

Center for Energy Workforce Development

ENERGY WORKFORCE DEMAND

SOUTHEAST REGION

TABLE OF CONTENTS

- 1 Summary: Southeast Region Energy Workforce overview for Electric and Natural Gas Utilities
- 5 State-Level Occupation Data
- 14 About This Report
- 16 Appendix A: Industry & Occupation Definitions

INTRODUCTION

This report is designed to exhibit data on the present and future demand for specific energy occupations within the electric and natural gas utility industries for all CEWD regions in the United States. The goal of this report is to provide stakeholders with critical information on energy workforce characteristics, which can be used for planning efforts and as a benchmark for future studies on the region, as well as a comparison against other regions.

The report provides an overview of employment for select energy industries, broken out by CEWD regions, considering historic, current and future circumstances. This is followed by a regional breakdown of employment by occupations typically associated with the Energy sector.

Energy occupations by field were identified by the Center for Energy Workforce Development and EMSI.*

* Please refer to Appendix A for the descriptions of the electric and natural gas utility industries and standard occupation classifications included in this report.

DATA SOURCES

Quarterly Census of Employment and Wages (QCEW); Alabama Department of Industrial Relations; Florida Agency for Workforce Innovation; Georgia Department of Labor, Workforce Information and Analysis, Occupational Information Services Unit; Kentucky Office of Employment and Training; Mississippi Department of Employment Security; North Carolina Employment Security Commission, Labor Market Information Division; South Carolina Employment Security Commission, Labor Market Information Department; Tennessee Department of Labor and Workforce Development, Research and Statistics Division.

PREPARED FOR:

The Center for Energy Workforce Development

REGION DEFINITION

Southeast United States: Mississippi, Tennessee, Kentucky, Alabama, Georgia, Florida, South Carolina, North Carolina

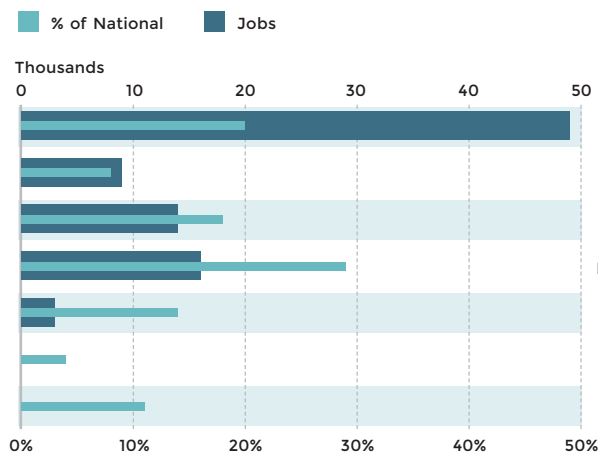
SUMMARY

Southeast Region Energy Workforce overview for Electric and Natural Gas Utilities

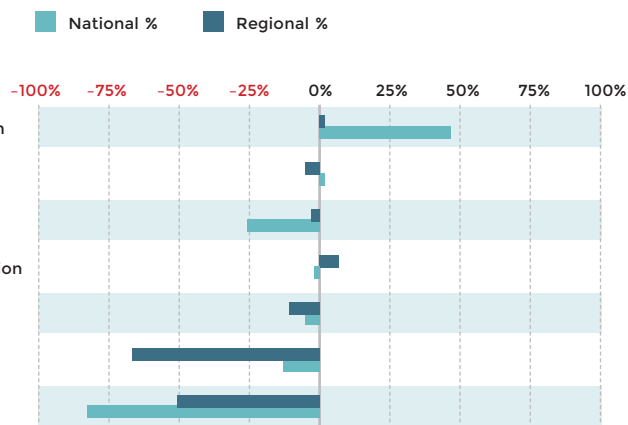
HISTORICAL INDUSTRY OVERVIEW

The following graphs display energy sector jobs in 2012 with their percent of national employment, and the regional and national job change from 2007 to 2012. In 2010, the Quarterly Census of Employment and Wages (QCEW) reclassified much of the employment contained in various electric power generation industries, specifically Fossil, Nuclear and Hydroelectric jobs into the Electric Distribution (NAICS 221122). In some cases this change was dramatic, with hydroelectric losing 300-800% of its jobs to the electric distribution industry. Since our reporting time frame covers this reclassification event, the job numbers reflect the shift accordingly. One must therefore, not overly scrutinize individual industries affected by the reclassification but rather look to the overall energy sector job change total as an indicator of job growth or decline.

Energy Industry Jobs, 2012

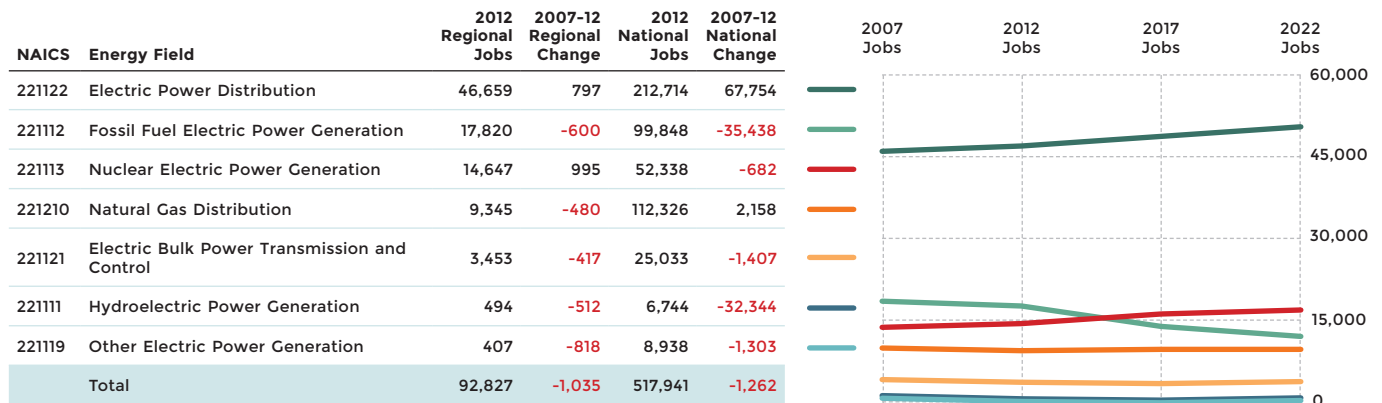


2007-2012 Job Change



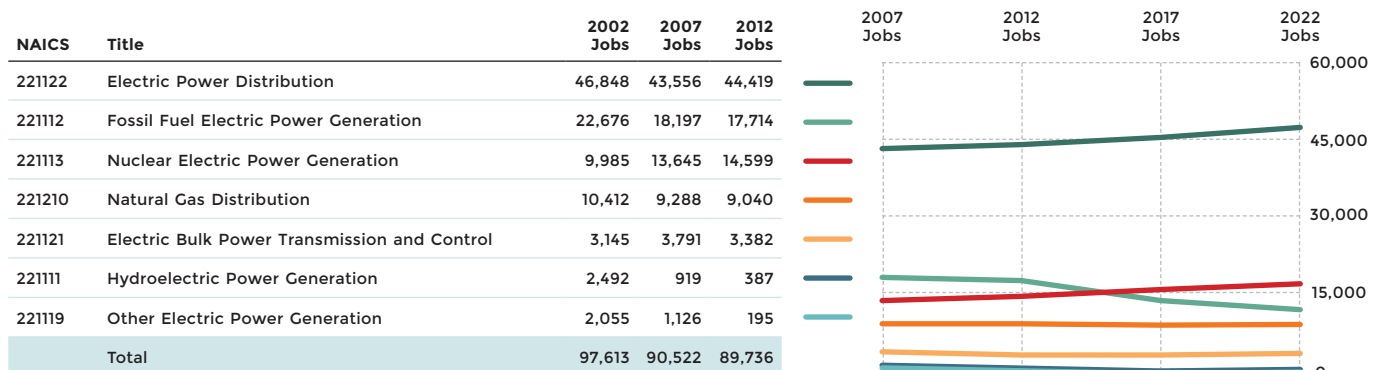
Analysis of the energy sector in the Southeast region shows a total of 92,827 jobs for 2012. Between 2007 and 2012 Nuclear energy and Electric power distribution had 7% and 2% growth respectively. All other sectors experienced a decline in jobs: Other electric energy -67%, Hydroelectric energy -51%, Electric bulk power transmission -11%, Natural gas distribution -5%, and Fossil fuel energy -3%. The table in this section displays both regional and national current employment and historical job change in the industry sectors between 2007 and 2012.

