December 2025

Workforce Research & Analysis

ENERGY CLUSTER PROFILE IN UTAH

ENERGY CLUSTER PROFILE IN UTAH

Reference Period: 2024 Calendar Year

Published December 2025

UTAH DEPARTMENT OF WORKFORCE SERVICES
Workforce Research & Analysis Division
140 East 300 South
PO Box 45249
Salt Lake City, Utah 84145-9902

Phone: 801-526-9491
Toll Free: 800-848-1481

jobs.utah.gov/wi

ACKNOWLEDGMENTS

Workforce products from the Workforce Research and Analysis (WRA) Division of the Department of Workforce Services (DWS) are funded by a grant awarded by the U.S. Department of Labor's Employment and Training Administration. These products were created by the recipient and do not necessarily reflect the official position of the U.S. Department of Labor. The U.S. Department of Labor makes no guarantees, warranties, or assurances of any kind, express or implied, with respect to such information, including any information on linked sites and including, but not limited to, the accuracy of the information or its completeness, timeliness, usefulness, adequacy, continued availability, or ownership.

Many individuals within the Workforce Research & Analysis Division contributed to this publication. Special recognition is given to the following:

Ben Crabb
Michael Jeanfreau
Gwendolyn Kervin
Marilyn Cannon
Henry Pernichele

SECTION I

ENERGY CLUSTER PROFILE IN UTAH 2024

Energy Cluster Profile in Utah

Introduction

Energy is the bedrock of the modern economy. From communication to transportation to farming, it is an integral component of nearly every economic activity. As time passes, the role of energy becomes increasingly important as innovation and new technologies expand its applications. The growing interest in alternative energy sources, increased automation, and the rise of artificial intelligence have made access to abundant and reliable energy more important than ever.

Energy consumed in Utah comes from a variety of sources, predominantly petroleum, natural gas, and coal. An analysis of Utah's energy use from the U.S. Energy Information Administration (EIA) estimates that in 2023, 50% of primary energy consumption in the state came from petroleum products, 36% originated from natural gas, and 11% came from coal. The remaining 3% originated from renewable energy sources such as solar, wind, hydropower, geothermal, and biomass. The state is also a large producer of energy, ranking 9th among states in crude oil production, 13th in natural gas production, and 14th in coal production.

Numerous industries are involved in activities related to the production and distribution of energy in the state. The breadth of industrial activities that support the state's energy sector spans beyond just resource extraction and conversion into end products like gasoline and electricity. There are also a wide array of supporting or peripheral industries that provide the machinery, transportation, consulting services, and markets upon which the energy system depends for its continued operations.

This wide array of industrial activities, all involved to various degrees in aspects of the state's energy sector, can be thought of as an industrial "cluster." This report proposes some preliminary working definitions of the state's energy cluster, and provides an assessment of this industrial grouping through the lens of employment, wages, and occupations.

Defining the Energy Cluster

While the concept of an energy industry is broadly understood, no universally accepted definition exists for an "energy sector" or "energy cluster" of industries. Major institutions including the Bureau of Labor Statistics, Energy Information Administration, and US Census Bureau, which would typically be the authorities on a classification of this kind, have no formal definition of the energy sector.

The most common method when creating industrial groupings is to work from an existing coding structure, such as the North American Industry Classification System (NAICS), and aggregate

the groupings into a custom cluster. The choice of industries to include is not simple and straightforward, as companies classified in a particular industry may be more or less directly involved in energy-related activities. For example, some roofing contractors may specialize in installing solar reflective coating, clearly an energy-related activity, while others may have very few projects with any direct energy aspect.

Decisions about which industries to include in an "energy cluster" come with trade-offs. A narrow definition of the energy cluster would only include those "core" industries where a large majority of employment is closely tied to activities related to energy production and distribution (e.g. coal mining, electric power generation, oil and gas pipeline construction, geophysical surveying, and mapping services). This approach comes at the cost of missing many supporting activities in other industries. Alternatively, a broader definition would include more industries, to capture the numerous "peripheral" industrial activities upon which direct energy production and distribution depend for their continued operations and growth. This approach comes at the cost of including some industries that are only partly involved with energy-related activities.

This report uses the latter, broader definition approach to defining the state's energy cluster. Candidate industries were identified from NAICS-based characterizations of the energy sector by the Kem C. Gardner Policy Institute (Downen et. al 2020), the Utah Office of Energy Development (OED 2014), and Purdue University (Purdue 2007). From these industry lists, 107 detailed six-digit NAICS codes were selected for inclusion in the "energy cluster." Each industry was given the distinction of "core" or "peripheral," based on its level of direct involvement in the production, harvesting and distribution of energy (Table 1). This core/periphery distinction enables painting two complimentary pictures of energy: the state of the entire cluster, and of just the "core" industries.

Industries were further divided into seven industry groups based on their two-digit NAICS sector: mining, utilities, construction, manufacturing, trade, transportation, and administration & consulting services:

- Mining: Industries involved in the extraction of raw materials used in energy production from the earth such as coal, oil, and precious metals necessary for energy production.
- Utilities: Industries that produce and distribute energy directly to consumers via a grid network such as fossil fuel power generation.
- Construction: Industries that directly or indirectly build energy infrastructure such as powerline and communication system construction.
- Manufacturing: Industries that produce goods used in energy production/extraction or goods with energy sources as a key input such as petrochemical manufacturing.
- Trade: Industries that buy and sell energy materials and accessory goods such as wholesale merchandisers of petroleum and fuel dealers.
- Transportation: Industries that transport energy materials and byproducts including pipeline, freight, and truck transportation.
- Administration and Consulting Services: Industries that provide scientific/technical consultation on energy projects or regulation/administrative oversight.

Employment and wages: Detailed industries

Employment, wages, and establishment counts for each of the detailed industries in Utah's energy cluster are listed in Table 1, organized by NAICS code and industrial grouping. Also included are the "core" and "peripheral" distinctions indicating each industry's relative attachment to energy activities.

Of the 107 industries in the energy cluster, 39 were classified as "core" industries and 68 as "peripheral." Nine industries did not have an active presence in the state in 2024, with zero reported employment.

Table 1: Industries in Utah's energy cluster by NAICS code, with 2024 employment, wages, and establishment counts.

NAICS	Industry	Core or peripheral	2024 Employment	Total Wages (millions)	Average Annual Wage	Establishments
Mining						
211120	Crude Petroleum Extraction	Core	705	$81.9	$116k	47
211130	Natural Gas Extraction	Core	474	$56.7	$120k	17
212114	Surface Coal Mining	Core	**	**	**	2
212115	Underground Coal Mining	Core	**	**	**	5
212210	Iron Ore Mining	Peripheral	**	**	**	1
212220	Gold Ore and Silver Ore Mining	Peripheral	36	$9.0	$249k	11
212230	Copper, Nickel, Lead, and Zinc Mining	Peripheral	**	**	**	5
212290	Other Metal Ore Mining	Core	221	$22.5	$105k	8
213111	Drilling Oil And Gas Wells	Core	612	$60.2	$98k	58
213112	Support Activities For Oil And Gas Operations	Core	2,695	$228.9	$85k	290
213113	Support Activities For Coal Mining	Core	324	$31.6	$97k	12
213114	Support Activities for Metal Mining	Peripheral	713	$116.1	$163k	26
Utilities						
221111	Hydroelectric Power Generation	Core	41	$3.4	$83k	15
221112	Fossil Fuel Electric Power Generation	Core	953	$135.7	$142k	19
221113	Nuclear Electric Power Generation	Core	-	-	-	-
221114	Solar Electric Power Generation	Core	749	$77.0	$103k	66
221115	Wind Electric Power Generation	Core	26	$4.1	$120k	9
221116	Geothermal Electric Power Generation	Core	36	$4.3	$156k	5

221117	Biomass Electric Power Generation	Core	**	**	**	2
221118	Other Electric Power Generation	Core	44	$6.2	$119k	13
221121	Electric Bulk Power Transmission And Control	Core	86	$8.9	$141k	4
221122	Electric Power Distribution	Core	**	**	**	64
221210	Natural Gas Distribution	Core	**	**	**	36
221330	Steam and Air-Conditioning Supply	Peripheral	44	$3.4	$78K	8
Construction						
237110	Water and Sewer Line and Related Structures Construction	Peripheral	2,973	$239.6	$81k	139
237120	Oil And Gas Pipeline And Related Structures Construction	Core	1,261	$117.7	$93k	63
237130	Power And Communication System Construction	Core	2,349	$200.1	$85k	127
237990	Other Heavy and Civil Engineering Construction	Peripheral	688	$69.0	$100k	83
238161	Roofing contractors - residential	Peripheral	2,640	$151.1	$57k	398
238162	Roofing contractors - nonresidential	Peripheral	1,138	$74.1	$65k	41
238211	Electrical contractors - residential	Peripheral	12,765	$952.7	$75k	1,247
238212	Electrical contractors - nonresidential	Peripheral	8,350	$720.6	$86k	217
238221	Plumbing, Heating, and Air-Conditioning Contractors - residential	Peripheral	11,003	$699.4	$64k	1,517
238222	Plumbing, Heating, and Air-Conditioning Contractors - nonresidential	Peripheral	5,898	$492.9	$84k	170
Manufacturing						
324110	Petroleum Refineries	Core	1,519	$248.5	$164k	19
324199	All Other Petroleum and Coal Products Manufacturing	Core	-	-	-	-
325110	Petrochemical Manufacturing	Core	-	-	-	-
325120	Industrial Gas Manufacturing	Core	249	$22.9	$92k	14
325193	Ethyl Alcohol Manufacturing	Core	-	-	-	-
325311	Nitrogenous Fertilizer Manufacturing	Peripheral	52	$3.5	$68k	6
325312	Phosphatic Fertilizer Manufacturing	Peripheral	-	-	-	-
325314	Fertilizer (Mixing Only) Manufacturing	Peripheral	**	**	**	1
325920	Explosives Manufacturing	Peripheral	**	**	**	2

326211	Tire Manufacturing (except Retreading)	Peripheral	-	-	-	-
326220	Rubber and Plastics Hoses and Belting Manufacturing	Peripheral	123	$7.5	$61k	9
327310	Cement Manufacturing	Peripheral	279	$29.3	$105k	5
327320	Ready-Mix Concrete Manufacturing	Peripheral	2,087	$161.1	$77k	50
327331	Concrete Block and Brick Manufacturing	Peripheral	156	$7.8	$50k	5
327332	Concrete Pipe Manufacturing	Peripheral	**	**	**	1
327390	Other Concrete Product Manufacturing	Peripheral	879	$61.9	$70k	35
327410	Lime Manufacturing	Peripheral	**	**	**	2
327420	Gypsum Product Manufacturing	Peripheral	162	$11.3	$70k	4
331410	Nonferrous Metal (except Aluminum) Smelting and Refining	Peripheral	882	$94.7	$107k	7
331420	Copper Rolling, Drawing, Extruding, and Alloying	Peripheral	9	$0.9	$98k	3
331491	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding	Peripheral	**	**	**	7
331492	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	Peripheral	39	$2.6	$67k	3
332410	Power Boiler and Heat Exchanger Manufacturing	Peripheral	6	$0.7	$109k	3
332420	Metal Tank (Heavy Gauge) Manufacturing	Peripheral	437	$27.5	$63k	9
333131	Mining machinery and equipment manufacturing	Core	257	$19.0	$74k	16
333132	Oil and gas field machinery and equipment manufacturing	Core	448	$39.3	$88k	14
333242	Semiconductor Machinery Manufacturing	Peripheral	18	$1.6	$90k	8
333248	All Other Industrial Machinery Manufacturing	Peripheral	561	$36.9	$66k	48
333414	Heating Equipment (except Warm Air Furnaces) Manufacturing	Peripheral	**	**	**	7
333611	Turbine And Turbine Generator Set Units Manufacturing	Core	**	**	**	6
333612	Speed Changer, Industrial High-Speed Drive, and Gear Manufacturing	Peripheral	**	**	**	3
333613	Mechanical Power Transmission Equipment Manufacturing	Peripheral	-	-	-	-

