complex Problem Solving  
Coordination  
Critical Thinking  
Mathematics

# Civil Engineers

Common Employer Job Titles: Civil Engineer, Engineer, Project Engineer, Project Manager, Structural Engineer, City Engineer, Civil Engineering Manager, Railroad Design Consultant, Research Hydraulic Engineer

## Related Occupations

Broadcast & Sound Engineering Technicians, Clinical Laboratory Technologists & Technicians

## Nature of the Work

Engineers apply the principles of science and mathematics to develop economical solutions to technical problems. Their work is the link between scientific discoveries and the commercial applications that meet societal and consumer needs.

Many engineers develop new products. During the process, they consider several factors. For example, in developing an industrial robot, engineers specify the functional requirements precisely; design and test the robot's components; integrate the components to produce the final design; and evaluate the design's overall effectiveness, cost, reliability and safety. This process applies to the development of many different products, such as chemicals, computers, power plants, helicopters and toys.

In addition to their involvement in design and development, many engineers work in testing, production or maintenance. These engineers supervise production in factories, determine the causes of a component's failure and test manufactured products to maintain quality. They also estimate the time and cost required to complete projects.

Civil engineers design and supervise the construction of roads, buildings, airports, tunnels, dams, bridges and water supply and sewage systems. They must consider many factors in the design process from the construction costs and expected lifetime of a project to government regulations and potential environmental hazards, such as earthquakes and hurricanes. Civil engineering, considered one of the oldest engineering disciplines, encompasses many specialties. The major ones are structural, water resources, construction, transportation and geotechnical engineering. Many civil engineers hold supervisory or administrative positions, from supervisor of a construction site to city engineer. Others may work in design, construction, research and teaching.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$52,840	\$56,960	\$56,750	\$40,050	\$56,780	\$47,930
Annual Average Wage 2011	\$77,600	\$77,400	\$80,120	\$71,600	\$91,120	\$71,120
Experienced Level Wage 2011	\$89,990	\$87,610	\$91,800	\$87,380	\$108,280	\$82,710
Estimated Employment 2008	12,150	390	2,810	250	80	220
Projected Employment 2018	13,030	370	2,760	240	80	230
Percent Change 2008-18	7.24%	-5.13%	-1.78%	-4.00%	0.00%	4.55%
Annual Openings 2008-18	408	10	74	7	2	7

## Knowledge Required

- Building & Construction
- Engineering & Technology
- Mathematics
- Design
- Public Safety & Security

## Skills Required

- Reading Comprehension
- Active Listening
- Critical Thinking
- Operations Analysis
- Complex Problem Solving

# Electrical Engineers

Common Employer Job Titles: Electrical Engineer, Electrical Design Engineer, Project Engineer, Electrical Controls Engineer, Test Engineer, Hardware Design Engineer, Circuits Engineer, Electrical Project Engineer

## Related Occupations

Computer Programmer, Computer Support Specialist, Computer Systems Analyst, Network Systems Analyst

## Nature of the Work

Electrical engineers design, develop, test and supervise the manufacture of electrical equipment. Some of this equipment includes electric motors; machinery controls, lighting and wiring in buildings; radar and navigation systems; communications systems; and power generation, control and transmission devices used by electric utilities. Electrical engineers also design the electrical systems of automobiles and aircraft. Although the terms electrical and electronics engineering often are used interchangeably in academia and industry, electrical engineers traditionally have focused on the generation and supply of power, whereas electronics engineers have worked on applications of electricity to control systems or signal processing. Electrical engineers specialize in areas such as power systems engineering or electrical equipment manufacturing.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$59,330	\$57,480	\$60,030	\$60,300	\$54,200	\$51,500
Annual Average Wage 2011	\$86,610	\$79,810	\$87,200	\$79,720	\$70,800	\$76,540
Experienced Level Wage 2011	\$100,250	\$90,970	\$100,790	\$89,430	\$79,110	\$89,060
Estimated Employment 2008	5,700	170	1,080	140	40	250
Projected Employment 2018	5,590	160	1,100	120	40	200
Percent Change 2008-18	-1.93%	-5.88%	1.85%	-14.29%	0.00%	-20.00%
Annual Openings 2008-18	132	4	27	3	1	6

## Knowledge Required

Engineering & Technology  
 Mathematics  
 Physics  
 Computers & Electronics  
 Mechanical

## Skills Required

Critical Thinking  
 Complex Problem Solving  
 Equipment Maintenance  
 Judgment & Decision Making

# Environmental Engineers

Common Employer Job Titles: Environmental Engineer, Sanitary Engineer, Environmental Analyst, Hazardous Substances Engineer, Regulatory Environmental Compliance Manager, Environmental Remediation Specialist

## Related Occupations

Agricultural Engineer, Chemical Engineer, Civil Engineer, Industrial Engineer, Geological Engineer

## Nature of the Work

Using the principles of biology and chemistry, environmental engineers develop solutions to environmental problems. They are involved in water and air pollution control, recycling, waste disposal and public health issues. Environmental engineers conduct hazardous-waste management studies in which they evaluate the significance of the hazard, offer analysis on treatment and containment and develop regulations to prevent mishaps. They design municipal water supply and industrial wastewater treatment systems. They conduct research on proposed environmental projects, analyze scientific data and perform quality control checks.