Southeast/National Comparison, Electrical and Natural Gas Utilities, all Jobs by Energy field



REGIONAL GOVERNMENT JOBS

CEWD requested EMSI to gather and correlate government jobs data relative to the seven industries currently being review in this report. The following table gives the results of the regional analysis but there are caveats that need to be included here along with the data. The government classifies all occupations into three NAICS codes (or industries): Federal, State and Local. Therefore, no direct correlation can be established between an occupation and a specific functional industry as in the private sector. The staffing patterns used to place government jobs into private industry classifications are based on EMSI's estimates of staffing patterns of private sector energy producing industries. As such, the data in the table below should not be used to compare industry jobs across the seven private NAICS codes being reviewed elsewhere in this report or against other EMSI official data releases.



ENERGY FIELD REGIONAL GROWTH PROJECTIONS

Growth projections are designed to portray the future trend of all jobs in the energy sectors in the region. The following table shows the projected employment growth across all seven energy sectors for the CEWD region. The categories include: "2012 Jobs" or the total number of energy workers in 2012; "2012-2017 Growth" or the number of new jobs pro-

jected to be created between 2012 and 2017; “% Growth”; “2012-2017 Annual Job Growth” or the average annual growth over the five year period; “2012-2017 Projected Attrition & Retirements” and “2012-2022 Projected Attrition & Retirements” or the projected annual job turnover/openings for the sector for the respective five or ten year period; and “Median Annual Earnings” or the median average earnings per worker.

Southeast, Electrical and Natural Gas Utilities, all Jobs by Energy field

NAICS	Title	2012 Jobs	2012-17 Growth	2012-17% Growth	2012-17 Average Annual Net Job Change	2012-17 Projected Attrition & Retirement Openings	2012-22 Projected Attrition & Retirement Openings	Median Annual Earnings
221122	Electric Power Distribution	46,659	1,870	4%	374	19,323	25,472	\$51,437
221113	Nuclear Electric Power Generation	14,647	1,292	8%	258	6,066	7,996	\$53,172
221121	Electric Bulk Power Transmission and Control	3,453	-31	-1%	-6	1,430	1,885	\$52,752
221119	Other Electric Power Generation	407	-58	-16%	-12	168	222	\$40,546
221210	Natural Gas Distribution	9,345	-62	-1%	-12	3,870	5,102	\$44,732
221111	Hydroelectric Power Generation	494	-252	-104%	-50	205	270	\$47,705
221112	Fossil Fuel Electric Power Generation	17,820	-3,859	-28%	-772	7,380	9,728	\$52,752
Total		92,827	-1,100	-1%	-220	38,441	50,676	

KEY OCCUPATIONS IN THE SOUTHEAST REGION

The following table shows the number of workers that were employed in occupations typically associated with the Energy field in 2007, 2012, 2017 and 2022. The columns of data progressively list jobs, job change, and percent change from the previous time period; in five-year increments starting from 2007 and projected forward ten years into the future. The associated projected attritions and retirements occurring over the same 5 to ten year period are listed next.* Finally, “Median Annual Earnings” indicates the average median wages across all occupations in the respective industry.

* Projected attrition and retirements rates for occupations are taken from EMSI’s proprietary dataset.

Southeast Region, Electrical and Natural Gas Utilities, Key Occupation Employment*

SOC Code	Description	2007 Jobs	2007-2012 Change	2007-2012 %Change	2012 Jobs	2017 Jobs	2012-2017 Change	2012-2017 %Change	2022 Jobs	2012-2022 Change	2012-2022 %Change	2012-2017 Projected Attrition & Retirement	2012-2022 Projected Attrition & Retirement	Median Annual Earnings
Lineworkers		16,748	132	1%	16,880	16,724	-156	-1%	17,080	200	1%	5,330	7,616	\$54,763
49-1011	First-line supervisors/managers of mechanics, installers, & repairers	3,251	-58	-2%	3,193	3,052	-141	-4%	3,027	-166	-5%	1,008	1,441	\$55,040
49-9051	Electrical power-line installers & repairers	13,497	190	1%	13,687	13,672	-15	-0%	14,053	366	3%	4,322	6,175	\$54,697
Plant / Field Operators		7,762	50	1%	7,812	7,798	-14	-0%	8,008	196	3%	3,264	4,278	\$65,324
51-8011	Nuclear power reactor operators	1,408	79	6%	1,487	1,531	44	3%	1,608	121	8%	621	814	\$72,998
51-8013	Power plant operators	5,653	-34	-1%	5,619	5,568	-51	-1%	5,685	66	1%	2,348	3,077	\$64,629
51-8092	Gas plant operators	701	5	1%	706	699	-7	-1%	715	9	1%	295	387	\$54,701
Technicians		13,555	303	2%	13,858	14,118	260	2%	14,645	787	6%	5,494	7,467	\$52,904
17-3023	Electrical & Instrumentation Techs., Electrical & electronic engineering technicians	1,246	-39	-3%	1,207	1,163	-44	-4%	1,159	-48	-4%	478	650	\$55,223
19-4051	Nuclear technicians, Nuclear Equipment Operations Technicians Nuclear Monitoring Technicians	1,224	69	6%	1,293	1,331	38	3%	1,413	120	9%	513	697	\$68,037
47-2111	Electricians	1,347	-40	-3%	1,307	1,267	-40	-3%	1,266	-41	-3%	518	704	\$38,281
47-2151	Pipelayers	63	4	6%	67	64	-3	-4%	64	-3	-4%	27	36	\$29,139
47-2152	Plumbers, pipefitters, & steamfitters	590	-39	-7%	551	548	-3	-1%	558	7	1%	218	297	\$37,215
47-3015	Helpers, pipelayers, plumbers, pipefitters & steamfitters	5	0	0%	5	5	0	0%	5	0	0%	2	3	\$24,807
49-2095	Electrical & electronics repairers, powerhouse, substation, & relay	3,405	310	9%	3,715	3,937	222	6%	4,175	460	12%	1,473	2,002	\$64,205
49-9012	Control & valve installers & repairers, except mechanical door	2,244	-63	-3%	2,181	2,148	-33	-2%	2,160	-21	-1%	865	1,175	\$41,554
49-9041	Industrial machinery mechanics	1,820	123	7%	1,943	2,061	118	6%	2,216	273	14%	770	1,047	\$43,200
49-9044	Millwright, Mechanic technician	18	0	0%	18	18	0	0%	18	0	0%	7	10	\$43,046
51-4041	Machinist	100	-2	-2%	98	95	-3	-3%	96	-2	-2%	39	53	\$37,220
51-4121	Welders, cutters, solderers, & brazers	336	-5	-1%	331	321	-10	-3%	320	-11	-3%	131	178	\$34,584
51-8012	Power Distributors & Dispatchers	1,157	-15	-1%	1,142	1,160	18	2%	1,195	53	5%	453	615	\$67,327
Engineers		5,810	-74	-1%	5,736	5,606	-130	-2%	5,629	-107	-2%	2,020	2,681	\$87,481
11-9041	Engineering Managers	718	-33	-5%	685	659	-26	-4%	657	-28	-4%	241	320	\$109,342
17-2041	Chemical Engineer	64	2	3%	66	69	3	5%	74	8	12%	23	31	\$81,721
17-2051	Civil Engineers	292	-6	-2%	286	281	-5	-2%	287	1	0%	101	134	\$72,184
17-2071	Electrical Engineers, Power Systems Engineer, Energy Transmission Engineers	3,114	-51	-2%	3,063	2,967	-96	-3%	2,971	-92	-3%	1,078	1,431	\$82,074
17-2081	Environmental Engineers	126	-2	-2%	124	120	-4	-3%	120	-4	-3%	44	58	\$70,283
17-2111	Health & Safety engineers, except mining safety engineers & inspectors	77	-1	-1%	76	72	-4	-5%	72	-4	-5%	27	36	\$70,771
17-2141	Mechanical Engineers	209	-2	-1%	207	205	-2	-1%	210	3	1%	73	97	\$76,380
17-2161	Nuclear Engineers	1,210	19	2%	1,229	1,233	4	0%	1,238	9	1%	433	574	\$97,228
Total		43,875	411	1%	44,286	44,246	-40	-0%	45,362	1,076	2%	16,108	22,042	\$60,282

* Job numbers by employment category may not equal total Key Occupation Employment for each region, due to rounding.



