



Energy

Highlights

- The relative cost of traditional petroleum-based energy resources, particularly oil and refined oil products, will be a key factor in the growth of employment opportunities in the energy sector.
- Governmental actions, either “positive” incentives aimed at promoting certain activities (e.g., direct or indirect investments) or “negative” disincentives aimed at avoiding certain results (e.g., regulatory actions) will also greatly impact employment opportunities in this sector.
- Construction-related occupations in the energy sector will produce the most annual job openings due to replacement needs.
- Traditional occupational categories in transportation and manufacturing will also produce many of the projected annual job openings in these sectors due to replacement needs.

Nature of the Industry

The Energy sector in Illinois is focused on processes and technologies that improve energy supply and efficiency and reduce the environmental impacts associated with: 1) the development of energy resources; 2) the utilization of energy resources; or, 3) energy infrastructure. These are the emerging energy industries:

Building Energy Efficiency: Reducing electricity and natural gas consumption by improving energy efficiency in buildings through better designs and use of superior building envelope components, mechanical systems, sensors and controls.

Transportation Energy Efficiency: Improving overall public and private transportation energy efficiency by expanding public transit and inter-city rail services including high-speed rail, improving fleet efficiency, expanding the use of more fuel-efficient vehicles, hybrids, electric-powered vehicles; and, expanding the production and use of bio-fuels.

Energy-Related Manufacturing: Developing and producing products, processes, equipment, controls, and related technology used to reduce energy consumption in buildings and transportation, as well as expand energy recovery from renewable sources such as wind, solar, biomass and geothermal.

Energy Infrastructure: Improving processes associated with the generation, recovery, storage and use of energy from all sources, including: electricity generation; production of fuels from both renewable and non-renewable sources; recovery of energy from renewable sources; efficient storage and distribution of electricity and fuels. Significant energy investments in Illinois are focused on the following technologies:

Advance Battery Storage: Expanded development and use of energy alternatives will also include improved energy storage technology such as battery and fuel cell technology and support systems such as fueling stations and equipment.

Biofuels: Renewable energy under which biomass – in the form of any one of a number of types of biological products – is directly converted to burnable fuel, generally for use in transportation and often as an additive to existing petroleum-based fuels.

Clean Coal Energy: Expanding the production and use of energy using clean coal technology including carbon capture and storage and related mitigation strategies in order to increase coal’s viability as an energy source by decreasing the environmental impacts of its use.

Geothermal: Consists of thermal energy generated and stored in the Earth. A ground-source heat pump uses the shallow ground or ground water as a source of heat, thus taking advantage of its seasonally moderate temperatures.

Hydro: Water supply will also likely become a bigger issue in our economic future. It will be critical to have a sufficient water supply available to meet the increased demands of both population and industry. Compared to many states, Illinois has abundant water resources and several options in planning for its future water needs.

Natural Gas: Is an increasingly popular choice among homeowners, businesses, and electric utilities due to increasing efficiencies and energy-conserving technologies that can be used economically to meet consumers’ needs.

Nuclear: Power generation continues to supply a significant portion of Illinois’ energy demand. Given that the nuclear power production process does not emit carbon dioxide and the likelihood of new greenhouse gas emissions restrictions, there is some potential for expansion.

Smart Grid: Describes a set of changes to the electric transmission and distribution system (the electric “grid”), which results in an automated, widely distributed energy delivery network characterized by a two-way flow of both electricity and information about the usage of that electricity.

Solar: Renewable energy under which light energy from the sun is either converted directly to electrical energy (through the use of photovoltaics) or indirectly converted to usable energy (typically by converting water to steam and then using that steam to power an electrical generator).

Wind: Renewable energy under which some of the energy involved in the mass movement of the atmosphere is converted into electrical energy, typically by using wind to power a turbine which directly generates electricity.