333618	Other Engine Equipment Manufacturing	Peripheral	256	$15.9	$62k	4
334413	Semiconductor and Related Device Manufacturing	Peripheral	1,394	$193.5	$139k	33
334519	Other Measuring and Controlling Device Manufacturing	Peripheral	529	$43.7	$83k	19
335311	Power, Distribution, and Specialty Transformer Manufacturing	Core	91	$7.5	$83k	10
335312	Motor and Generator Manufacturing	Peripheral	174	$22.6	$130k	13
335313	Switchgear and Switchboard Apparatus Manufacturing	Peripheral	133	$11.8	$89k	10
335314	Relay and Industrial Control Manufacturing	Peripheral	106	$8.1	$76k	8
335910	Battery Manufacturing	Peripheral	**	**	**	8
335929	Other Communication and Energy Wire Manufacturing	Peripheral	**	**	**	4
335931	Current-Carrying Wiring Device Manufacturing	Peripheral	22	$1.4	$64k	5
335991	Carbon and Graphite Product Manufacturing	Peripheral	1,292	$116.0	$90k	6
335999	All Other Miscellaneous Electrical Equipment and Component Manufacturing	Peripheral	605	$46.1	$76k	28
Trade						
423510	Metal Service Centers and Other Metal Merchant Wholesalers	Peripheral	1,234	$107.7	$87k	90
423520	Coal and other mineral and ore merchant wholesalers	Core	4	$0.2	51k	3
424710	Petroleum Bulk Stations and Terminals	Core	203	$16.1	$79k	24
424720	Petroleum and Petroleum Products Merchant Wholesalers (except Bulk Stations and Terminals)	Core	419	$45.2	$108k	52
441340	Tire Dealers	Peripheral	3,633	$203.5	$56k	268
457210	Fuel Dealers	Core	220	$15.4	$70k	30
Transportation						
482111	Line-Haul Railroads	Peripheral	**	**	**	27
482112	Short Line Railroads	Peripheral	-	-	-	-
484110	General Freight Trucking, Local	Peripheral	2,948	$170.5	$58k	594
484121	General Freight Trucking, Long-Distance, Truckload	Peripheral	7,201	$450.0	$62k	645

484122	General Freight Trucking, Long-Distance, Less Than Truckload	Peripheral	3,475	$277.6	$80k	97
484220	Specialized Freight (except Used Goods) Trucking, Local	Peripheral	3,472	$269.2	$78k	368
484230	Specialized Freight (except Used Goods) Trucking, Long-Distance	Peripheral	2,776	$202.6	$73k	179
486110	Pipeline Transportation Of Crude Oil	Core	**	**	**	6
486210	Pipeline Transportation Of Natural Gas	Core	**	**	**	12
486910	Pipeline transportation of refined petroleum products	Core	72	$8.6	$119k	7
486990	All Other Pipeline Transportation	Peripheral	44	$5.0	$114k	3
Admin and Consulting Services						
532411	Commercial Air, Rail, and Water Transportation Equipment Rental and Leasing	Peripheral	**	**	**	2
532412	Construction, Mining, and Forestry Machinery and Equipment Rental and Leasing	Peripheral	1,183	$111.5	$94k	129
541360	Geophysical Surveying and Mapping Services	Core	58	$5.3	$92k	18
541370	Surveying and Mapping (except Geophysical) Services	Peripheral	383	$27.7	$72k	101
541380	Testing Laboratories and Services	Peripheral	2,065	$168.7	$82k	156
541620	Environmental Consulting Services	Peripheral	810	$81.1	$100k	199
541690	Other Scientific and Technical Consulting Services	Peripheral	1,802	$186.2	$103k	611
562211	Hazardous Waste Treatment and Disposal	Peripheral	623	$51.4	$82k	24
562212	Solid Waste Landfill	Peripheral	440	$25.7	$58k	31
562213	Solid Waste Combustors and Incinerators	Peripheral	-	-	-	-
562219	Other Nonhazardous Waste Treatment and Disposal	Peripheral	351	$27.1	$77k	18
926130	Regulation and administration of communications, electric, gas, and other utilities	Core	1,377	$94.2	$68k	58

**: employment and wage counts suppressed.
-: no employment reported
Source: Bureau of Labor Statistics' Quarterly Census of Employment and Wages (QCEW)

Employment and wages: Energy cluster industry groups

Despite its importance in overall economic activity, the energy cluster makes up a relatively small proportion of the overall labor force, with roughly 112,000 jobs or 6.4% of total 2024 employment in the state, and 7.9% of all wages. Core energy industries account for roughly 19,000 jobs or 1.1% of total jobs and 1.7% of all wages. From 2014 to 2024, average monthly employment in Utah's energy cluster grew nearly 29%, similar to overall state job growth of 31%. Over the same period, the core energy cluster saw a 2.7% contraction in jobs. Despite this contraction, total wages in the core cluster grew by 27%.

Construction was the largest subsector of the energy cluster overall, accounting for nearly 44% of all energy employment and 41% of all energy wages. Construction also saw the largest employment and wage gains over this period, growing 75% and 174% respectively. Most of the construction industries included in the energy cluster are classified as "peripheral" and also have high levels of employment, resulting in a high proportion of all energy employment being tabulated in construction.

Table 2: Energy cluster employment, wages, and establishments, 2014 and 2024.

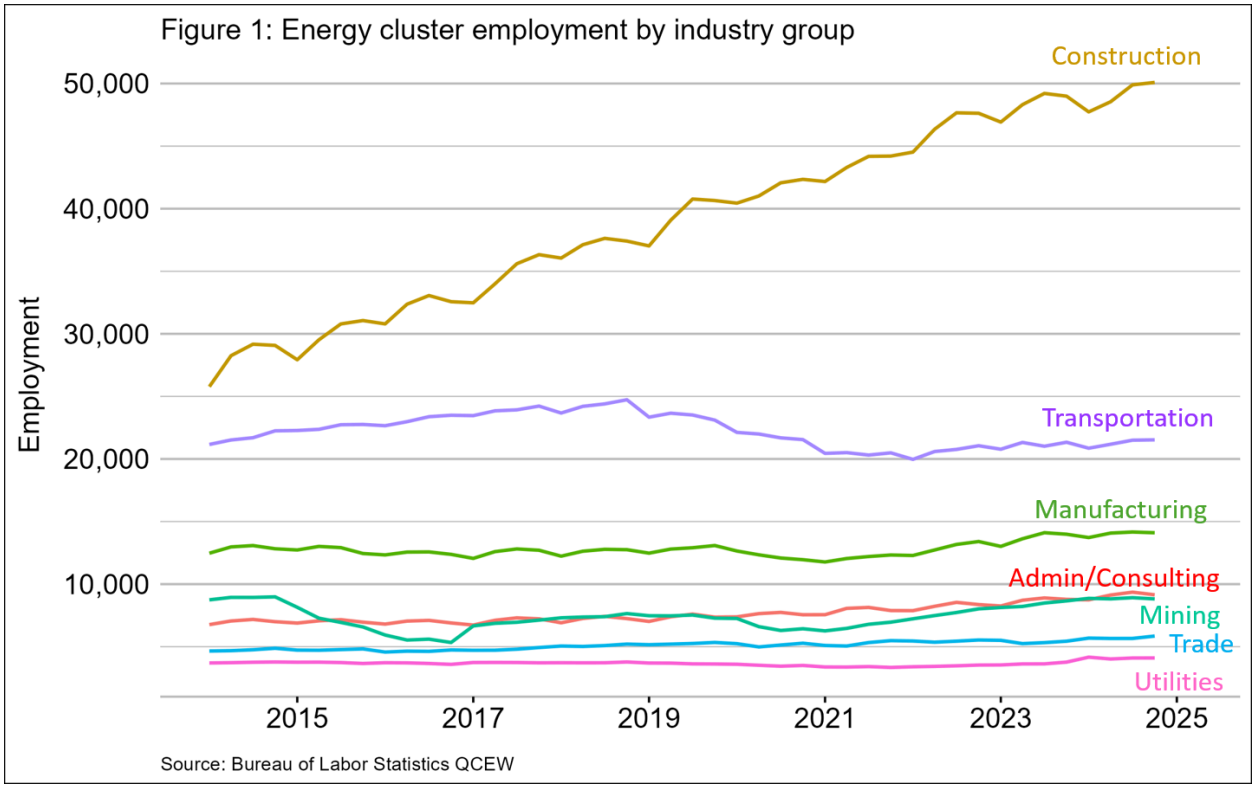
	Employment	Average Annual Wage	Total Payroll Wages	Establishments	% of Energy Employment	% of Energy Wages	% of Energy Establishments
Admin and Consulting Services							
2014	6,999	$64,023	$448,094,102	1,038	8.1%	8.9%	15.7%
2024	9,093	$85,684	$779,123,482	1,347	8.1%	8.5%	15.1%
% Change	29.9%	33.8%	73.9%	29.8%			
Construction							
2014	28,070	$48,374	$1,357,852,063	2,674	32.3%	27.1%	40.4%
2024	49,065	$75,760	$3,717,159,788	4,002	43.7%	40.5%	44.9%
% Change	74.8%	56.6%	173.8%	49.7%			
Manufacturing							
2014	12,838	$69,452	$891,619,282	295	14.8%	17.8%	4.5%
2024	14,022	$96,327	$1,350,690,289	437	12.5%	14.7%	4.9%
% Change	9.2%	38.7%	51.5%	48.1%			
Mining							
2014	8,902	$82,765	$736,770,101	572	10.2%	14.7%	8.6%

2024	8,855	$103,302	$914,735,963	482	7.9%	10.0%	5.4%
% Change	-0.5%	24.8%	24.2%	-15.7%			
Trade							
2014	4,742	$44,840	$212,631,038	425	5.5%	4.2%	6.4%
2024	5,713	$67,950	$388,198,390	467	5.1%	4.2%	5.2%
% Change	20.5%	51.5%	82.6%	9.9%			
Transportation							
2014	21,656	$46,969	$1,017,161,904	1,485	24.9%	20.3%	22.4%
2024	21,269	$71,025	$1,510,622,422	1,938	19.0%	16.5%	21.7%
% Change	-1.8%	51.2%	48.5%	30.5%			
Utilities							
2014	3,740	$92,401	$345,578,321	135	4.3%	6.9%	2.0%
2024	4,138	$122,728	$507,848,307	242	3.7%	5.5%	2.7%
% Change	10.6%	32.8%	47.0%	79.3%			
Total Energy Cluster							
2014	86,947	$57,618	$5,009,706,811	6,624	100%	100%	100%
2024	112,155	$81,747	$9,168,378,641	8,915	100%	100%	100%
% Change	28.9%	41.9%	82.9%	34.6%			

Source: Bureau of Labor Statistics' Quarterly Census of Employment and Wages (QCEW)