STATE-LEVEL OCCUPATION DATA

Standard Occupation Classification (soc) employment data is provided by total number of jobs and projected jobs in the region spanning the years 2006, 2011, 2016 and 2012. Additionally, projected attrition & retirements rates are applied to show the amount of open positions over the next ten years. Employment numbers are reported as of December 2011.

ALABAMA

SOC Code	Description	2007 Jobs	2007-2012 Change	2007-2012 %Change	2012 Jobs	2017 Jobs	2012-2017 Change	2012-2017 %Change	2022 Jobs	2012-2022 Change	2012-2022 %Change	2012-2017 Projected Attrition & Retirement	2012-2022 Projected Attrition & Retirement	Median Annual Earnings
Lineworkers		2,291	192	8%	2,483	2,581	98	4%	2,700	217	9%	784	1,120	\$61,292
49-1011	First-line supervisors/managers of mechanics, installers, & repairers	447	29	6%	476	477	1	0%	483	7	1%	150	215	\$55,882
49-9051	Electrical power-line installers & repairers	1,844	163	9%	2,007	2,104	97	5%	2,217	210	10%	634	905	\$62,578
Plant / Field Operators		908	121	13%	1,029	1,089	60	6%	1,153	124	12%	429	563	\$64,112
51-8011	Nuclear power reactor operators	218	41	19%	259	277	18	7%	297	38	15%	108	142	\$68,489
51-8013	Power plant operators	613	89	15%	702	739	37	5%	779	77	11%	293	384	\$62,795
51-8092	Gas plant operators	77	-9	-12%	68	73	5	7%	77	9	13%	28	37	\$61,755
Technicians		2,318	305	13%	2,623	2,762	139	5%	2,911	288	11%	1,039	1,413	\$52,742
17-3023	Electrical & Instrumentation Technician, Electrical & electronic engineering technicians	111	19	17%	130	133	3	2%	135	5	4%	52	70	\$56,568
19-4051	Nuclear technicians, Nuclear Equipment Operations Technicians Nuclear Monitoring Technicians	51	2	4%	53	58	5	9%	65	12	23%	21	29	\$69,413
47-2111	Electricians	216	10	5%	226	226	0	0%	229	3	1%	90	122	\$38,933
47-2151	Pipelayers	23	0	0%	23	22	-1	-4%	22	-1	-4%	9	12	\$30,619
47-2152	Plumbers, pipefitters, & steamfitters	102	-14	-14%	88	91	3	3%	94	6	7%	35	47	\$36,840
47-3015	Helpers, pipelayers, plumbers, pipefitters & steamfitters	1	0	0%	1	1	0	0%	1	0	0%	0	1	\$23,421
49-2095	Electrical & electronics repairers, powerhouse, substation, & relay	694	215	31%	909	986	77	8%	1,059	150	17%	360	490	\$64,917
49-9012	Control & valve installers & repairers, except mechanical door	494	6	1%	500	504	4	1%	513	13	3%	198	269	\$37,461
49-9041	Industrial machinery mechanics	336	46	14%	382	419	37	10%	456	74	19%	151	206	\$45,369
49-9044	Millwright, Mechanic technician	5	1	20%	6	6	0	0%	6	0	0%	2	3	\$43,430
51-4041	Machinist	14	1	7%	15	15	0	0%	16	1	7%	6	8	\$38,368
51-4121	Welders, cutters, solderers, & brazers	59	3	5%	62	62	0	0%	63	1	2%	25	33	\$34,405
51-8012	Power Distributors & Dispatchers	212	16	8%	228	239	11	5%	252	24	11%	90	123	\$72,530
Engineers		1,010	84	8%	1,094	1,094	0	0%	1,112	18	2%	383	511	\$89,591
11-9041	Engineering Managers	116	7	6%	123	122	-1	-1%	124	1	1%	43	57	\$116,500
17-2041	Chemical Engineer	11	1	9%	12	13	1	8%	14	2	17%	4	6	\$89,710
17-2051	Civil Engineers	38	0	0%	38	39	1	3%	41	3	8%	13	18	\$67,131
17-2071	Electrical Engineers, Power Systems Engineer, Energy Transmission Engineers	665	63	9%	728	725	-3	-0%	733	5	1%	256	340	\$85,600
17-2081	Environmental Engineers	19	1	5%	20	20	0	0%	21	1	5%	7	9	\$63,981
17-2111	Health & Safety engineers, except mining safety engineers & inspectors	9	0	0%	9	9	0	0%	9	0	0%	3	4	\$86,411
17-2141	Mechanical Engineers	30	2	7%	32	33	1	3%	34	2	6%	11	15	\$81,597
17-2161	Nuclear Engineers	122	10	8%	132	133	1	1%	136	4	3%	46	62	\$98,719
Total		6,527	702	11%	7,229	7,526	297	4%	7,876	647	9%	2,635	3,607	\$62,874

FLORIDA

SOC Code	Description	2007 Jobs	2007-2012 Change	2007-2012 %Change	2012 Jobs	2017 Jobs	2012-2017 Change	2012-2017 %Change	2022 Jobs	2012-2022 Change	2012-2022 %Change	2012-2017 Projected Attrition & Retirement	2012-2022 Projected Attrition & Retirement	Median Annual Earnings
Lineworkers		4,007	-100	-2%	3,907	3,736	-171	-4%	3,910	3	0%	1,234	1,763	\$54,428
49-1011	First-line supervisors/managers of mechanics, installers, & repairers	726	-24	-3%	702	651	-51	-7%	660	-42	-6%	222	317	\$55,627
49-9051	Electrical power-line installers & repairers	3,281	-76	-2%	3,205	3,085	-120	-4%	3,250	45	1%	1,012	1,446	\$54,153
Plant / Field Operators		1,367	-83	-6%	1,284	1,284	0	0%	1,357	73	6%	537	703	\$64,795
51-8011	Nuclear power reactor operators	171	-4	-2%	167	173	6	4%	186	19	11%	70	91	\$68,524
51-8013	Power plant operators	1,089	-72	-7%	1,017	1,008	-9	-1%	1,057	40	4%	425	557	\$65,104
51-8092	Gas plant operators	107	-7	-7%	100	103	3	3%	114	14	14%	42	55	\$55,806
Technicians		2,918	-30	-1%	2,888	2,885	-3	-0%	3,054	166	6%	1,145	1,556	\$49,372
17-3023	Electrical & Instrumentation Technician, Electrical & electronic engineering technicians	313	-13	-4%	300	276	-24	-8%	279	-21	-7%	119	162	\$53,736
19-4051	Nuclear technicians, Nuclear Equipment Operations Technicians Nuclear Monitoring Technicians	184	5	3%	189	198	9	5%	211	22	12%	75	102	\$68,988
47-2111	Electricians	340	-15	-4%	325	305	-20	-6%	308	-17	-5%	129	175	\$36,169
47-2151	Pipelayers	9	0	0%	9	10	1	11%	11	2	22%	4	5	\$30,321
47-2152	Plumbers, pipefitters, & steamfitters	106	-11	-10%	95	100	5	5%	108	13	14%	38	51	\$36,898
47-3015	Helpers, pipelayers, plumbers, pipefitters & steamfitters	0	0	0%	0	1	1	0%	1	1	0%	0	0	\$24,705
49-2095	Electrical & electronics repairers, powerhouse, substation, & relay	748	19	3%	767	796	29	4%	855	88	11%	304	413	\$57,366
49-9012	Control & valve installers & repairers, except mechanical door	433	-31	-7%	402	397	-5	-1%	416	14	3%	159	217	\$39,894
49-9041	Industrial machinery mechanics	435	29	7%	464	472	8	2%	518	54	12%	184	250	\$41,030
49-9044	Millwright, Mechanic technician	2	0	0%	2	2	0	0%	2	0	0%	1	1	\$39,645
51-4041	Machinist	20	-2	-10%	18	17	-1	-6%	18	0	0%	7	10	\$36,320
51-4121	Welders, cutters, solderers, & brazers	67	-3	-4%	64	61	-3	-5%	63	-1	-2%	25	34	\$33,812
51-8012	Power Distributors & Dispatchers	261	-8	-3%	253	250	-3	-1%	264	11	4%	100	136	\$62,795
Engineers		1,123	-77	-7%	1,046	974	-72	-7%	994	-52	-5%	367	488	\$83,945
11-9041	Engineering Managers	156	-14	-9%	142	131	-11	-8%	133	-9	-6%	50	66	\$111,288
17-2041	Chemical Engineer	9	-1	-11%	8	9	1	13%	10	2	25%	3	4	\$48,526
17-2051	Civil Engineers	66	-3	-5%	63	61	-2	-3%	65	2	3%	22	29	\$74,820
17-2071	Electrical Engineers, Power Systems Engineer, Energy Transmission Engineers	695	-38	-5%	657	596	-61	-9%	603	-54	-8%	231	307	\$81,875
17-2081	Environmental Engineers	33	-1	-3%	32	30	-2	-6%	30	-2	-6%	11	15	\$60,320
17-2111	Health & Safety engineers, except mining safety engineers & inspectors	19	-1	-5%	18	17	-1	-6%	17	-1	-6%	6	8	\$66,081
17-2141	Mechanical Engineers	37	-2	-5%	35	33	-2	-6%	35	0	0%	12	16	\$74,908
17-2161	Nuclear Engineers	108	-17	-16%	91	97	6	7%	101	10	11%	32	43	\$79,580
Total		9,415	-290	-3%	9,125	8,879	-246	-3%	9,315	190	2%	3,283	4,510	\$57,670