Standard Occupational Classification (SOC) Code	Title	Employment 2014	Employment Change 2014-2024		Average Annual Job Openings due to			2015	Training/ Education Level
			Number	Percent	Growth	Replcmnts	Total	Median	
								Annual Wage	
00-0000	Total, All Occupations	6,263,919	371,593	5.93	42,732	147,453	190,185	\$37,316	
Energy Management									
499071	General Maintenance & Repair Workers	54,226	3,016	5.56	302	1,421	1,723	\$40,694	Moderate-term on-the-job training
472111	Electricians	24,421	3,668	15.02	367	373	740	\$74,060	Long-term on-the-job training
499041	Industrial Machinery Mechanics	11,486	2,530	22.03	253	298	551	\$54,482	Long-term on-the-job training
472152	Plumbers, Pipefitters & Steamfitters	17,107	2,105	12.30	210	226	436	\$76,037	Long-term on-the-job training
499021	Heat, A/C & Refrigeration Mechanics & Installers	7,700	1,191	15.47	119	118	237	\$52,100	Long-term on-the-job training
499051	Electric Power-Line Installers & Repairers	3,674	315	8.57	32	146	178	\$76,014	Long-term on-the-job training
518021	Stationary Engineers & Boiler Operators	3,814	170	4.46	17	104	121	\$80,588	Long-term on-the-job training
518031	Water & Waste Treatment Plant & Sys Operators	4,343	74	1.70	7	110	117	\$51,423	Long-term on-the-job training
537081	Refuse & Recyclable Material Collectors	3,717	220	5.92	22	93	115	\$45,296	Short-term on-the-job training
173022	Civil Engineering Techs	2,515	88	3.50	9	62	71	\$55,036	Associate degree
518013	Power Plant Operators	1,685	-25	-1.48	0	58	58	\$72,648	Long-term on-the-job training
194021	Biological Technicians	1,465	66	4.51	7	41	48	\$41,902	Associate degree
475040	Mining Occupations	1,507	-207	-13.74	0	27	27	\$53,982	Moderate-term on-the-job training
192042/3	Geoscientists & Hydrologists	429	69	16.08	7	13	20	\$91,251	Master's degree
173024	Electro-Mechanical Technicians	691	-1	-0.14	0	17	17	\$49,487	Associate degree
191022	Microbiologists	293	24	8.19	2	8	10	\$56,360	Doctoral degree
475021	Earth Drillers	301	17	5.65	2	7	9	\$68,289	Moderate-term on-the-job training
518099	Plant & System Operators, All Other	*	*	*	*	*	*	N/A	Long-term on-the-job training
Energy Engineering									
172141	Mechanical Engineers	12,055	654	5.43	65	382	447	\$84,543	Bachelor's degree
172051	Civil Engineers	10,625	931	8.76	93	314	407	\$84,434	Bachelor's degree
172199	Engineers, All Other	7,838	729	9.30	73	157	230	\$86,182	Bachelor's degree
173022	Civil Engineering Techs	2,515	88	3.50	9	62	71	\$55,036	Associate degree
172081	Environmental Engineers	1,391	217	15.60	22	39	61	\$84,606	Bachelor's degree
194021	Biological Technicians	1,465	66	4.51	7	41	48	\$41,902	Associate degree
172041	Chemical Engineers	1,327	70	5.28	7	36	43	\$92,027	Bachelor's degree
172151	Mining and Geological Engineers	295	41	13.90	4	8	12	N/A	Bachelor's degree
Building Energy Efficiency									
499071	General Maintenance & Repair Workers	54,226	3,016	5.56	302	1,421	1,723	\$40,694	Moderate-term on-the-job training
472061	Construction Laborers	44,107	4,304	9.76	430	880	1,310	\$49,768	Moderate-term on-the-job training