Employment trends in energy cluster industry groups

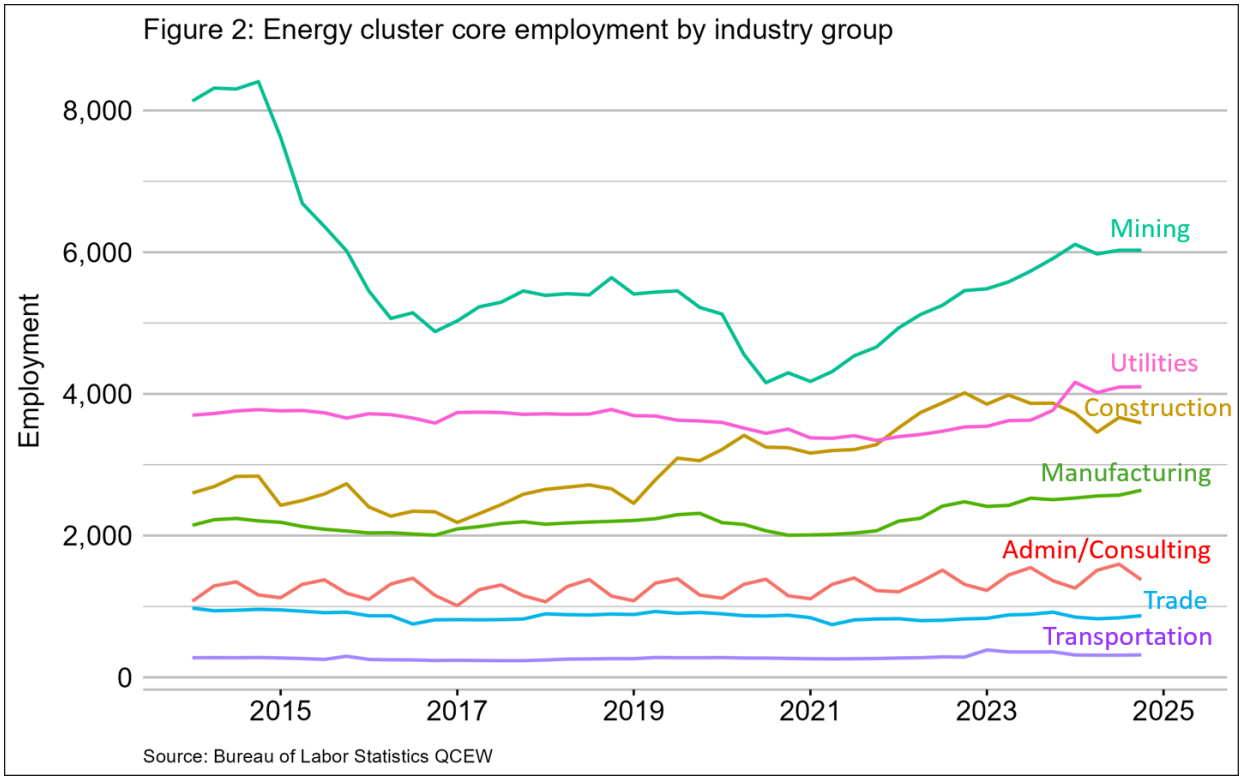
Due to strong growth in the statewide construction industry, employment in the construction industry group has grown much faster than other energy industrial groupings, expanding by 75% from 2014-2024. All other energy industry groups lagged the 31% rate of overall job growth in the state from 2014-2024. Administration and consulting grew by 30% and the trade industry group, made up of wholesalers and dealers, grew by 20.5%. All other industry groups expanded by less than 10% over the 10-year period, and the transportation and mining groups experienced contractions.



Employment trends in energy cluster "core" industry groups

Overall employment in core energy industries declined from 19,426 in 2014 to 18,909 in 2024, a modest decline of about 3%. In the middle of this time period, employment levels in mining industries were pulled downward by low world energy prices, with mining jobs declining from approximately 8,000 in 2015 to 4,000 in 2020. By 2024, mining employment had rebounded to around 6,000, and overall core energy employment had returned close to, but still below, its 2014 level. Mining industries were the largest portion of core industries in 2024, comprising 44.5% and 39.5% of core industry employment and wages, respectively.

Construction was the fastest-growing core energy group in terms of jobs and total wages over the 2014-2024 period, primarily due to growth in oil & gas pipeline and power & communication system construction. Manufacturing industries also grew over this time span, from 2,205 employees in 2014 to 2,575 in 2024, a 17% expansion. The other core industry groups experienced mostly stable employment levels over the last ten years.



Energy cluster occupations

Occupations prevalent in the energy cluster are presented in Tables 3, 4, and 5. Occupational codes and titles are based on the 2018 Standard Occupational Classification (SOC) system. The tables are separated so each presents a slice of the occupational mix based on typical educational requirements. Table 3 lists occupations requiring a bachelor's degree or higher; Table 4 lists occupations requiring an associate's degree or other postsecondary credential short of a bachelor's degree; and Table 5 lists occupations with an educational requirement of high school or less. Not all occupations in the energy cluster are included in these tables. To limit table size, a selection of prevalent occupations was made based on the share of occupational employment in energy and core energy industries.

Occupations were identified using the most recent staffing patterns created from the Occupational Employment and Wage Statistics data being applied to the most recent 2022-2032 long-term occupational projections. For each occupation, the percent of occupational employment in energy industries and in core energy industries is shown. The share of total energy jobs that are classified in each occupation is also available.

Each table is organized with color coded rows based on a "Star rating" metric from the Utah Department of Workforce Services, which is a measure of occupational quality based on

earnings, growth outlook, and turnover rates. Top ranked occupations are in red-colored rows; middle ranked occupations are in yellow rows, and low ranked occupations are in gray rows. The annual turnover rate is also provided as an indicator of occupational quality. The turnover rate is the percentage of workers leaving the occupation each year. Lower turnover rates are an indication of higher occupational quality, as people tend to stay longer in occupations that meet their needs and that they enjoy. The turnover rate for all occupations in the state is around 12%, while in aggregate in the energy sector it is just under 10%, suggesting relatively high worker satisfaction in energy occupations.

Occupations requiring a bachelor's degree or higher (Table 3) make up a relatively small share of occupations prevalent in the energy cluster. These occupations tend to have higher ratings of occupational quality and relatively low turnover rates, with median salaries ranging from $64,000 to $166,000. Most are classified as STEM (science, technology, engineering and math) occupations. The annual turnover rate in these occupations is around 8%, substantially lower than the statewide average of 12%.

Among the occupations in this list with the largest share of occupational employment in the energy cluster are petroleum engineers (72% of employment in energy); geoscientists (58%); microbiologists (42%) materials engineers (40%); commercial and industrial designers (38%); and chemists (31%).

Table 3: Occupations prevalent in the energy cluster: educational requirements of bachelor's degree or higher

SOC	Title	Education	STEM	Median Annual Wage	Turn-over	Employment		% of Occupational Employment		Occ % of Energy Emp
						Energy	Core	% Energy	% Core	
11-1011	Chief Executives	Bachelor's		$163,980	6.7%	229	33	5.4%	0.8%	0.2%
11-1021	General and Operations Managers	Bachelor's		$91,230	8.9%	4020	796	6.8%	1.3%	3.7%
11-3013	Facilities Managers	Bachelor's		$94,310	8.3%	163	48	5.3%	1.5%	0.1%
11-3051	Industrial Production Managers	Bachelor's	Y	$108,370	7.4%	200	45	8.4%	1.9%	0.2%
11-9021	Construction Managers	Bachelor's	Y	$99,900	8.4%	829	202	17.4%	4.2%	0.8%
11-9041	Architectural and Engineering Managers	Bachelor's	Y	$149,990	7.2%	304	46	12.9%	1.9%	0.3%
11-9199	Managers, All Other	Bachelor's			7.8%	453	60	5.9%	0.8%	0.4%
13-1081	Logisticians	Bachelor's	Y	$84,000	9.3%	172	85	5.3%	2.6%	0.2%
13-1082	Project Management Specialists	Bachelor's		$95,470	7.9%	1564	260	12.1%	2.0%	1.4%
15-1212	Information Security Analysts	Bachelor's	Y	$97,180	7.5%	92	8	5.5%	0.5%	0.1%
15-2031	Operations Research Analysts	Bachelor's	Y	$82,230	7.1%	122	**	8.9%	**	0.1%

17-2051	Civil Engineers	Bachelor's	Y	$92,000	6.9%	196	11	5.0%	0.3%	0.2%
17-2071	Electrical Engineers	Bachelor's	Y	$107,520	6.1%	415	128	20.5%	6.3%	0.4%
17-2081	Environmental Engineers	Bachelor's	Y	$99,180	7.1%	69	33	14.4%	7.0%	0.1%
17-2112	Industrial Engineers	Bachelor's	Y	$100,710	6.5%	391	43	12.4%	1.4%	0.4%
17-2141	Mechanical Engineers	Bachelor's	Y	$99,050	6.5%	340	30	8.8%	0.8%	0.3%
17-2199	Engineers, All Other	Bachelor's	Y	$113,290	6.4%	341	**	18.0%	**	0.3%
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	Bachelor's	Y	$84,340	9.8%	391	13	8.3%	0.3%	0.4%
11-3061	Purchasing Managers	Bachelor's		$123,360	8.2%	72	22	9.5%	2.9%	0.1%
13-1020	Buyers and Purchasing Agents	Bachelor's		$73,770	9.3%	376	163	8.6%	3.7%	0.3%
13-1041	Compliance Officers	Bachelor's	Y	$64,730	8.2%	294	33	9.1%	1.0%	0.3%
13-1051	Cost Estimators	Bachelor's	Y	$79,150	9.2%	617	77	19.8%	2.5%	0.6%
17-1022	Surveyors	Bachelor's	Y	$64,260	7.3%	186	16	27.8%	2.4%	0.2%
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	Bachelor's	Y	$102,980	6.2%	73	25	21.5%	7.3%	0.1%
17-2131	Materials Engineers	Bachelor's	Y	$85,720	7.1%	131	**	40.2%	**	0.1%
17-2171	Petroleum Engineers	Bachelor's	Y	$166,580	6.3%	103	121	71.8%	84.2%	0.1%
19-1022	Microbiologists	Bachelor's	Y	$67,780	8.0%	68		41.8%		0.1%
19-2031	Chemists	Bachelor's	Y	$77,270	7.6%	215	24	31.4%	3.5%	0.2%
19-2041	Environmental Scientists and Specialists, Including Health	Bachelor's	Y	$81,480	8.6%	151	4	21.3%	0.6%	0.1%
19-2042	Geoscientists, Except Hydrologists and Geographers	Bachelor's	Y	$104,000	8.6%	188	85	58.0%	26.3%	0.2%
19-5011	Occupational Health and Safety Specialists	Bachelor's		$87,000	12.3 %	420	153	27.6%	10.1%	0.4%
27-1021	Commercial and Industrial Designers	Bachelor's	Y	$66,040	7.5%	360	**	37.5%	**	0.3%
27-3042	Technical Writers	Bachelor's		$74,940	9.0%	62	**	8.1%	**	0.1%

Row coloring is based on "Star ratings" of occupational quality from Utah Department of Workforce Services. Red rows: high Star rating (5); yellow rows: middle Star ratings (3 & 4); gray rows: low Star ratings (1 & 2).
** Suppressed due to confidentiality and/or quality issues.
Source: Utah Department of Workforce Services Long-term Occupational Projections, Bureau of Labor Statistics Occupational Employment and Wage Statistics (OEWS)

Occupations with some postsecondary educational requirements (Table 4) such as an associate's degree are a relatively small group. Median salaries in this set of occupations range from $42,000 to $105,000, and most occupations are classified in the middle range of occupational quality Star ratings. Again, most occupations are classified as STEM fields. The average annual turnover rate among these occupations is just over 10%, higher than the occupations requiring a bachelor's or higher but lower than the statewide average of 12%.

Notable occupations in this category include truck drivers and heating, ventilation, and air conditioning (HVAC) installers. Truck drivers comprise almost 14% of all employment in the energy cluster, and approximately 63% of all truck drivers are employed in energy industries, although only 3% are in the core energy industries. HVAC installers comprise about 5% of all energy employment, with 82% of all workers in this occupational category employed in energy industries.