GEORGIA

SOC Code	Description	2007 Jobs	2007-2012 Change	2007-2012 %Change	2012 Jobs	2017 Jobs	2012-2017 Change	2012-2017 %Change	2022 Jobs	2012-2022 Change	2012-2022 %Change	2012-2017 Projected Attrition & Retirement	2012-2022 Projected Attrition & Retirement	Median Annual Earnings
Lineworkers		3,401	-169	-5%	3,232	3,292	60	2%	3,412	180	6%	1,020	1,458	\$49,861
49-1011	First-line supervisors/managers of mechanics, installers, & repairers	697	-40	-6%	657	647	-10	-2%	650	-7	-1%	207	296	\$56,846
49-9051	Electrical power-line installers & repairers	2,704	-129	-5%	2,575	2,645	70	3%	2,762	187	7%	813	1,162	\$48,083
Plant / Field Operators		1,625	-79	-5%	1,546	1,599	53	3%	1,669	123	8%	646	847	\$60,223
51-8011	Nuclear power reactor operators	221	-6	-3%	215	230	15	7%	245	30	14%	90	118	\$68,090
51-8013	Power plant operators	1,285	-74	-6%	1,211	1,246	35	3%	1,295	84	7%	506	663	\$59,592
51-8092	Gas plant operators	119	1	1%	120	123	3	3%	129	9	8%	50	66	\$52,478
Technicians		2,728	-69	-3%	2,659	2,757	98	4%	2,885	226	8%	1,053	1,433	\$54,317
17-3023	Electrical & Instrumentation Technician, Electrical & electronic engineering technicians	308	-24	-8%	284	275	-9	-3%	277	-7	-2%	113	153	\$56,887
19-4051	Nuclear technicians, Nuclear Equipment Operations Technicians Nuclear Monitoring Technicians	172	-8	-5%	164	172	8	5%	184	20	12%	65	88	\$63,541
47-2111	Electricians	306	-13	-4%	293	291	-2	-1%	294	1	0%	116	158	\$39,540
47-2151	Pipelayers	6	0	0%	6	6	0	0%	6	0	0%	2	3	\$26,921
47-2152	Plumbers, pipefitters, & steamfitters	115	-2	-2%	113	112	-1	-1%	115	2	2%	45	61	\$37,901
47-3015	Helpers, pipelayers, plumbers, pipefitters & steamfitters	1	0	0%	1	1	0	0%	1	0	0%	0	1	\$23,442
49-2095	Electrical & electronics repairers, powerhouse, substation, & relay	757	8	1%	765	816	51	7%	871	106	14%	303	412	\$67,662
49-9012	Control & valve installers & repairers, except mechanical door	376	-25	-7%	351	353	2	1%	359	8	2%	139	189	\$45,365
49-9041	Industrial machinery mechanics	370	13	4%	383	419	36	9%	456	73	19%	152	206	\$41,571
49-9044	Millwright, Mechanic technician	5	0	0%	5	5	0	0%	5	0	0%	2	3	\$42,536
51-4041	Machinist	22	-2	-9%	20	21	1	5%	21	1	5%	8	11	\$35,634
51-4121	Welders, cutters, solderers, & brazers	63	-2	-3%	61	60	-1	-2%	61	0	0%	24	33	\$33,526
51-8012	Power Distributors & Dispatchers	227	-14	-6%	213	226	13	6%	235	22	10%	84	115	\$71,469
Engineers		1,200	-58	-5%	1,142	1,139	-3	-0%	1,153	11	1%	403	534	\$86,244
11-9041	Engineering Managers	156	-15	-10%	141	137	-4	-3%	138	-3	-2%	50	66	\$112,962
17-2041	Chemical Engineer	11	0	0%	11	12	1	9%	13	2	18%	4	5	\$85,426
17-2051	Civil Engineers	52	-3	-6%	49	49	0	0%	51	2	4%	17	23	\$71,660
17-2071	Electrical Engineers, Power Systems Engineer, Energy Transmission Engineers	628	-34	-5%	594	593	-1	-0%	599	5	1%	209	278	\$82,914
17-2081	Environmental Engineers	28	-1	-4%	27	26	-1	-4%	26	-1	-4%	10	13	\$72,010
17-2111	Health & Safety engineers, except mining safety engineers & inspectors	23	-1	-4%	22	22	0	0%	22	0	0%	8	10	\$72,014
17-2141	Mechanical Engineers	38	-3	-8%	35	36	1	3%	37	2	6%	12	16	\$74,420
17-2161	Nuclear Engineers	264	-1	-0%	263	264	1	0%	267	4	2%	93	123	\$86,197
Total		8,954	-375	-4%	8,579	8,787	208	2%	9,119	540	6%	3,122	4,272	\$57,953