Environmental engineers are concerned with local and worldwide environmental issues. They study and attempt to minimize the effects of acid rain, global warming, automobile emissions and ozone depletion. They also are involved in the protection of wildlife.

Many environmental engineers work as consultants, helping their clients to comply with regulations and to clean up hazardous sites.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$54,470	\$81,630	\$54,550	\$63,250	\$56,180	\$49,010
Annual Average Wage 2011	\$84,520	\$182,630	\$76,060	\$96,260	\$89,580	\$70,520
Experienced Level Wage 2011	\$99,550	\$233,130	\$86,810	\$112,760	\$106,280	\$81,280
Estimated Employment 2008	2,910	50	390	150	40	50
Projected Employment 2018	3,200	50	400	160	40	50
Percent Change 2008-18	9.97%	0.00%	2.56%	6.67%	0.00%	0.00%
Annual Openings 2008-18	114	2	12	5	2	1

## Knowledge Required

Administration & Management  
Engineering & Technology  
Law & Government  
Mathematics  
Public Safety & Security

## Skills Required

Active Listening  
Critical Thinking  
Reading Comprehension  
Science  
Writing

# Industrial Engineers

Common Employer Job Titles: Industrial Engineer, Process Engineer, Engineer, Operations Engineer, Engineering Manager, Manufacturing Specialist, Plant Engineer, Supply Chain Engineer, Tool Engineer, Production Engineer

## Related Occupations

Electrical Engineer, Materials Engineer, Materials Scientist, Mechanical Engineer, Mining & Geological Engineer

## Nature of the Work

Industrial engineers determine the most effective ways to use the basic factors of production — people, machines, materials, information and energy — to make a product or to provide a service. They are mostly concerned with increasing productivity through the management of people, methods of business organization and technology. To solve organizational, production and related problems efficiently, industrial engineers carefully study the product requirements, use mathematical methods to meet those requirements and design manufacturing and information systems.

They develop management control systems to aid in financial planning and cost analysis, and design production planning and control systems to coordinate activities and ensure product quality. They also design or improve systems for the physical distribution of goods and services, as well as determine the most efficient plant locations. Industrial engineers develop wage and salary administration systems and job evaluation programs. Many industrial engineers move into management positions because the work is closely related to the work of managers.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$54,640	\$57,360	\$58,340	\$52,510	\$49,860	\$56,760
Annual Average Wage 2011	\$78,470	\$76,900	\$80,750	\$73,410	\$70,090	\$78,280
Experienced Level Wage 2011	\$90,390	\$86,670	\$91,960	\$83,860	\$80,210	\$89,030
Estimated Employment 2008	9,650	270	1,260	220	130	260
Projected Employment 2018	10,880	290	1,470	260	150	290
Percent Change 2008-18	12.75%	7.41%	16.67%	18.18%	15.38%	11.54%
Annual Openings 2008-18	354	9	51	9	6	9

## Knowledge Required

Administration & Management  
 Engineering & Technology  
 Mathematics  
 Mechanical  
 Production & Processing

## Skills Required

Active Listening  
 Complex Problem Solving  
 Critical Thinking  
 Reading Comprehension  
 Time Management

# Mechanical Engineers

Common Employer Job Titles: Mechanical Engineer, Design Engineer, Product Engineer, Process Engineer, Equipment Engineer, Design Maintenance Engineer, Systems Engineer, Commissioning Engineer

## Related Occupations

Computer Engineer, Computer Systems Analyst, Engineering Managers, Engineering & Science Technicians

## Nature of the Work

Mechanical engineers research, develop, design, test and manufacture tools, engines and machinery. Specific duties will vary by industry and job function. In most mechanical engineering positions, computers are used to perform complex modeling and simulation.

This is the broadest engineering discipline, extending across many specialties. As a result, mechanical engineers may work in production operations, maintenance or technical sales.

## Wages & Employment

	Statewide	SW Corner	Three Rivers	Tri-County	West Central	West/Fay
Entry Level Wage 2011	\$54,750	\$45,870	\$60,010	\$52,800	\$50,960	\$55,510
Annual Average Wage 2011	\$79,300	\$66,430	\$83,720	\$72,200	\$76,490	\$73,630
Experienced Level Wage 2011	\$91,570	\$76,710	\$95,570	\$81,900	\$89,260	\$82,680
Estimated Employment 2008	9,290	150	1,380	200	170	280
Projected Employment 2018	8,870	140	1,310	180	180	240
Percent Change 2008-18	-4.52%	-6.67%	-5.07%	-10.00%	5.88%	-14.29%
Annual Openings 2008-18	202	3	30	4	4	6

## Knowledge Required

Building & Construction  
Design  
Engineering & Technology  
English Language  
Mathematics

## Skills Required

Active Listening  
Complex Problem Solving  
Critical Thinking  
Instructing  
Reading Comprehension