Table 4: Occupations prevalent in the energy cluster: educational requirements of some postsecondary education

SOC	Title	Education	STEM	Median Annual Wage	Turn-over	Employment		% of Occupational Employment		Occ % of Energy Emp
						Energy	Core	% Energy	% Core	
15-1232	Computer User Support Specialists	Some college, no degree		$57,560	7.2%	363	33	3.3%	0.3%	0.3%
17-3011	Architectural and Civil Drafters	Associate's degree	Y	$62,350	10.7%	157	10	7.4%	0.50%	0.1%
17-3012	Electrical and Electronics Drafters	Associate's degree	Y	$64,200	9.6%	142	6	48.5%	2.20%	0.1%
17-3013	Mechanical Drafters	Associate's degree	Y	$68,520	8.7%	34	**	5.9%	**	0.0%
17-3022	Civil Engineering Technologists and Technicians	Associate's degree	Y	$61,770	10.0%	103		13.2%		0.1%
17-3023	Electrical and Electronics Engineering Technologists and Technicians	Associate's degree	Y	$65,830	10.6%	278	62	22.2%	4.9%	0.3%
17-3027	Mechanical Engineering Technicians	Associate's degree	Y	$60,830	9.9%	143		15.4%		0.1%
17-3028	Calibration Technologists and Technicians	Associate's degree		$65,920	10.2%	84	38	32.9%	14.9%	0.1%
17-3029	Engineering Technologists and Technicians, Except Drafters, All Other	Associate's degree		$64,680	10.3%	57	41	3.7%	2.6%	0.1%

19-4031	Chemical Technicians	Associate's degree	Y	$52,890	13.3%	303	36	33.4%	4.0%	0.3%
19-4042	Environmental Science and Protection Technicians, Including Health	Associate's degree	Y	$54,060	11.3%	129		63.4%		0.1%
19-4043	Geological Technicians, Except Hydrologic Technicians	Associate's degree		$61,150	11.5%	38	24	25.7%	15.9%	0.0%
19-4099	Life, Physical, and Social Science Technicians, All Other	Associate's degree	Y	$52,400	13.7%	57	**	3.7%	**	0.1%
43-3031	Bookkeeping, Accounting, and Auditing Clerks	Some college, no degree		$48,210	12.3%	1049	103	6.8%	0.7%	1.0%
49-2022	Telecommunications Equipment Installers and Repairers, Except Line Installers	Postsecondary non-degree award		$62,380	10.6%	253	3	16.1%	0.2%	0.2%
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	Postsecondary non-degree award	Y	$70,970	9.4%	102	35	9.8%	3.3%	0.1%
49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	Postsecondary non-degree award	Y	$104,730	8.3%	91	91	63.4%	63.4%	0.1%
49-3023	Automotive Service Technicians and Mechanics	Postsecondary non-degree award	Y	$46,990	9.2%	794	5	8.0%	0.1%	0.7%
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	Postsecondary non-degree award	Y	$56,200	9.7%	5763	39	81.8%	0.5%	5.3%
51-4111	Tool and Die Makers	Postsecondary non-degree award	Y	$66,660	10.6%	39	**	10.0%	**	0.0%
53-3032	Heavy and Tractor-Trailer Truck Drivers	Postsecondary non-degree award		$59,580	11.2%	15154	723	62.6%	3.00%	13.9%
43-4151	Order Clerks	Some college, no degree		$41,960	11.0%	115	3	6.0%	0.2%	0.1%

17-3025	Environmental Engineering Technologists and Technicians	Associate's degree	Y	$50,100	9.7%	36	20	19.3%	10.7%	0.0%
43-4151	Order Clerks	Some college, no degree		$41,960	11.0%	115	3	6.0%	0.2%	0.4%

Row coloring is based on "Star ratings" of occupational quality from Utah Department of Workforce Services. Red rows: high Star rating (5); yellow rows: middle Star ratings (3 & 4); gray rows: low Star ratings (1 & 2).
** Suppressed due to confidentiality and/or quality issues.
Source: Utah Department of Workforce Services, Long-term Occupational Projections, Bureau of Labor Statistics Occupational Employment and Wage Statistics (OEWS)

Occupations with educational requirements of high school or less (Table 5) comprise the largest group of occupations in the energy cluster. Only a few are rated in the highest category of occupational quality based on Star ratings, with most occupations in middle or lower Star ratings groups. Jobs in this educational category include operators of machinery and equipment, mechanics, clerks, construction laborers, tradespeople, machinists, laborers, and helpers. There are also supervisory roles, overseeing the work of front-line workers. Median salaries range from $36k to $104k, with an average of $57k, and annual turnover averages about 11%, which is below the statewide average of 12%. Few of the occupations are classified as STEM roles.

A few notable occupations in this list include occupations that are essentially entirely found within the core industries of the energy cluster. These include roustabouts, drill operators and service unit operators for oil and gas, underground mining machine operators, gas plant operators, and power plant operators. Other occupations, such as plumbers and pipefitters, are largely found working within the energy cluster but not so much in the core energy industries.

Table 5: Occupations prevalent in the energy cluster: educational requirements of high school or less.

SOC	Title	Education	STEM	Median Annual Wage	Turn-over	Employment		% of Occupational Employment		Occ % of Energy Emp
						Energy	Core	% Energy	% Core	
11-3071	Transportation, Storage, and Distribution Managers	High school		$97,980	8.8%	305	63	12.5%	2.6%	0.3%
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	High school		$77,380	9.1%	1198	290	20.7%	5.0%	1.1%
19-5012	Occupational Health and Safety Technicians	High school		$63,510	13.0%	63	42	22.7%	15.1%	0.1%
41-1012	First-Line Supervisors of Non-Retail Sales Workers	High school		$77,110	8.6%	194	**	6.2%	**	0.2%

41-3091	Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	High school		$59,970	10.6%	1234	29	9.0%	0.2%	1.1%
43-1011	First-Line Supervisors of Office and Administrative Support Workers	High school		$63,970	10.0%	930	103	5.2%	0.6%	0.9%
43-3051	Payroll and Timekeeping Clerks	High school		$54,790	10.1%	184	25	10.0%	1.4%	0.2%
43-3061	Procurement Clerks	High school		$49,000	9.6%	196	**	13.8%	**	0.2%
43-5032	Dispatchers, Except Police, Fire, and Ambulance	High school		$49,660	9.9%	911	23	29.8%	0.8%	0.8%
43-5061	Production, Planning, and Expediting Clerks	High school		$53,110	11.3%	637	51	12.4%	1.0%	0.6%
43-6011	Executive Secretaries and Executive Administrative Assistants	High school		$55,900	9.8%	258	63	6.6%	1.6%	0.2%
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	High school		$45,150	11.4%	1029	106	5.4%	0.6%	0.9%
43-9061	Office Clerks, General	High school		$41,530	12.7%	2726	468	8.3%	1.4%	2.5%
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	High school		$76,080	9.1%	3917	1009	29.0%	7.5%	3.6%
47-2061	Construction Laborers	No formal educational credential		$46,100	10.0%	3964	1578	14.7%	5.8%	3.6%
47-2073	Operating Engineers and Other Construction Equipment Operators	High school		$59,760	9.6%	1515	612	27.0%	10.9%	1.4%
47-2111	Electricians	High school diploma or equivalent	Y	$61,430	10.5%	9478	330	80.5%	2.8%	8.7%
47-2151	Pipelayers	No formal educational credential		$51,180	8.1%	368	56	45.8%	7.0%	0.3%
47-2152	Plumbers, Pipefitters, and Steamfitters	High school		$61,680	10.0%	5126	60	84.7%	1.0%	4.7%

47-2181	Roofers	No formal educational credential		$49,800	8.8%	2311		87.9%		2.1%
47-2211	Sheet Metal Workers	High school	Y	$60,490	10.1%	461	6	26.6%	0.3%	0.4%
47-2221	Structural Iron and Steel Workers	High school		$47,840	10.0%	68	6	7.5%	0.6%	0.1%
47-4011	Construction and Building Inspectors	High school	Y	$71,040	12.4%	149	53	9.8%	3.5%	0.1%
47-4041	Hazardous Materials Removal Workers	High school	Y	$45,740	12.0%	72		27.7%		0.1%
47-4061	Rail-Track Laying and Maintenance Equipment Operators	High school		$61,520	7.8%	74		57.7%		0.1%
47-5012	Rotary Drill Operators, Oil and Gas	No formal educational credential		$68,660	11.0%	170	166	98.8%	96.3%	0.2%
47-5013	Service Unit Operators, Oil and Gas*	No formal educational credential	Y	$55,570	10.9%	453	443	98.7%	96.6%	0.4%
47-5022	Excavating and Loading Machine and Dragline Operators, Surface Mining	High school		$52,240	11.5%	173	59	14.6%	5.0%	0.2%
47-5023	Earth Drillers, Except Oil and Gas	High school		$57,850	11.2%	157	80	39.2%	20.0%	0.1%
47-5044	Loading and Moving Machine Operators, Underground Mining	No formal educational credential		**	8.8%	307	**	100.0%	**	0.3%
47-5049	Underground Mining Machine Operators, All Other	No formal educational credential		$65,570	11.5%	462	405	100.0%	87.7%	0.4%
49-2098	Security and Fire Alarm Systems Installers	High school		$58,860	11.7%	245		21.5%		0.2%
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	High school		$62,970	8.8%	929	38	28.0%	1.1%	0.9%
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	High school		$63,890	9.2%	574	153	24.8%	6.6%	0.5%
49-3043	Rail Car Repairers	High school		$75,280	9.2%	84	10	43.3%	5.3%	0.1%
49-9012	Control and Valve Installers and Repairers, Except Mechanical Door	High school		$69,450	7.5%	65	63	13.2%	12.9%	0.1%
49-9041	Industrial Machinery Mechanics	High school		$69,670	9.1%	740	493	20.1%	13.4%	0.7%

49-9043	Maintenance Workers, Machinery	High school		$63,820	10.5%	547	45	27.4%	2.2%	0.5%
49-9051	Electrical Power-Line Installers and Repairers	High school		$81,380	8.2%	512	458	74.8%	66.9%	0.5%
49-9052	Telecommunications Line Installers and Repairers	High school		$55,980	9.9%	314	294	45.5%	42.7%	0.3%
51-1011	First-Line Supervisors of Production and Operating Workers	High school		$67,050	10.1%	762	289	9.3%	3.5%	0.7%
51-2028	Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers	High school		$45,050	11.8%	442	**	16.9%	**	0.4%
51-2041	Structural Metal Fabricators and Fitters	High school		$50,440	10.3%	141		8.0%		0.1%
51-2090	Miscellaneous Assemblers and Fabricators	High school		$42,110	11.0%	882	**	5.5%	**	0.8%
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	High school		$44,940	10.0%	121		6.7%		0.1%
51-4041	Machinists	High school		$60,450	10.7%	348	40	9.2%	1.1%	0.3%
51-4051	Metal-Refining Furnace Operators and Tenders	High school		$70,450	10.5%	465		95.8%		0.4%
51-4121	Welders, Cutters, Solderers, and Brazers	High school		$56,050	10.7%	473	131	11.4%	3.1%	0.4%
51-8013	Power Plant Operators	High school		$103,760	7.8%	334	334	83.6%	83.6%	0.3%
51-8092	Gas Plant Operators	High school		$95,690	9.3%	73	100	67.9%	93.8%	0.1%
51-8093	Petroleum Pump System Operators, Refinery Operators, and Gaugers*	High school		$101,920	9.4%	465	489	87.6%	92.3%	0.4%
51-8099	Plant and System Operators, All Other	High school		$63,380	10.4%	97	5	56.1%	3.0%	0.1%
51-9011	Chemical Equipment Operators and Tenders	High school		$39,110	9.5%	84	**	5.7%	**	0.1%
51-9021	Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders	High school		$50,440	11.2%	78	25	16.4%	5.3%	0.1%