KENTUCKY

SOC Code	Description	2007 Jobs	2007-2012 Change	2007-2012 %Change	2012 Jobs	2017 Jobs	2012-2017 Change	2012-2017 %Change	2022 Jobs	2012-2022 Change	2012-2022 %Change	2012-2017 Projected Attrition & Retirement	2012-2022 Projected Attrition & Retirement	Median Annual Earnings
Lineworkers		1,277	70	5%	1,347	1,355	8	1%	1,341	-6	-0%	426	608	\$55,095
49-1011	First-line supervisors/managers of mechanics, installers, & repairers	230	-6	-3%	224	213	-11	-5%	202	-22	-10%	71	101	\$53,149
49-9051	Electrical power-line installers & repairers	1,047	76	7%	1,123	1,142	19	2%	1,139	16	1%	355	507	\$55,487
Plant / Field Operators		622	23	4%	645	619	-26	-4%	598	-47	-7%	270	353	\$67,832
51-8011	Nuclear power reactor operators	49	-2	-4%	47	51	4	9%	54	7	15%	20	26	\$110,440
51-8013	Power plant operators	525	23	4%	548	521	-27	-5%	499	-49	-9%	229	300	\$65,187
51-8092	Gas plant operators	48	2	4%	50	47	-3	-6%	45	-5	-10%	21	27	\$56,389
Technicians		835	16	2%	851	856	5	1%	847	-4	-0%	336	457	\$54,021
17-3023	Electrical & Instrumentation Technician, Electrical & electronic engineering technicians	57	-8	-14%	49	50	1	2%	48	-1	-2%	19	26	\$59,653
19-4051	Nuclear technicians, Nuclear Equipment Operations Technicians Nuclear Monitoring Technicians	24	-3	-13%	21	24	3	14%	26	5	24%	8	11	\$42,788
47-2111	Electricians	88	-5	-6%	83	81	-2	-2%	78	-5	-6%	33	45	\$43,021
47-2151	Pipelayers	5	1	20%	6	6	0	0%	5	-1	-17%	2	3	\$31,876
47-2152	Plumbers, pipefitters, & steamfitters	40	5	13%	45	43	-2	-4%	42	-3	-7%	18	24	\$40,918
47-3015	Helpers, pipelayers, plumbers, pipefitters & steamfitters	0	0	0%	0	0	0	0%	0	0	0%	0	0	\$25,856
49-2095	Electrical & electronics repairers, powerhouse, substation, & relay	184	15	8%	199	213	14	7%	217	18	9%	79	107	\$66,581
49-9012	Control & valve installers & repairers, except mechanical door	145	3	2%	148	141	-7	-5%	137	-11	-7%	59	80	\$38,730
49-9041	Industrial machinery mechanics	142	9	6%	151	155	4	3%	157	6	4%	60	81	\$46,511
49-9044	Millwright, Mechanic technician	1	0	0%	1	1	0	0%	0	-1	-100%	0	1	\$51,210
51-4041	Machinist	6	0	0%	6	6	0	0%	6	0	0%	2	3	\$40,538
51-4121	Welders, cutters, solderers, & brazers	28	0	0%	28	26	-2	-7%	25	-3	-11%	11	15	\$34,632
51-8012	Power Distributors & Dispatchers	115	-1	-1%	114	110	-4	-4%	106	-8	-7%	45	61	\$81,162
Engineers		264	-23	-9%	241	243	2	1%	238	-3	-1%	84	113	\$83,718
11-9041	Engineering Managers	41	-3	-7%	38	36	-2	-5%	35	-3	-8%	13	18	\$94,268
17-2041	Chemical Engineer	4	1	25%	5	5	0	0%	5	0	0%	2	2	\$87,360
17-2051	Civil Engineers	17	-1	-6%	16	16	0	0%	15	-1	-6%	6	7	\$70,147
17-2071	Electrical Engineers, Power Systems Engineer, Energy Transmission Engineers	146	-12	-8%	134	135	1	1%	132	-2	-1%	47	63	\$75,492
17-2081	Environmental Engineers	4	0	0%	4	4	0	0%	4	0	0%	1	2	\$72,571
17-2111	Health & Safety engineers, except mining safety engineers & inspectors	3	0	0%	3	3	0	0%	3	0	0%	1	1	\$73,756
17-2141	Mechanical Engineers	12	0	0%	12	12	0	0%	12	0	0%	4	6	\$74,973
17-2161	Nuclear Engineers	37	-8	-22%	29	32	3	10%	32	3	10%	10	14	\$120,612
Total		2,998	86	3%	3,084	3,073	-11	-0%	3,024	-60	-2%	1,116	1,531	\$59,699

MISSISSIPPI

SOC Code	Description	2007 Jobs	2007-2012 Change	2007-2012 %Change	2012 Jobs	2017 Jobs	2012-2017 Change	2012-2017 %Change	2022 Jobs	2012-2022 Change	2012-2022 %Change	2012-2017 Projected Attrition & Retirement	2012-2022 Projected Attrition & Retirement	Median Annual Earnings
Lineworkers		1,604	70	4%	1,674	1,678	4	0%	1,613	-61	-4%	529	755	\$53,772
49-1011	First-line supervisors/managers of mechanics, installers, & repairers	225	3	1%	228	223	-5	-2%	211	-17	-7%	72	103	\$51,574
49-9051	Electrical power-line installers & repairers	1,379	67	5%	1,446	1,455	9	1%	1,402	-44	-3%	457	652	\$54,116
Plant / Field Operators		353	-1	-0%	352	373	21	6%	373	21	6%	147	193	\$64,646
51-8011	Nuclear power reactor operators	34	-1	-3%	33	38	5	15%	40	7	21%	14	18	\$104,722
51-8013	Power plant operators	289	-3	-1%	286	303	17	6%	302	16	6%	119	157	\$60,798
51-8092	Gas plant operators	30	3	10%	33	32	-1	-3%	31	-2	-6%	14	18	\$58,635
Technicians		944	36	4%	980	994	14	1%	969	-11	-1%	389	528	\$50,132
17-3023	Electrical & Instrumentation Technician, Electrical & electronic engineering technicians	113	0	0%	113	112	-1	-1%	107	-6	-5%	45	61	\$53,635
19-4051	Nuclear technicians, Nuclear Equipment Operations Technicians Nuclear Monitoring Technicians	23	0	0%	23	27	4	17%	29	6	26%	9	12	\$45,995
47-2111	Electricians	107	0	0%	107	107	0	0%	103	-4	-4%	42	58	\$41,642
47-2151	Pipelayers	3	1	33%	4	4	0	0%	3	-1	-25%	2	2	\$27,177
47-2152	Plumbers, pipefitters, & steamfitters	46	2	4%	48	46	-2	-4%	43	-5	-10%	19	26	\$35,522
47-3015	Helpers, pipelayers, plumbers, pipefitters & steamfitters	1	0	0%	1	1	0	0%	1	0	0%	0	1	\$23,780
49-2095	Electrical & electronics repairers, powerhouse, substation, & relay	211	16	8%	227	239	12	5%	239	12	5%	90	122	\$66,934
49-9012	Control & valve installers & repairers, except mechanical door	212	6	3%	218	206	-12	-6%	193	-25	-11%	86	117	\$34,778
49-9041	Industrial machinery mechanics	92	8	9%	100	109	9	9%	112	12	12%	40	54	\$42,857
49-9044	Millwright, Mechanic technician	2	0	0%	2	2	0	0%	2	0	0%	1	1	\$42,744
51-4041	Machinist	5	-1	-20%	4	5	1	25%	4	0	0%	2	2	\$36,428
51-4121	Welders, cutters, solderers, & brazers	29	1	3%	30	29	-1	-3%	27	-3	-10%	12	16	\$38,424
51-8012	Power Distributors & Dispatchers	100	3	3%	103	107	4	4%	106	3	3%	41	56	\$70,678
Engineers		276	-2	-1%	274	275	1	0%	268	-6	-2%	95	128	\$89,089
11-9041	Engineering Managers	38	0	0%	38	38	0	0%	36	-2	-5%	13	18	\$106,450
17-2041	Chemical Engineer	3	1	33%	4	4	0	0%	4	0	0%	1	2	\$76,003
17-2051	Civil Engineers	19	1	5%	20	19	-1	-5%	18	-2	-10%	7	9	\$68,840
17-2071	Electrical Engineers, Power Systems Engineer, Energy Transmission Engineers	140	-3	-2%	137	139	2	1%	135	-2	-1%	48	64	\$75,760
17-2081	Environmental Engineers	7	0	0%	7	7	0	0%	7	0	0%	2	3	\$65,333
17-2111	Health & Safety engineers, except mining safety engineers & inspectors	5	0	0%	5	4	-1	-20%	4	-1	-20%	2	2	\$61,787
17-2141	Mechanical Engineers	7	1	14%	8	8	0	0%	8	0	0%	3	4	\$69,944
17-2161	Nuclear Engineers	57	-2	-4%	55	56	1	2%	56	1	2%	19	26	\$129,679
Total		3,177	103	3%	3,280	3,320	40	1%	3,223	-57	-2%	1,160	1,604	\$56,802