472111	Electricians	24,421	3,668	15.02	367	373	740	\$74,060	Long-term on-the-job training
472031	Carpenters	31,663	1,560	4.93	156	364	520	\$55,212	Long-term on-the-job training
472152	Plumbers, Pipefitters & Steamfitters	17,107	2,105	12.30	210	226	436	\$76,037	Long-term on-the-job training
131051	Cost Estimators	7,132	541	7.59	54	203	257	\$66,339	Work exp. in a related occupation
499021	Heat, A/C & Refrigeration Mechanics & Installers	7,700	1,191	15.47	119	118	237	\$52,100	Long-term on-the-job training
499098	Helpers--Installation, Maint. & Repair Workers	4,555	342	7.51	34	147	181	\$25,319	Short-term on-the-job training
472181	Roofers	5,264	727	13.81	73	80	153	\$41,891	Moderate-term on-the-job training
172071	Electrical Engineers	5,263	122	2.32	12	116	128	\$92,036	Bachelor's degree
474011	Construction & Building Inspectors	3,156	166	5.26	17	88	105	\$66,899	Work exp. in a related occupation
472131	Insulation Workers	713	51	7.15	5	24	29	\$38,355	Moderate-term on-the-job training
472121	Glaziers	1,362	73	5.36	7	20	27	\$40,638	Long-term on-the-job training
173025	Environmental Engineering Techs	657	34	5.18	3	16	19	\$40,336	Associate degree
473012	Helpers--Carpenters	923	67	7.26	7	12	19	\$29,096	Short-term on-the-job training
193051	Urban & Regional Planners	692	10	1.45	1	13	14	\$81,513	Master's degree
Transportation Energy Efficiency									
533032	Truck Drivers, Heavy & TractorTrailer	71,486	6,029	8.43	603	1,216	1,819	\$43,755	Moderate-term on-the-job training
493023	Automotive Service Techs & Mechanics	28,460	1,654	5.81	165	762	927	\$39,201	Postsecondary vocational award
499041	Industrial Machinery Mechanics	11,486	2,530	22.03	253	298	551	\$54,482	Long-term on-the-job training
493031	Bus & Truck Mechanics & Diesel Eng Specialists	9,673	1,458	15.07	146	166	312	\$46,120	Postsecondary vocational award
531031	1st-Line Svrs/Mgrs, Trans Machine Operators	6,484	449	6.92	45	208	253	\$58,244	Work exp. in a related occupation
113071	Transportation, Storage & Distribution Managers	6,436	328	5.10	33	142	175	\$81,317	Work exp. in a related occupation
533021	Bus Drivers, Transit & Intercity	7,400	471	6.36	47	97	144	\$44,553	Moderate-term on-the-job training
131081	Logisticians	4,855	408	8.40	41	68	109	\$66,599	Bachelor's degree
192041	Environmental Scientists & Specialists	1,959	273	13.94	27	60	87	\$83,719	Master's degree
493042	Mobile Heavy Equipment Mechanics	2,333	155	6.64	16	55	71	\$55,437	Postsecondary vocational award
194091	Environmental Science & Protection Techs	1,322	97	7.34	10	55	65	\$36,308	Associate degree
536051	Transportation Inspectors	1,208	17	1.41	2	31	33	\$73,278	Work exp. in a related occupation
474061	Rail-Track Laying & Maint Equipment Operators	1,082	19	1.76	2	27	29	\$54,920	Moderate-term on-the-job training
173025	Environmental Engineering Techs	657	34	5.18	3	16	19	\$40,336	Associate degree
193051	Urban & Regional Planners	692	10	1.45	1	13	14	\$81,513	Master's degree
532021	Air Traffic Controllers	*	*	*	*	*	*	\$138,736	Long-term on-the-job training