51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	High school		$48,000	12.3%	687	122	9.9%	1.7%	0.6%
53-1047	FirstLine Supervisors of Transportation & Material Moving Workers, Exc Aircraft Cargo Handling Supervisor	High school		$59,930	10.9%	816	59	12.8%	0.9%	0.7%
53-7021	Crane and Tower Operators	High school		$69,020	10.2%	102	**	24.1%	**	0.1%
53-7081	Refuse and Recyclable Material Collectors	High school		$50,720	14.0%	57		6.3%		0.1%
17-3031	Surveying and Mapping Technicians	High school	Y	$48,720	13.6%	72	19	10.2%	2.7%	0.1%
41-2021	Counter and Rental Clerks	No formal educational credential		$37,300	12.8%	196		6.5%		0.2%
41-9099	Sales and Related Workers, All Other	High school		$51,750	14.2%	817		17.5%		0.7%
43-5011	Cargo and Freight Agents	High school		$55,220	11.7%	73		13.0%		0.1%
43-5041	Meter Readers, Utilities	High school		$53,650	9.0%	64	64	15.4%	15.4%	0.1%
43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	High school		$46,530	12.8%	66	39	9.6%	5.7%	0.1%
47-2231	Solar Photovoltaic Installers	High school		$47,960	11.7%	341	61	86.7%	15.4%	0.3%
47-3013	Helpers--Electricians	High school		$42,120	12.6%	610	**	90.6%	**	0.6%
47-3015	Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	High school		$44,810	13.0%	291	20	97.2%	6.6%	0.3%
47-3016	Helpers--Roofers	No formal educational credential		**	12.3%	57		100.0%		0.1%
47-3019	Helpers, Construction Trades, All Other	No formal educational credential		$36,490	12.2%	61	25	18.1%	7.5%	0.1%
47-5043	Roof Bolters, Mining	High school		**	10.8%	93	**	100.0%	**	0.1%
47-5071	Roustabouts, Oil and Gas	No formal educational credential		$47,680	11.2%	453	453	99.4%	99.3%	0.4%

47-5081	Helpers--Extraction Workers	High school		$54,100	12.5%	148	130	51.4%	45.3%	0.1%
49-2092	Electric Motor, Power Tool, and Related Repairers	High school		$41,460	8.6%	88	**	40.2%	**	0.1%
49-3093	Tire Repairers and Changers	High school		$36,060	11.8%	2028		87.3%		1.9%
49-9098	Helpers--Installation, Maintenance, and Repair Workers	High school		$41,760	12.3%	429	**	38.7%	**	0.4%
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	High school		$40,180	10.6%	117	**	9.0%	**	0.1%
51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	High school		$45,620	10.3%	140	70	18.2%	9.2%	0.1%
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	High school		$44,920	11.1%	220	27	10.6%	1.3%	0.2%
51-9141	Semiconductor Processing Technicians	High school		$39,090	12.4%	234		62.9%		0.2%
51-9195	Molders, Shapers, and Casters, Except Metal and Plastic	High school		$39,260	13.9%	822		51.4%		0.8%
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	No formal educational credential		$39,570	14.2%	1990	207	8.0%	0.8%	1.8%
53-7121	Tank Car, Truck, and Ship Loaders	No formal educational credential		$47,540	12.4%	102	13	29.5%	3.7%	0.1%
53-7199	Material Moving Workers, All Other	No formal educational credential		$48,200	12.8%	63	22	21.8%	7.8%	0.1%

Row coloring is based on "Star ratings" of occupational quality from Utah Department of Workforce Services. Red rows: high Star rating (5); yellow rows: middle Star ratings (3 & 4); gray rows: low Star ratings (1 & 2).
** Suppressed due to confidentiality and/or quality issues.
Source: Utah Department of Workforce Services Long-term Occupational Projections, Bureau of Labor Statistics Occupational Employment and Wage Statistics (OEWS)

Job openings

Job posting data provides information about the demand for a given occupation. Tables 6 and 7 below provide summaries of the top occupations by level of job openings in the state, constrained to energy cluster industries (Table 6) or energy cluster core industries (Table 7).

The metrics included in these tables are the total number of job openings, median posting duration in days as a potential indicator of difficult-to-fill jobs, number of employers competing to attract job candidates, and median annual advertised salary.

Job openings for the entire energy cluster for the time period March to June 2025 totaled 8,900 postings, of which 4,375 or about half were in the top 30 jobs (Table 6). The largest number of job openings by far was for heavy and tractor-trailer truck drivers where there were over 1,200 openings posted by nearly 200 employers. Advertised salaries in the top 30 occupations ranged from $35,000 to $122,000, with an average of $75,000.

Table 6: Top 30 occupations by number of job openings within 107 energy cluster industries in Utah, March 2025 to June 2025.

SOC	Occupation	Unique Postings	Median Posting Duration (days)	Number of Employers Competing	Median Annual Advertised Salary	Advertised Salary Observations
53-3032	Heavy and Tractor-Trailer Truck Drivers	1,240	25	192	$81,280	923
13-1082	Project Management Specialists	187	19	94	$102,656	65
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	180	25	72	$71,040	102
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	179	20	75	$41,600	71
15-1252	Software Developers	157	22	28	$122,112	93
49-9071	Maintenance and Repair Workers, General	149	27	74	$62,336	54
43-4051	Customer Service Representatives	148	22	70	$41,088	76
47-2111	Electricians	130	34	45	$80,256	33
41-3091	Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	127	33	57	$85,376	66
11-1021	General and Operations Managers	123	21	67	$70,400	48
49-3023	Automotive Service Technicians and Mechanics	121	21	35	$51,584	40
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	111	31	33	$70,912	52
11-2022	Sales Managers	106	25	65	$120,064	45
17-2071	Electrical Engineers	102	34	22	$108,544	60
41-4011	Sales Representatives, Wholesale and Manufacturing,	101	28	51	$100,096	71

	Technical and Scientific Products					
15-1299	Computer Occupations, All Other	99	21	33	$111,360	53
37-2011	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	99	21	17	$35,456	72
11-9021	Construction Managers	98	19	59	$89,856	39
47-2152	Plumbers, Pipefitters, and Steamfitters	94	30	57	$68,864	40
43-3031	Bookkeeping, Accounting, and Auditing Clerks	90	22	42	$42,624	35
47-2061	Construction Laborers	85	24	33	$42,624	33
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	79	19	54	$47,616	40
11-3031	Financial Managers	75	20	51	$105,216	22
13-1051	Cost Estimators	75	18	42	$85,248	28
47-2073	Operating Engineers and Other Construction Equipment Operators	75	17	32	$54,272	31
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	71	25	29	$51,968	19
49-9051	Electrical Power-Line Installers and Repairers	70	25	13	$118,528	19
13-1071	Human Resources Specialists	69	26	38	$69,888	17
53-7051	Industrial Truck and Tractor Operators	69	19	24	$52,992	21
43-1011	First-Line Supervisors of Office and Administrative Support Workers	67	20	44	$51,968	34
Source: Lightcast						

Focusing on just core industries within the energy cluster, job openings for the time period March to June 2025 totaled 2,200 postings, of which 956 or nearly half were in the top 30 occupations (Table 7). Electrical engineers (71 postings) and electrical power-line installers and repairers (60 postings) had the largest number of job openings during this time period. Laborers, maintenance workers, and truck drivers were other well represented groups, in addition to a variety of office and accounting roles. Advertised salaries in the top 30 occupations ranged from $35,000 to $142,000, with an average of $82,000.

Comparing advertised salaries by occupation in listings for the entire energy cluster and in the core industries, salaries tended to be similar in most occupations. However, there are some occupations where advertised salaries in the core industries and the overall energy cluster differ

significantly. Financial managers and general managers, for example, had advertised salaries that were 16% to 31% higher in core industries than in the overall energy cluster. These higher skilled positions are able to demand higher pay from the capital-intensive core industries.

On the other hand, electricians, truck drivers, computer occupations, and construction laborers all faced lower advertised salaries in “core” energy industries compared to the overall energy cluster, by a margin of 17% to 36%. Salary discrepancies of this magnitude surely affect employers’ ability to fill positions, as many workers are less attached to the industry in which they work than to their occupational skill sets and roles.

Table 7: Top 30 occupations by number of job openings within 39 energy cluster “core” industries in Utah, March 2025 to June 2025.

SOC	Occupation	Unique Postings	Median Posting Duration	Number of Employers Competing	Median Annual Advertised Salary	Advertised Salary Observations
17-2071	Electrical Engineers	71	35	7	$108,544	51
49-9051	Electrical Power-Line Installers and Repairers	60	28	9	$118,528	19
49-9071	Maintenance and Repair Workers, General	49	23	23	$56,192	14
13-1082	Project Management Specialists	47	19	18	$103,680	23
53-3032	Heavy and Tractor-Trailer Truck Drivers	47	21	27	$59,264	27
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	42	22	20	$37,504	23
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	41	25	13	$71,040	22
41-3091	Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	34	38	15	$85,376	15
49-9098	Helpers--Installation, Maintenance, and Repair Workers	34	30	12	$37,504	15
11-9199	Managers, All Other	33	23	8	$87,296	5
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	32	19	14	$59,904	19
11-9021	Construction Managers	30	13	17	$89,856	14
15-1299	Computer Occupations, All Other	30	20	14	$71,424	14
13-1071	Human Resources Specialists	29	33	9	$64,768	8
41-4011	Sales Representatives,	29	32	13	$120,064	25

	Wholesale and Manufacturing, Technical and Scientific Products					
11-2021	Marketing Managers	27	26	5	**	1
43-4051	Customer Service Representatives	27	17	15	$36,480	11
15-1252	Software Developers	26	30	7	**	1
11-3031	Financial Managers	25	17	14	$137,728	7
11-1021	General and Operations Managers	24	23	16	$90,000	6
13-2011	Accountants and Auditors	24	39	12	$103,500	9
47-2061	Construction Laborers	24	24	8	$35,456	11
49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	24	36	4	$112,128	11
43-3031	Bookkeeping, Accounting, and Auditing Clerks	23	20	10	**	4
51-8099	Plant and System Operators, All Other	22	34	10	**	4
11-3071	Transportation, Storage, and Distribution Managers	21	33	7	$136,704	15
47-2073	Operating Engineers and Other Construction Equipment Operators	21	34	10	$51,200	12
47-2111	Electricians	21	39	9	**	1
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	21	30	11	**	4
11-9041	Architectural and Engineering Managers	19	19	10	$130,560	12

Source: Lightcast
** Data suppressed due to confidentiality and/or quality issues. Many job openings do not advertise salary levels. Median Annual Advertised Salary is suppressed where the number of advertised salary observations was less than five.

Conclusion

Utah's energy cluster, encompassing a broad range of core and peripheral industries, is a significant component of the state's economy, employing over 112,000 individuals in 2024. While the overall cluster has experienced growth mirroring state job trends, the core energy sector has seen a slight contraction in employment, compensated by an increase in total wages. The Construction subsector, heavily influenced by peripheral industries, has emerged as a major growth driver within the cluster. Occupational analysis reveals a diverse workforce, with a notable concentration of higher-paying STEM roles that exhibit low turnover.

SECTION II

ASSESSMENT OF NUCLEAR SMR AND GEOTHERMAL INDUSTRY WORKFORCE REQUIREMENTS

Assessment of Nuclear SMR and Geothermal Industry Workforce Requirements

This report provides an assessment of the current status and workforce requirements for the nuclear and geothermal industries in Utah across phases of energy development. The primary focus for nuclear energy is on small modular reactors (SMRs). Occupational workforce patterns in states with existing nuclear and geothermal industries are reported. Estimated workforce needs throughout the energy development lifecycle are provided, with accompanying employment levels in Utah, educational requirements, and median earnings.

Status of Nuclear industry in Utah

Utah has connections to nuclear energy spanning well over a century. Uranium mining operations have been part of the state's economy for over 100 years. This long-standing engagement with the nuclear fuel cycle has periodically fueled discussions and plans for nuclear energy projects within the state.