NORTH CAROLINA

SOC Code	Description	2007 Jobs	2007-2012 Change	2007-2012 %Change	2012 Jobs	2017 Jobs	2012-2017 Change	2012-2017 %Change	2022 Jobs	2012-2022 Change	2012-2022 %Change	2012-2017 Projected Attrition & Retirement	2012-2022 Projected Attrition & Retirement	Median Annual Earnings
Lineworkers		1,735	-12	-1%	1,723	1,524	-199	-12%	1,488	-235	-14%	544	778	\$53,464
49-1011	First-line supervisors/managers of mechanics, installers, & repairers	472	-12	-3%	460	404	-56	-12%	386	-74	-16%	145	208	\$55,209
49-9051	Electrical power-line installers & repairers	1,263	0	0%	1,263	1,120	-143	-11%	1,102	-161	-13%	399	570	\$52,820
Plant / Field Operators		1,397	13	1%	1,410	1,273	-137	-10%	1,251	-159	-11%	589	772	\$65,766
51-8011	Nuclear power reactor operators	312	11	4%	323	298	-25	-8%	299	-24	-7%	135	177	\$73,378
51-8013	Power plant operators	950	-6	-1%	944	837	-107	-11%	813	-131	-14%	394	517	\$65,582
51-8092	Gas plant operators	135	8	6%	143	138	-5	-3%	139	-4	-3%	60	78	\$49,962
Technicians		1,497	-28	-2%	1,469	1,417	-52	-4%	1,424	-45	-3%	582	793	\$51,946
17-3023	Electrical & Instrumentation Technician, Electrical & electronic engineering technicians	131	-11	-8%	120	109	-11	-9%	105	-15	-13%	48	65	\$55,627
19-4051	Nuclear technicians, Nuclear Equipment Operations Technicians Nuclear Monitoring Technicians	84	0	0%	84	79	-5	-6%	79	-5	-6%	33	45	\$65,361
47-2111	Electricians	144	-8	-6%	136	123	-13	-10%	118	-18	-13%	54	73	\$36,269
47-2151	Pipelayers	12	2	17%	14	13	-1	-7%	12	-2	-14%	6	8	\$27,384
47-2152	Plumbers, pipefitters, & steamfitters	104	-8	-8%	96	93	-3	-3%	93	-3	-3%	38	52	\$37,259
47-3015	Helpers, pipelayers, plumbers, pipefitters & steamfitters	1	0	0%	1	1	0	0%	1	0	0%	0	1	\$25,633
49-2095	Electrical & electronics repairers, powerhouse, substation, & relay	360	3	1%	363	367	4	1%	380	17	5%	144	196	\$61,859
49-9012	Control & valve installers & repairers, except mechanical door	248	-5	-2%	243	234	-9	-4%	232	-11	-5%	96	131	\$51,979
49-9041	Industrial machinery mechanics	185	3	2%	188	188	0	0%	195	7	4%	75	101	\$41,932
49-9044	Millwright, Mechanic technician	1	0	0%	1	1	0	0%	1	0	0%	0	1	\$43,930
51-4041	Machinist	15	0	0%	15	14	-1	-7%	14	-1	-7%	6	8	\$36,788
51-4121	Welders, cutters, solderers, & brazers	40	-1	-3%	39	36	-3	-8%	35	-4	-10%	15	21	\$35,022
51-8012	Power Distributors & Dispatchers	172	-3	-2%	169	159	-10	-6%	159	-10	-6%	67	91	\$60,611
Engineers		660	-45	-7%	615	573	-42	-7%	556	-59	-10%	217	287	\$84,166
11-9041	Engineering Managers	91	-7	-8%	84	76	-8	-10%	72	-12	-14%	30	39	\$111,799
17-2041	Chemical Engineer	11	0	0%	11	11	0	0%	12	1	9%	4	5	\$89,440
17-2051	Civil Engineers	52	-1	-2%	51	47	-4	-8%	46	-5	-10%	18	24	\$69,083
17-2071	Electrical Engineers, Power Systems Engineer, Energy Transmission Engineers	352	-26	-7%	326	300	-26	-8%	290	-36	-11%	115	152	\$80,609
17-2081	Environmental Engineers	14	-1	-7%	13	12	-1	-8%	12	-1	-8%	5	6	\$75,358
17-2111	Health & Safety engineers, except mining safety engineers & inspectors	7	0	0%	7	6	-1	-14%	5	-2	-29%	2	3	\$69,859
17-2141	Mechanical Engineers	30	-1	-3%	29	27	-2	-7%	26	-3	-10%	10	14	\$73,566
17-2161	Nuclear Engineers	103	-9	-9%	94	94	0	0%	93	-1	-1%	33	44	\$83,707
Total		5,289	-72	-1%	5,217	4,787	-430	-8%	4,719	-498	-10%	1,932	2,630	\$59,981

SOUTH CAROLINA

SOC Code	Description	2007 Jobs	2007-2012 Change	2007-2012 %Change	2012 Jobs	2017 Jobs	2012-2017 Change	2012-2017 %Change	2022 Jobs	2012-2022 Change	2012-2022 %Change	2012-2017 Projected Attrition & Retirement	2012-2022 Projected Attrition & Retirement	Median Annual Earnings
Lineworkers		1,700	26	2%	1,726	1,737	11	1%	1,792	66	4%	545	778	\$52,465
49-1011	First-line supervisors/managers of mechanics, installers, & repairers	378	4	1%	382	372	-10	-3%	373	-9	-2%	121	172	\$53,970
49-9051	Electrical power-line installers & repairers	1,322	22	2%	1,344	1,365	21	2%	1,419	75	6%	424	606	\$52,036
Plant / Field Operators		1,259	66	5%	1,325	1,328	3	0%	1,378	53	4%	554	726	\$67,185
51-8011	Nuclear power reactor operators	363	40	11%	403	417	14	3%	440	37	9%	168	221	\$72,654
51-8013	Power plant operators	742	11	1%	753	748	-5	-1%	775	22	3%	315	412	\$67,586
51-8092	Gas plant operators	154	15	10%	169	163	-6	-4%	163	-6	-4%	71	93	\$52,354
Technicians		1,772	71	4%	1,843	1,882	39	2%	1,982	139	8%	732	994	\$56,649
17-3023	Electrical & Instrumentation Technician, Electrical & electronic engineering technicians	180	2	1%	182	178	-4	-2%	179	-3	-2%	72	98	\$54,665
19-4051	Nuclear technicians, Nuclear Equipment Operations Technicians Nuclear Monitoring Technicians	606	56	9%	662	669	7	1%	712	50	8%	262	357	\$66,462
47-2111	Electricians	114	-4	-4%	110	108	-2	-2%	109	-1	-1%	44	59	\$37,087
47-2151	Pipelayers	2	0	0%	2	2	0	0%	2	0	0%	1	1	\$27,385
47-2152	Plumbers, pipefitters, & steamfitters	43	-3	-7%	40	41	1	3%	43	3	8%	16	22	\$36,394
47-3015	Helpers, pipelayers, plumbers, pipefitters & steamfitters	0	0	0%	0	0	0	0%	0	0	0%	0	0	\$24,576
49-2095	Electrical & electronics repairers, powerhouse, substation, & relay	282	7	2%	289	300	11	4%	322	33	11%	115	156	\$65,726
49-9012	Control & valve installers & repairers, except mechanical door	232	-3	-1%	229	230	1	0%	235	6	3%	91	123	\$51,501
49-9041	Industrial machinery mechanics	214	21	10%	235	255	20	9%	277	42	18%	93	127	\$43,103
49-9044	Millwright, Mechanic technician	2	0	0%	2	2	0	0%	2	0	0%	1	1	\$43,451
51-4041	Machinist	15	0	0%	15	15	0	0%	16	1	7%	6	8	\$35,743
51-4121	Welders, cutters, solderers, & brazers	40	0	0%	40	39	-1	-3%	39	-1	-3%	16	22	\$35,409
51-8012	Power Distributors & Dispatchers	42	-5	-12%	37	43	6	16%	46	9	24%	15	20	\$54,163
Engineers		1,063	51	5%	1,114	1,093	-21	-2%	1,103	-11	-1%	392	520	\$84,383
11-9041	Engineering Managers	104	2	2%	106	104	-2	-2%	105	-1	-1%	37	50	\$106,535
17-2041	Chemical Engineer	12	1	8%	13	14	1	8%	14	1	8%	5	6	\$83,179
17-2051	Civil Engineers	41	2	5%	43	43	0	0%	45	2	5%	15	20	\$72,185
17-2071	Electrical Engineers, Power Systems Engineer, Energy Transmission Engineers	411	9	2%	420	409	-11	-3%	412	-8	-2%	148	196	\$78,711
17-2081	Environmental Engineers	17	1	6%	18	17	-1	-6%	17	-1	-6%	6	8	\$78,229
17-2111	Health & Safety engineers, except mining safety engineers & inspectors	9	0	0%	9	9	0	0%	9	0	0%	3	4	\$70,388
17-2141	Mechanical Engineers	49	3	6%	52	52	0	0%	54	2	4%	18	24	\$80,848
17-2161	Nuclear Engineers	420	33	8%	453	445	-8	-2%	447	-6	-1%	160	212	\$86,450
Total		5,794	214	4%	6,008	6,040	32	1%	6,255	247	4%	2,223	3,018	\$62,913