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			Number	Percent	Growth	Replcmnts		
Energy-Related Manufacturing								
111021	General & Operations Managers	108,229	9,185	8.49	918	2,740	3,658	\$93,657 Bach degree, plus work exp.
499071	General Maintenance & Repair Workers	54,226	3,016	5.56	302	1,421	1,723	\$40,694 Moderate-term on-the-job training
514041	Machinists	30,448	3,202	10.52	320	880	1,200	\$36,619 Long-term on-the-job training
414011	Sales Reps, Wholesale/Mfg, Tech/Scientific Prods	21,636	1,104	5.10	110	445	555	\$65,397 Moderate-term on-the-job training
499041	Industrial Machinery Mechanics	11,486	2,530	22.03	253	298	551	\$54,482 Long-term on-the-job training
514121	Welders, Cutters, Solderers & Brazers	15,089	401	2.66	40	433	473	\$36,041 Long-term on-the-job training
172141	Mechanical Engineers	12,055	654	5.43	65	382	447	\$84,543 Bachelor's degree
511011	1st-Line Svrs/Mgrs, Prod. & Operating Workers	27,541	-42	-0.15	0	435	435	\$58,008 Work exp. in a related occupation
151199	Computer Occupations, All Other	17,312	1,513	8.74	151	223	374	\$85,662 Associate degree
491011	1st-Line Svrs/Mgrs, Mechanics & Installers	13,811	930	6.73	93	275	368	\$65,086 Work exp. in a related occupation
435061	Production, Planning & Expediting Clerks	11,721	385	3.28	38	318	356	\$46,200 Short-term on-the-job training
512099	Assemblers & Fabricators, All Other	11,723	833	7.11	83	252	335	\$26,207 Moderate-term on-the-job training
514011	Computer-Controlled Machine Tool Operators	6,787	1,281	18.87	128	206	334	\$37,730 Moderate-term on-the-job training
172112	Industrial Engineers	10,109	162	1.60	16	296	312	\$78,146 Bachelor's degree
131023	Purchasing Agents	9,716	71	0.73	7	267	274	\$63,493 Work exp. in a related occupation
172199	Engineers, All Other	7,838	729	9.30	73	157	230	\$86,182 Bachelor's degree
113051	Industrial Production Managers	7,117	-127	-1.78	0	202	202	\$89,329 Work exp. in a related occupation
499043	Maintenance Workers, Machinery	5,489	685	12.48	68	88	156	\$43,576 Short-term on-the-job training
514081	Multiple Machine Tool Setters & Operators	6,176	143	2.32	14	107	121	\$35,496 Moderate-term on-the-job training
512022	Electric & Electronic Equipment Assemblers	8,863	-430	-4.85	0	109	109	\$29,535 Short-term on-the-job training
173029	Engineering Techs, All Other	4,109	78	1.90	8	100	108	\$59,775 Associate degree
173023	Electrical & Electronic Engineering Techs	3,882	-87	-2.24	0	95	95	\$65,147 Associate degree
514122	Welding, Solder & Brazing Machine Setters/Opers	2,653	-450	-16.96	0	76	76	\$34,916 Moderate-term on-the-job training
518091	Chemical Plant & System Operators	1,949	-26	-1.33	0	74	74	\$55,969 Long-term on-the-job training
192031	Chemists	3,004	65	2.16	6	66	72	\$74,993 Bachelor's degree
194031	Chemical Techs	2,202	19	0.86	2	66	68	\$44,986 Associate degree
499044	Millwrights	1,523	233	15.30	23	31	54	\$49,487 Long-term on-the-job training
271021	Commercial & Industrial Designers	1,534	30	1.96	3	36	39	\$63,693 Bachelor's degree
173026	Industrial Engineering Techs	1,569	-11	-0.70	0	38	38	\$52,575 Associate degree
514111	Tool & Die Makers	6,247	-559	-8.95	0	31	31	\$53,157 Long-term on-the-job training
173013	Mechanical Drafters	2,430	-173	-7.12	0	29	29	\$52,192 Postsecondary vocational award
512031	Engine & Other Machine Assemblers	1,177	23	1.95	2	24	26	\$40,703 Short-term on-the-job training
512023	Electromechanical Equipment Assemblers	1,747	-27	-1.55	0	22	22	\$35,161 Short-term on-the-job training
192032	Materials Scientists	373	-6	-1.61	0	8	8	\$99,382 Bachelor's degree

Source: IL Dept. of Employment Security, Economic Information & Analysis Division