Despite this history of involvement in the nuclear sector, it's notable that Utah has never had a commercial nuclear power reactor. However, this doesn't mean the state has been entirely without active nuclear facilities. The University of Utah has maintained and operated a research TRIGA reactor since 1975. This reactor is used in various scientific and medical fields, playing a key role in nuclear medicine applications and forensic science investigations.

More recently, particularly within the last decade, there has been a resurgence of interest in nuclear power as a viable energy source for Utah. This renewed focus is driven by a combination of factors, including the push for cleaner energy, energy independence, and the potential for stable power generation to meet the demand of the modern economy. This heightened interest has translated into several proposals and initiatives underway to develop and deploy small modular reactors (SMRs) within the coming years (World Nuclear News 2025). SMRs represent an advancement in nuclear technology, offering smaller footprints, enhanced safety features, and greater flexibility in deployment compared to traditional large-scale nuclear power plants. SMRs generally produce less than 300 MW of electric power compared to traditional larger plants that typically have output in excess of 700 MW (IAEA 2018).

Nuclear operations staffing estimates

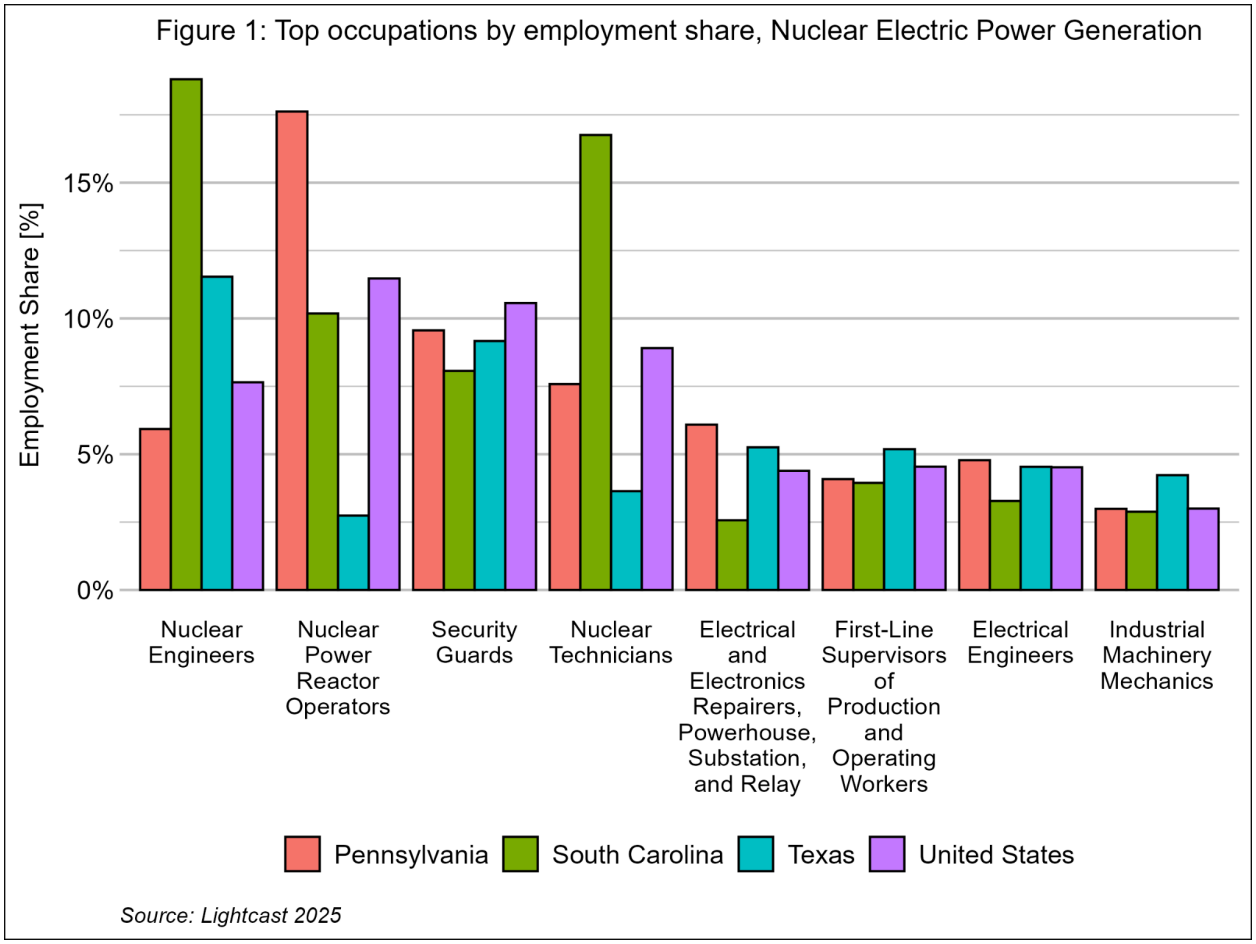
Estimates of staffing requirements for operating SMRs vary considerably. A report from the IAEA (2001) estimated SMRs will likely experience diseconomies of scale in staffing levels, requiring staffing levels approximately 50% higher per MW installed than in traditional nuclear plants. Conversely, a report from the IAEA in 2018 emphasizes SMRs may benefit from “economies of multiplies” (as opposed to economies of scale) in which multiple modular reactors can be efficiently deployed and operated at a cost competitive with the cost of operating larger nuclear plants. Hence, companies currently involved in SMR development expect staffing levels

may be reduced compared to traditional larger nuclear plants due to factors such as modular design, increased automation, and remote monitoring. In this report, the staffing characteristics of the national electric power generation industry are profiled as it appears the case for higher or lower staffing levels per MW are not well understood.

A starting point for operational occupational requirements is to consider employment in the Nuclear Electric Power Generation industry (NAICS code 221113), compared to the level of installed nuclear generating capacity. Using 2023 data, this ratio is about 0.4 employees per MW of installed nuclear capacity (37,538 employees and 95,712 MW of installed capacity (EIA 2025)).

Figure 1 below provides an overview of the staffing patterns, or occupational mix for an industry, for three states with an established Nuclear Electric Power Generation industry (NAICS code 221113) sufficiently large to be published in the Bureau of Labor Statistics' (BLS) Quarterly Census of Employment and Wages (QCEW) dataset. The national staffing pattern is also shown for reference. The Nuclear Electric Power Generation in the North American Industrial Classification Schema (NAICS) is described as follows: "This industry comprises establishments primarily engaged in operating nuclear electric power generation facilities. These facilities use nuclear power to produce electric energy. The electric energy produced in these establishments is provided to electric power transmission systems or to electric power distribution systems."

With some exceptions, the share of top occupations in the Nuclear Electric Power Generation industry tend to be pretty consistent across states. Where discrepancies exist, they are likely due to differing outsourcing or subcontracting practices between states to fill staffing needs. For example, notable differences can be seen in nuclear engineers, power reactor operators, and nuclear technicians.



Status of geothermal energy industry in Utah

Utah has geothermal resources that have been in use by local populations for generations, with uses ranging from washing and bathing to a heat source in the winter, and now to electricity production. The unique geographical features of the state place it in a position to capitalize on geothermal potential to make energy. Utah ranks behind only three other larger states in the potential for geothermal energy production and remains one of only seven states with utility-scale geothermal electricity production (Berry, 2008).

Geothermal power generation began in Utah in 1984, and has grown to three traditional geothermal plants in Beaver County generating around 75 megawatts of electricity–enough to power between 56,000 and 75,000 homes (Utah DNR). This is estimated to be a tenth of a percent of Utah's total geothermal potential. The Geothermal Electric Power Generation industry employed 36 people in 2024, which doesn't include employment in supporting industries necessary for researching, building, and maintaining geothermal energy production capacities.

Utah's geothermal energy industry is preparing for large expansion in the coming years. The Cape Station project is a traditional geothermal power plant currently in development in Beaver

County. It is expected to begin producing 100 megawatts of electricity in 2026, and reach 400 megawatts of electricity in 2028, more than 5 times greater than total current geothermal production. The project has the permitting to eventually expand to generate 2 gigawatts of geothermal energy (Fervo 2024). The Utah Frontier Observatory for Research in Geothermal Energy (FORGE), a research group developing ways to better use geothermal energy resources, has partnered with the company spearheading the Cape Station project.

The feasibility of five more geothermal projects is currently being researched, which would expand geothermal energy production both outside of Beaver County and beyond the traditional power plant with Enhanced Geothermal System (EGS) and Advanced Geothermal System (AGS) methods (Utah DNR).

Table 1: Geothermal Companies Operating In Utah

Company	Address	County	City	Phone	Employees	NAICS
Pacificorp	14 M NE of Milford, Milford UT 84751	Beaver	Milford	(503) 813-6666	10-19	221116
Fervo Energy Company		Salt Lake		(650) 862-7944	5-9	221116
Thermo No. 1 BE-01, LLC, a subsidiary of Cyrq Energy Inc.	7966 W Southside Rd, Milford UT 84751	Beaver	Milford	N/A	5-9	221116
Ormat Nevada Inc.	1185 E Sulpherdale Road, Beaver UT 84713	Beaver	Beaver	(775) 356-9029	5-9	221116

Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages

Currently, only four companies in Utah are listed under the Geothermal Electric Power Generation NAICS code (221116). Of these four companies, three have operating geothermal plants in Beaver County: Pacificorp's Blundell plant (Pacificorp 2025), Ormat's Cove Fort Plant and the Thermo No. 1 Plant owned by Cyrq Energy Inc (Ormat 2025). Fervo Energy, a national renewable energy company, is involved in the construction of the 400 MW Cape Station geothermal plant, also located in Beaver County, which is expected to start producing power in 2026.

Geothermal operations staffing estimates

A starting point for operational occupational requirements is to consider employment in the Geothermal Electric Power Generation industry (NAICS code 221116), compared to the level of installed geothermal generating capacity. Using 2023 data, this ratio is about 0.5 employees per

MW of installed geothermal electric generation capacity (1,278 employees and 2,696 MW of installed capacity (EIA 2025)).

The Geothermal Electric Power Generation in the NAICS schema is described as follows: “This industry comprises establishments primarily engaged in operating geothermal electric power generation facilities. These facilities use heat derived from the Earth to produce electric energy. The electric energy produced in these establishments is provided to electric power transmission systems or to electric power distribution systems.”

As a first look at the occupational requirements of geothermal energy development and operations, Figure 2 below provides an overview of the staffing patterns for three states (California, Nevada, and Utah) with an established Geothermal Electric Power Generation industry of sufficient size to be published in the QCEW dataset, plus the national staffing pattern. Because the geothermal power generation industry is not very large, staffing patterns could not be consistently estimated across occupations and geographies for that detailed industry (NAICS 221116).

To render a more complete staffing pattern, two related industries were included to create an industry group for geothermal that also includes **Steam and Air-Conditioning Supply** (NAICS 221330) and **Water and Sewer Line and Related Structures Construction** (NAICS 237110) (Table 2). The steam and air-conditioning supply industry comprises establishments primarily engaged in providing steam, heated air, or cooled air, including steam from geothermal operations. The water and sewer line and related structures construction industry would include drilling companies that are engaged in geothermal drilling.

Table 2: Employment and wages of geothermal industry group in Utah, 2024 annual averages.