TENNESSEE

SOC Code	Description	2007 Jobs	2007-2012 Change	2007-2012 %Change	2012 Jobs	2017 Jobs	2012-2017 Change	2012-2017 %Change	2022 Jobs	2012-2022 Change	2012-2022 %Change	2012-2017 Projected Attrition & Retirement	2012-2022 Projected Attrition & Retirement	Median Annual Earnings
Lineworkers		732	56	8%	788	823	35	4%	825	37	5%	249	356	\$59,810
49-1011	First-line supervisors/managers of mechanics, installers, & repairers	75	-11	-15%	64	65	1	2%	63	-1	-2%	20	29	\$53,590
49-9051	Electrical power-line installers & repairers	657	67	10%	724	758	34	5%	762	38	5%	229	327	\$60,369
Plant / Field Operators		229	-6	-3%	223	232	9	4%	230	7	3%	94	123	\$72,994
51-8011	Nuclear power reactor operators	39	3	8%	42	46	4	10%	47	5	12%	18	23	\$74,714
51-8013	Power plant operators	160	-2	-1%	158	166	8	5%	165	7	4%	66	87	\$75,088
51-8092	Gas plant operators	30	-7	-23%	23	20	-3	-13%	18	-5	-22%	10	13	\$57,158
Technicians		542	4	1%	546	571	25	5%	573	27	5%	215	296	\$57,906
17-3023	Electrical & Instrumentation Technician, Electrical & electronic engineering technicians	33	-4	-12%	29	30	1	3%	29	0	0%	11	16	\$54,430
19-4051	Nuclear technicians, Nuclear Equipment Operations Technicians, Nuclear Monitoring Technicians	80	17	21%	97	104	7	7%	107	10	10%	38	52	\$76,438
47-2111	Electricians	32	-5	-16%	27	27	0	0%	27	0	0%	11	15	\$39,762
47-2151	Pipelayers	3	0	0%	3	2	-1	-33%	2	-1	-33%	1	2	\$28,898
47-2152	Plumbers, pipefitters, & steamfitters	35	-9	-26%	26	23	-3	-12%	20	-6	-23%	10	14	\$36,142
47-3015	Helpers, pipelayers, plumbers, pipefitters & steamfitters	0	0	0%	0	0	0	0%	0	0	0%	0	0	\$27,604
49-2095	Electrical & electronics repairers, powerhouse, substation, & relay	169	29	17%	198	221	23	12%	231	33	17%	78	107	\$69,035
49-9012	Control & valve installers & repairers, except mechanical door	105	-14	-13%	91	83	-8	-9%	75	-16	-18%	36	49	\$37,378
49-9041	Industrial machinery mechanics	45	-5	-11%	40	44	4	10%	45	5	13%	16	22	\$45,159
49-9044	Millwright, Mechanic technician	0	0	0%	0	0	0	0%	0	0	0%	0	0	\$40,082
51-4041	Machinist	3	0	0%	3	3	0	0%	3	0	0%	1	2	\$38,594
51-4121	Welders, cutters, solderers, & brazers	9	-1	-11%	8	8	0	0%	7	-1	-13%	3	4	\$33,222
51-8012	Power Distributors & Dispatchers	28	-4	-14%	24	26	2	8%	27	3	13%	10	13	\$53,602
Engineers		213	-6	-3%	207	211	4	2%	204	-3	-1%	73	97	\$100,901
11-9041	Engineering Managers	16	-3	-19%	13	13	0	0%	13	0	0%	5	6	\$100,342
17-2041	Chemical Engineer	2	0	0%	2	2	0	0%	2	0	0%	1	1	\$86,632
17-2051	Civil Engineers	8	-2	-25%	6	6	0	0%	6	0	0%	2	3	\$77,586
17-2071	Electrical Engineers, Power Systems Engineer, Energy Transmission Engineers	77	-11	-14%	66	69	3	5%	67	1	2%	23	31	\$86,223
17-2081	Environmental Engineers	3	0	0%	3	3	0	0%	3	0	0%	1	1	\$85,696
17-2111	Health & Safety engineers, except mining safety engineers & inspectors	2	0	0%	2	2	0	0%	2	0	0%	1	1	\$70,446
17-2141	Mechanical Engineers	6	-2	-33%	4	5	1	25%	4	0	0%	1	2	\$76,331
17-2161	Nuclear Engineers	99	12	12%	111	111	0	0%	107	-4	-4%	39	52	\$112,634
Total		1,716	48	3%	1,764	1,837	73	4%	1,832	68	4%	631	872	\$65,709

ABOUT THIS REPORT

This report was produced in collaboration between the Center for Energy Workforce Development (CEWD) and Economic Modeling Specialists, Inc. (EMSI).

REGION DEFINITIONS

Northwest	West	Midwest	Mid-Atlantic	South	Southeast	Northeast
Alaska	California	Minnesota	Virginia	Arkansas	Mississippi	Maine
Idaho	Nevada	Iowa	West Virginia	Louisiana	Tennessee	New Hampshire
Montana	Hawaii	Kansas	Pennsylvania	Oklahoma	Kentucky	Vermont
Oregon	Arizona	Missouri	Delaware	Texas	Alabama	Massachusetts
Washington	New Mexico	Illinois	Maryland		Georgia	Rhode Island
Wyoming		Wisconsin	Washington DC		Florida	Connecticut
Utah		Indiana			South Carolina	New York
Colorado		Ohio			North Carolina	New Jersey
South Dakota		Michigan				
North Dakota						
Nebraska						

ABOUT CEWD

Formed in March 2006, the Center for Energy Workforce Development (CEWD) is a non-profit consortium of electric, natural gas, and nuclear utilities and their associations—Edison Electric Institute, American Gas Association, Nuclear Energy Institute, and National Rural Electric Cooperative Association. CEWD was formed to help utilities work together to develop solutions to the coming workforce shortage in the utility industry. It is the first partnership between utilities, their associations, contractors and unions to focus on the need to build a skilled workforce pipeline that will meet future industry needs. Our mission is to build the alliances, processes, and tools to develop tomorrow's energy workforce. For more information about CEWD, visit us at www.cewd.org, or call us at 202.638.5802.

ABOUT EMSI

Economic Modeling Specialists International (EMSI), a CareerBuilder company, is a leading provider of economic impact studies, labor market data, data-driven reports, and custom

consulting services to educational institutions, workforce planners, economic development professionals, and private industry in North America and the UK. EMSI specializes in detailed information about regional economies for assessment and planning purposes, bringing together industry, workforce, economic development, and education/training perspectives. EMSI's expertise is centered on regional economics, data integration and analysis, programming, and design so that it can provide the best available products and services for regional decision makers.

EMSI's understands that a skilled, well-prepared workforce drives economic prosperity. The successful development of that workforce requires the right training, recruiting, hiring, and planning. These activities are largely dependent on our ability to process data that illuminates many facets of employment and human capital so that we can make better decisions. EMSI is here to provide that data. For more information about EMSI, visit us at www.economicmodeling.com, or call us toll-free at 866.999.3674.