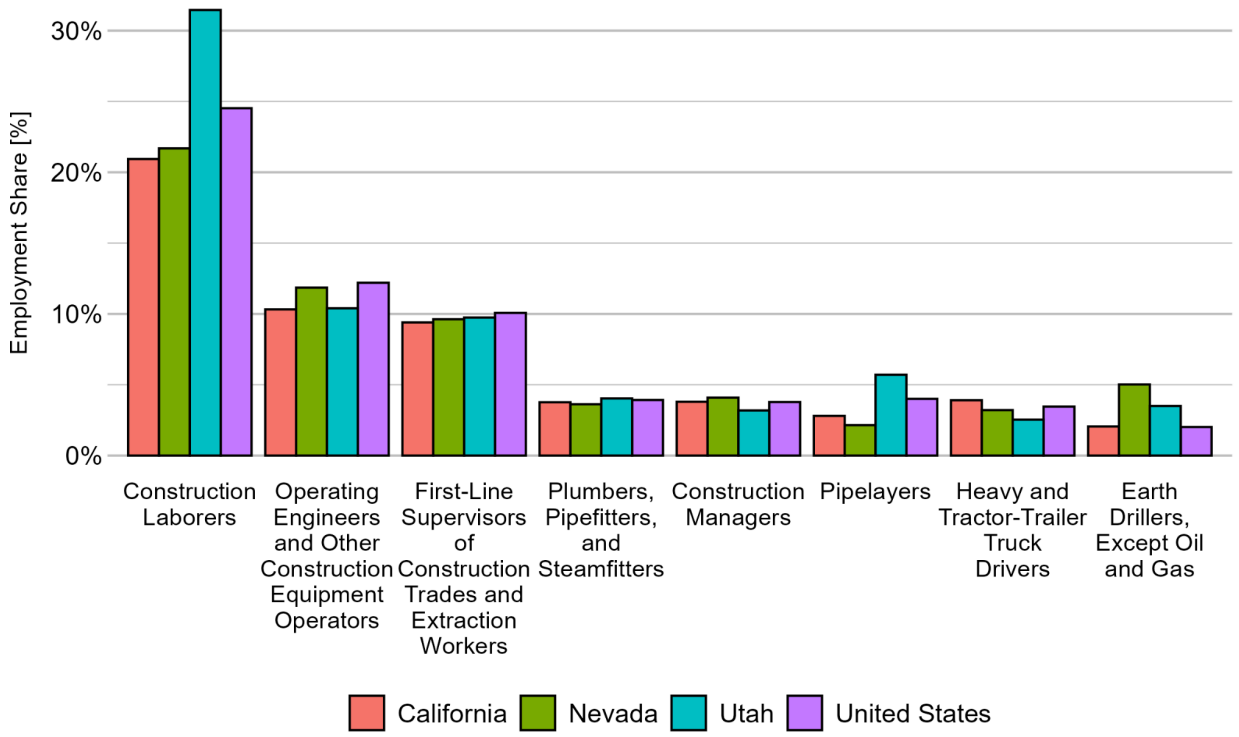
Establishments	Total wages	Employment	Average annual wage
Geothermal Electric Power Generation (NAICS 221116)			
5*	$1,236,825	39	$118,875
Steam and Air-Conditioning Supply (NAICS 221330)			
8	$998,955	50	$78,358
Water and Sewer Line and Related Structures Construction (NAICS 237110)			
139	$71,334,405	3,073	$80,576

*As of Q1 2025, there are only four establishments in NAICS 221116
Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages 2024

Both of these additional industry codes are much less directly related to geothermal energy production as companies in those industries may or may not be involved with geothermal activities. They have been included in the staffing pattern assessment shown in Figure 2 to

render occupational assessments that more comprehensively reflect the various phases and activities involved with geothermal energy development, including drilling and steam distribution. As could be seen with the Nuclear Electric Power Generation industry, the share of top occupations in the industry group tends to be pretty consistent across states. Where discrepancies exist, they are likely due to differing outsourcing or subcontracting practices between states to fill staffing needs. Due to the inclusion of the construction NAICS code 237110, construction occupations make up a large portion of overall employment in the three-industry group.

Figure 2: Top occupations by employment share in geothermal and related industries



Industries included: Geothermal Electric Power Generation (NAICS 221116),
Steam and Air-Conditioning Supply (NAICS 221330),
Water and Sewer Line and Related Structures Construction (NAICS 237110)

Source: Lightcast 2025

Estimating workforce requirements across energy project lifecycles

Understanding the workforce requirements for expanded nuclear and geothermal development requires consideration of the various development phases of energy projects, including planning, construction, and operations and maintenance. Activities related to these phases of energy development and operations span across multiple sectors including construction, manufacturing, and utilities. An estimation of workforce requirements and occupation distributions associated with the various phases of energy development and operation follows.

Nuclear energy

Nuclear energy development can be conceptualized in four general stages: design and licensing, construction, commissioning, and operations. The decommissioning phase is not considered in this report.

In the **design and licensing phase**, staffing requirements are largely centered around engineers, licensing experts, and project managers. The estimated headcount for a 300 MW SMR module is estimated at ~100-300 staff for initial design and licensing (IAEA 2018).

The **construction phase** is labor-intensive, but short-term. Workforce estimates can vary greatly depending on the degree to which the SMR can be modularly built at factory settings remote from the worksite. A workforce estimate for construction at an SMR site is ~1,000-2,000 workers for a few years. For a 300 MW SMR, this equates to ~3.3 to 6.6 workers per MW during peak construction.

The **commissioning phase** involves testing, control system verification, and training. Staffing levels are likely around 100-200 staff temporarily. For a 300 MW SMR, this equates to ~0.3-0.6 workers per MW of generating capacity.

The **operations phase** is the long-term staffing phase of an SMR project, during which staffing patterns are likely to generally mirror those of the established Nuclear Electric Power Generation industry in the United States, or about 0.4 employees per MW of installed nuclear capacity based on 2023 data. There is uncertainty surrounding operating staffing levels for SMRs as the technology has not yet been established commercially in the United States. This staffing ratio estimate does not consider indirect jobs in supplier and related industries that help maintain and support operations in the main nuclear electric generation industry.

Table 3 displays the national staffing pattern for the Nuclear Electric Power Generation industry, organized by educational requirements. Also shown are the 2022 employment level from the most recent long-term occupational projections for Utah, median wages in 2024, and approximate employment needs for the addition of 300 MW of nuclear capacity. The ratio of employment from QCEW to installed nuclear capacity nationwide of 0.4 employees per MW is used to render estimates of staffing needs.

Table 3: Nuclear Electric Power Generation Industry staffing pattern by educational requirement

SOC	SOC title	Percent of industry employment	Educational requirement	Employment per 300 MW nuclear	2022 Utah Employment	2024 Median wages

11-1021	General and Operations Managers	2.08%	Bachelor's degree	2	59,209	$91,230
11-3013	Facilities Managers	0.47%	Bachelor's degree	1	3,098	$94,310
11-3031	Financial Managers	0.47%	Bachelor's degree	1	8,342	$137,760
11-3051	Industrial Production Managers	0.88%	Bachelor's degree	1	2,379	$108,370
11-9041	Architectural and Engineering Managers	1.67%	Bachelor's degree	2	2,346	$149,990
11-9199	Managers, All Other	1.16%	Bachelor's degree	1	7,671	**
13-1028	Buyers and Purchasing Agents	0.75%	Bachelor's degree	1	4,381	$73,770
13-1082	Project Management Specialists	1.76%	Bachelor's degree	2	12,939	$95,470
13-1111	Management Analysts	0.81%	Bachelor's degree	1	6,975	**
13-1151	Training and Development Specialists	2.17%	Bachelor's degree	3	6,653	$60,510
13-1199	Business Operations Specialists, All Other	2.96%	Bachelor's degree	4	9,402	$79,790
17-2071	Electrical Engineers	4.52%	Bachelor's degree	5	2,029	$107,520
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	0.61%	Bachelor's degree	1	338	$102,980
17-2161	Nuclear Engineers	7.65%	Bachelor's degree	9	85	**
19-2031	Chemists	0.57%	Bachelor's degree	1	685	$77,270
19-4031	Chemical Technicians	0.69%	Associate's degree	1	908	$52,890
19-4051	Nuclear Technicians	8.91%	Associate's degree	11	148	$61,150

49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	4.39%	Postsecondary nondegree award	5	144	$104,730
33-1091	First-Line Supervisors of Security Workers	0.61%	High school	1	422	$51,570
33-9021	Private Detectives and Investigators	0.89%	High school	1	482	$51,130
33-9032	Security Guards	10.57%	High school	13	6,019	$42,440
43-5061	Production, Planning, and Expediting Clerks	0.48%	High school	1	5,129	$53,110
43-6011	Executive Secretaries and Executive Administrative Assistants	0.45%	High school	1	3,901	$55,900
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	0.57%	High school	1	19,222	$45,150
43-9061	Office Clerks, General	0.66%	High school	1	32,652	$41,530
47-2111	Electricians	1.88%	High school	2	11,777	$61,430
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	2.76%	High school	3	5,776	$77,380
49-9041	Industrial Machinery Mechanics	3.00%	High school	4	3,683	$69,670
49-9051	Electrical Power-Line Installers and Repairers	0.93%	High school	1	684	$81,380
51-1011	First-Line Supervisors of Production and Operating Workers	4.54%	High school	5	8,175	$67,050
51-8011	Nuclear Power Reactor Operators	11.47%	High school	14	3,087	**
51-8013	Power Plant Operators	0.71%	High school	1	399	$103,760
53-7065	Stockers and Order Fillers	0.42%	High school	1	27,153	$37,800

53-7062	Laborers and Freight, Stock, and Material Movers, Hand	0.48%	No formal educational credential	1	25,014	$39,570

**: suppressed data.
Source: Lightcast 2025

Geothermal energy

Employment in geothermal projects is associated with the different phases of development which can be summarized into these categories: exploration, drilling, drilling jobs performed by vendors, plant engineering and design, and plant construction, and finally operations and maintenance.

Jennejohn (2010), writing for the Geothermal Energy Association in Washington DC, produced estimates of staffing levels needed for a typical 50 MW geothermal plant through the various phases of the energy development and operations lifecycle. Jennejohn's estimates are utilized below to summarize occupational needs, in comparison with Utah's workforce, for the phases of geothermal development from exploration through plant construction (Table 4). The operations workforce needs are summarized separately using staffing patterns from the Geothermal Electric Power Generation industry (NAICS 221116) (Table 5).

Table 4: Geothermal staffing needs from exploration through plant construction, adapted from Jennejohn (2010)

SOC	SOC title	Educational requirement	Employment per 50 MW Geothermal	2022 Utah Employment	2024 Median wages
Exploration					
19-2042	Geoscientists, Except Hydrologists and Geographers	Bachelor's degree	2	324	$118,300
19-4043	Geological Technicians, Except Hydrologic Technicians	Associate's degree	3	148	$83,790
19-2042	Geoscientists, Except Hydrologists and Geographers	Bachelor's degree	1	324	$118,300
15-1299	Computer Occupations, All Other	Bachelor's degree	1	5,190	$127,520
47-5023	Earth Drillers, Except Oil and Gas	High school	4	401	$62,400
47-5071	Roustabouts, Oil and Gas	No formal educational credential	2	456	$59,910

19-4043	Geological Technicians, Except Hydrologic Technicians	Associate's degree	1	148	$83,790
17-2151	Mining and Geological Engineers, Including Mining Safety Engineers	Bachelor's degree	1	189	$135,350
Drilling					
47-5023	Earth Drillers, Except Oil and Gas	High school	2	401	$62,400
47-5071	Roustabouts, Oil and Gas	No formal educational credential	1	456	$59,910
47-5023	Earth Drillers, Except Oil and Gas	High school	12	401	$62,400
47-5071	Roustabouts, Oil and Gas	No formal educational credential	6	456	$59,910
11-9199	Managers, All Other	Bachelor's degree	2	7,671	**
19-4043	Geological Technicians, Except Hydrologic Technicians	Associate's degree	3	148	$83,790
47-5011	Extraction Workers		3	5,055	
47-5081	Helpers--Extraction Workers	High school	4	287	$63,220
47-5023	Earth Drillers, Except Oil and Gas	High school	4	401	$62,400
11-3013	Facilities Managers	Bachelor's degree	1	3,098	$119,590
51-4121	Welders, Cutters, Solderers, and Brazers	High school	2	4,156	$64,780
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	High school	1	243	$53,460
Drilling - Vendor jobs					
47-5071	Roustabouts, Oil and Gas	No formal educational credential	5	456	$59,910
47-5023	Earth Drillers, Except Oil and Gas	High school	6	401	$62,400
47-5012	Rotary Drill Operators, Oil and Gas	No formal educational credential	2	172	$72,800

19-2042	Geoscientists, Except Hydrologists and Geographers	Bachelor's degree	4	324	$118,300
17-2151	Mining and Geological Engineers, Including Mining Safety Engineers	Bachelor's degree	4	189	$135,350
53-6051	Transportation Inspectors	High school	1	335	$93,120
53-3032	Heavy and Tractor-Trailer Truck Drivers	Postsecondary non-degree award	12	24,195	$65,090
53-7051	Industrial Truck and Tractor Operators	No formal educational credential	12	7,807	$55,580
53-6051	Transportation Inspectors	High school	1	335	$93,120
53-3032	Heavy and Tractor-Trailer Truck Drivers	Postsecondary non-degree award	9	24,195	$65,090
53-7051	Industrial Truck and Tractor Operators	No formal educational credential	10	7,807	$55,580
Plant Engineering and Design					
17-2071	Electrical Engineers	Bachelor's degree	3	2,029	$134,330
17-2051	Civil Engineers	Bachelor's degree	3	3,928	$117,680
17-2141	Mechanical Engineers	Bachelor's degree	3	3,863	$122,110
17-2141	Mechanical Engineers	Bachelor's degree	30	3,863	$122,110
15-1299	Computer Occupations, All Other	Bachelor's degree	2	5,190	$127,520
11-9041	Architectural and Engineering Managers	Bachelor's degree	1	2,346	$172,940
15-1299	Computer Occupations, All Other	Bachelor's degree	1	5,190	$127,520
43-1011	First-Line Supervisors of Office and Administrative Support Workers	High school	1	18,027	$81,180
43-4051	Customer Service Representatives	High school	1	50,382	$47,910
43-6011	Executive Secretaries and Executive Administrative Assistants	High school	1	3,901	$72,630

Plant Construction					
11-9021	Construction Managers	Bachelor's degree	20	4,775	$130,000
17-2199	Engineers, All Other	Bachelor's degree	5	1,901	$134,430
17-2199	Engineers, All Other	Bachelor's degree	23	1,901	$134,430
47-2073	Operating Engineers and Other Construction Equipment Operators	High school	20	5,617	$63,840
11-1011	Chief Executives	Bachelor's degree	2	4,225	**
19-5011	Occupational Health and Safety Specialists	Bachelor's degree	10	1,519	$106,180
15-1299	Computer Occupations, All Other	Bachelor's degree	10	5,190	$127,520
15-1299	Computer Occupations, All Other	Bachelor's degree	8	5,190	$127,520
43-1011	First-Line Supervisors of Office and Administrative Support Workers	High school	2	18,027	$81,180
43-4051	Customer Service Representatives	High school	8	50,382	$47,910
43-6011	Executive Secretaries and Executive Administrative Assistants	High school	12	3,901	$72,630
51-4121	Welders, Cutters, Solderers, and Brazers	High school	40	4,156	$64,780
49-9041	Industrial Machinery Mechanics	High school	50	3,683	$81,000
47-4011	Construction and Building Inspectors	High school	30	1,530	$83,970
47-2051	Cement Masons and Concrete Finishers	No formal educational credential	40	4,408	$61,650
47-2221	Structural Iron and Steel Workers	High school	40	903	$64,110
47-2061	Construction Laborers	No formal educational credential	80	27,052	$51,660
**: suppressed data.					

For operations and maintenance staffing needs of geothermal plants, the Geothermal Electric Power Generation industry (NAICS 221116) is used. National staffing patterns for this industry illustrate typical staffing needs for operation and maintenance of geothermal plants. The ratio of employment from QCEW to installed geothermal capacity nationwide of 0.5 employees per MW is used to render estimates of staffing needs. The magnitude of geothermal capacity used as a reference in Table 5 is 500 MW.

Table 5: Geothermal Electric Power Generation Industry (NAICS 221116) staffing pattern by educational requirement.

SOC	SOC title	Percent of industry employment	Educational requirement	Employment per 500 MW Geothermal	2022 Utah Employment	2024 Median wages
11-9021	Construction Managers	3.19%	Bachelor's degree	8	4,775	$99,900
11-1021	General and Operations Managers	2.08%	Bachelor's degree	5	59,209	$91,230
13-1082	Project Management Specialists	1.99%	Bachelor's degree	5	12,939	$95,470
13-1051	Cost Estimators	0.72%	Bachelor's degree	2	3,121	$79,150
17-2051	Civil Engineers	0.53%	Bachelor's degree	1	3,928	$92,000
13-2011	Accountants and Auditors	0.46%	Bachelor's degree	1	15,334	$75,100
19-5011	Occupational Health and Safety Specialists	0.40%	Bachelor's degree	1	1,519	$87,000
53-3032	Heavy and Tractor-Trailer Truck Drivers	2.54%	Postsecondary nondegree award	6	24,195	$59,580
43-3031	Bookkeeping, Accounting, and Auditing Clerks	0.75%	Some college, no degree	2	15,412	$48,210
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	9.74%	High school	24	13,520	$76,080
47-2152	Plumbers, Pipefitters, and Steamfitters	4.04%	High school	10	6,049	$61,680
47-5023	Earth Drillers, Except Oil and Gas	3.50%	High school	9	401	$57,850

43-9061	Office Clerks, General	2.39%	High school	6	32,652	$41,530
47-2031	Carpenters	1.97%	High school	5	15,339	$51,720
51-4121	Welders, Cutters, Solderers, and Brazers	1.85%	High school	5	4,156	$56,050
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	1.23%	High school	3	2,312	$63,890
47-5081	Helpers--Extraction Workers	0.89%	High school	2	287	$54,100
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	0.67%	High school	2	19,222	$45,150
47-2111	Electricians	0.62%	High school	2	11,777	$61,430
47-2011	Boilermakers	0.57%	High school	1	96,976	**
51-8031	Water and Wastewater Treatment Plant and System Operators	0.55%	High school	1	1,692	$59,120
43-1011	First-Line Supervisors of Office and Administrative Support Workers	0.53%	High school	1	18,027	$63,970
47-5022	Excavating and Loading Machine and Dragline Operators, Surface Mining	0.48%	High school	1	1,183	$52,240
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	0.37%	High school	1	5,776	$77,380
53-7072	Pump Operators, Except Wellhead Pumpers	0.36%	High school	1	103	$73,840
49-9051	Electrical Power-Line Installers and Repairers	0.36%	High school	1	684	$81,380
41-3091	Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	0.36%	High school	1	13,706	$59,970

51-9198	Helpers--Production Workers	0.35%	High school	1	1,541	$35,940
49-9071	Maintenance and Repair Workers, General	0.35%	High school	1	14,370	$49,070
51-8013	Power Plant Operators	0.33%	High school	1	399	$103,760
43-4051	Customer Service Representatives	0.30%	High school	1	50,382	$40,150
47-4071	Septic Tank Servicers and Sewer Pipe Cleaners	0.30%	High school	1	211	$48,720
49-9041	Industrial Machinery Mechanics	0.30%	High school	1	3,683	$69,670
51-1011	First-Line Supervisors of Production and Operating Workers	0.29%	High school	1	8,175	$67,050
49-9012	Control and Valve Installers and Repairers, Except Mechanical Door	0.25%	High school	1	491	$69,450
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	0.23%	High school	1	6,963	$48,000
43-5061	Production, Planning, and Expediting Clerks	0.20%	High school	1	5,129	$53,110
47-2061	Construction Laborers	31.46%	No formal educational credential	79	27,052	$46,100
47-2151	Pipelayers	5.71%	No formal educational credential	14	802	$51,180
47-2051	Cement Masons and Concrete Finishers	1.13%	No formal educational credential	3	4,408	$55,540
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	0.69%	No formal educational credential	2	25,014	$39,570
47-5071	Roustabouts, Oil and Gas	0.33%	No formal educational credential	1	456	$47,680

47-2141	Painters, Construction and Maintenance	0.29%	No formal educational credential	1	5,697	$45,900
47-3019	Helpers, Construction Trades, All Other	0.26%	No formal educational credential	1	336	$36,490
33-9091	Crossing Guards and Flaggers	0.22%	No formal educational credential	1	2,141	$34,480
**: suppressed data. Source: Lightcast 2025						

References

Berry, Jason. September 2008. Utah's Energy Renaissance: Geothermal in Utah. Energy News: Survey Notes, v. 40 no. 3. Utah Geological Survey. Accessed 8/8/25. https://geology.utah.gov/map-pub/survey-notes/energy-news/energy-news-geothermal-energy-development-in-utah/

Downen, John C.; Holst, Thomas; Vanden Berg, Michael D. February 2020. Economic Impacts of Utah's Energy Industry, 2017. Kem C. Gardner Policy Institute, The University of Utah. Accessed July 2025 from https://gardner.utah.edu/wp-content/uploads/EnergyReport-Feb2020.pdf.

Fervo Energy. February 12, 2024. Fervo Energy Drilling Results Show Rapid Advancement of Geothermal Performance. Press Release. Accessed 8/8/25. https://fervoenergy.com/fervo-energy-drilling-results-show-rapid-advancement-of-geothermal-performance/.

IAEA. 2001. Staffing requirements for future small and medium reactors (SMRs) based on operating experience and projections. UAEA-TECDOC-1193. Accessed 8/8/25. https://www-pub.iaea.org/MTCD/Publications/PDF/te_1193_prn.pdf

IAEA. 2018. Deployment Indicators for Small Modular Reactors: methodology, analysis of key factors and case studies. IAEA-TECDOC-1854. Accessed 8/8/25. https://www-pub.iaea.org/MTCD/Publications/PDF/TE-1854web.pdf

Jennejohn, Dan. October 2010. Green jobs through geothermal energy. Geothermal Energy Association (GEA). Accessed 8/8/25. https://geothermal.org/sites/default/files/2021-02/Green_Jobs_Through_Geothermal_Energy.pdf

Ormat Technologies Inc. COVE FORT TOUR & PERMITTING REFORM. Accessed 8/8/25. https://www.ormat.com/en/company/news/view/Default.aspx?ContentID=9382.

Pacificorp. 2025. Webpage titled “Thermal,” including a list of Pacificorp’s thermal facilities. Accessed 8/8/25. https://www.pacificorp.com/energy/thermal.html.

Purdue Center for Regional Development, Indiana University Indiana Business Research Center and Strategic Development Group Inc. 2007. Unlocking rural competitiveness: The role of regional clusters. Accessed July 2025 from https://www.iatp.org/documents/unlocking-rural-competitiveness-the-role-of-regional-clusters.

U.S. Energy Information Administration (EIA). Independent Statistics and Analysis. Accessed 8/5/2025. https://www.eia.gov/state/seds/

Utah Governor’s Office of Energy Development (OED). 2014. “Detailed List of OED Data Requirements” - memo to Utah Department of Workforce specifying industry codes for which employment data was required to effectively advance energy and mineral development in the state.

Utah Department of Natural Resources (DNR). Publication date 2024 or 2025. Geothermal in Utah. Accessed 8/8/25. https://energy.utah.gov/wp-content/uploads/Geothermal-In-Utah.pdf

World Nuclear News. June 12, 2025. “Utah to Host NuCube Test Reactor.” Accessed 8/8/25. https://world-nuclear-news.org/articles/utah-to-host-nucube-test-reactor.