APPENDIX A

Industry & Occupation Definitions

NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM

Industry descriptions are taken from the North American Industry Classification System (NAICS) website.* The NAICS codes listed below are those requested by CEWD for this report.

Electric Distribution (NAICS 221122)—This U.S. industry comprises electric power establishments primarily engaged in either (1) operating electric power distribution systems (i.e., consisting of lines, poles, meters, and wiring) or (2) operating as electric power brokers or agents that arrange the sale of electricity via power distribution systems operated by others.

Fossil Fuel Energy (NAICS 221112)—This U.S. industry comprises establishments primarily engaged in operating fossil fuel powered electric power generation facilities. These facilities use fossil fuels, such as coal, oil, or gas, in internal combustion or combustion turbine conventional steam process to produce electric energy. The electric energy produced in these establishments is provided to electric power transmission systems or to electric power distribution systems.

Nuclear Energy (NAICS 221113)—This U.S. 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.

Natural Gas (NAICS 221210)—This industry comprises: (1) establishments primarily engaged in operating gas distribution systems (e.g., mains, meters); (2) establishments known as gas marketers that buy gas from the well and sell it to a distribution system; (3) establishments known as gas brokers or agents that arrange the sale of gas over gas distribution systems operated by others; and (4) establishments primarily engaged in transmitting and distributing gas to final consumers.

Electric Bulk Transmission (NAICS 221121)—This U.S. industry comprises establishments primarily engaged in operating electric power transmission systems and/or controlling (i.e., regulatory voltage) the transmission of electricity from the generating source to distribution centers or other electric utilities. The transmission system includes lines and transformer stations.

Hydroelectric Energy (NAICS 221111)—This U.S. industry comprises establishments primarily engaged in operating hydroelectric power generation facilities. These facilities use water power to drive a turbine and produce electric energy. The electric energy produced

* U.S. Census Bureau, "North American Industry Classification System (NAICS)." <http://www.census.gov/eos/www/naics/> (accessed April 26, 2012).

in these establishments is provided to electric power transmission systems or to electric power distribution systems.

Other Electric Energy (NAICS 221119)—This U.S. industry comprises establishments primarily engaged in operating electric power Generation facilities (except hydroelectric, fossil fuel, nuclear). These facilities convert other forms of energy, such as solar, wind, or tidal power, into electrical energy. The electric energy produced in these establishments is provided to electric power transmission systems or to electric power distribution systems.

STANDARD OCCUPATION CLASSIFICATIONS

Standard Occupation Classification (SOC) employment codes are taken from the U.S. Department of Labor, Bureau of Labor Statistics.* The SOC codes listed below are those requested by CEWD for this report.

LINEWORKERS:

49-1011 First-Line Supervisors of Mechanics, Installers, and Repairers—Directly supervise and coordinate the activities of mechanics, installers, and repairers. Excludes team or work leaders.

49-9051 Electrical Power-Line Installers and Repairers—Install or repair cables or wires used in electrical power or distribution systems. May erect poles and light or heavy-duty transmission towers. Excludes “Electrical and Electronics Repairers, Powerhouse, Substation, and Relay” (49-2095).

PLANT/FIELD OPERATORS:

51-8011 Nuclear Power Reactor Operators—Operate or control nuclear reactors. Move control rods, start and stop equipment, monitor and adjust controls, and record data in logs. Implement emergency procedures when needed. May respond to abnormalities, determine cause, and recommend corrective action.

51-8013 Power Plant Operators—Control, operate, or maintain machinery to generate electric power. Includes auxiliary equipment operators. Excludes “Nuclear Power Reactor Operators” (51-8011).

51-8092 Gas Plant Operators—Distribute or process gas for utility companies and others by controlling compressors to maintain specified pressures on main pipelines.

TECHNICIANS:

17-3023 Electrical and Electronics Engineering Technicians—Apply electrical and electronic theory and related knowledge, usually under the direction of engineering staff, to design, build, repair, calibrate, and modify electrical components, circuitry, controls, and machinery for subsequent evaluation and use by engineering staff in making engineering

* U.S. Department of Labor, Bureau of Labor Statistics, http://www.bls.gov/soc/major_groups.htm (accessed April 26, 2012).

design decisions. Excludes “Broadcast Technicians” (27-4012).

19-4051 Nuclear Technicians—Assist nuclear physicists, nuclear engineers, or other scientists in laboratory or production activities. May operate, maintain, or provide quality control for nuclear testing and research equipment. May monitor radiation.

47-2111 Electricians—Install, maintain, and repair electrical wiring, equipment, and fixtures. Ensure that work is in accordance with relevant codes. May install or service street lights, intercom systems, or electrical control systems. Excludes “Security and Fire Alarm Systems Installers” (49-2098).

47-2151 Pipelayers—Lay pipe for storm or sanitation sewers, drains, and water mains. Perform any combination of the following tasks: grade trenches or culverts, position pipe, or seal joints. Excludes “Welders, Cutters, Solderers, and Brazers” (51-4121).

47-2152 Plumbers, Pipefitters, and Steamfitters—Assemble, install, alter, and repair pipelines or pipe systems that carry water, steam, air, or other liquids or gases. May install heating and cooling equipment and mechanical control systems. Includes sprinklerfitters.

47-3015 Helpers - Pipelayers, Plumbers, Pipefitters, and Steamfitters—Help plumbers, pipefitters, steamfitters, or pipelayers by performing duties requiring less skill. Duties include using, supplying or holding materials or tools, and cleaning work area and equipment. Construction laborers who do not primarily assist plumbers, pipefitters, steamfitters, or pipelayers are classified under “Construction Laborers” (47-2061). Apprentice workers are classified with the appropriate skilled construction trade occupation (47-2011 through 47-2231).

49-2095 Electrical and Electronics Repairers, Powerhouse, Substation, and Relay—Inspect, test, repair, or maintain electrical equipment in generating stations, substations, and in-service relays.

49-9012 Control and Valve Installers and Repairers, Except Mechanical Door—Install, repair, and maintain mechanical regulating and controlling devices, such as electric meters, gas regulators, thermostats, safety and flow valves, and other mechanical governors.

49-9041 Industrial Machinery Mechanics—Repair, install, adjust, or maintain industrial production and processing machinery or refinery and pipeline distribution systems. Excludes “Millwrights” (49-9044), “Mobile Heavy Equipment Mechanics, Except Engines” (49-3042), and “Maintenance Workers, Machinery” (49-9043).

49-9044 Millwrights—Install, dismantle, or move machinery and heavy equipment according to layout plans, blueprints, or other drawings.

51-4041 Machinists—Set up and operate a variety of machine tools to produce precision parts and instruments. Includes precision instrument makers who fabricate, modify, or repair mechanical instruments. May also fabricate and modify parts to make or repair machine tools or maintain industrial machines, applying knowledge of mechanics, mathematics, metal properties, layout, and machining procedures.

51-4121 Welders, Cutters, Solderers, and Brazers—Use hand-welding, flame-cutting, hand

soldering, or brazing equipment to weld or join metal components or to fill holes, indentations, or seams of fabricated metal products.

51-8012 Power Distributors and Dispatchers—Coordinate, regulate, or distribute electricity or steam.

ENGINEERS:

11-9041 Architectural and Engineering Managers—Plan, direct, or coordinate activities in such fields as architecture and engineering or research and development in these fields. Excludes “Natural Sciences Managers” (11-9121).

17-2041 Chemical Engineers—Design chemical plant equipment and devise processes for manufacturing chemicals and products, such as gasoline, synthetic rubber, plastics, detergents, cement, paper, and pulp, by applying principles and technology of chemistry, physics, and engineering.

17-2051 Civil Engineers—Perform engineering duties in planning, designing, and overseeing construction and maintenance of building structures, and facilities, such as roads, railroads, airports, bridges, harbors, channels, dams, irrigation projects, pipelines, power plants, and water and sewage systems. Includes architectural, structural, traffic, ocean, and geo-technical engineers. Excludes “Hydrologists” (19-2043).

17-2071 Electrical Engineers—Research, design, develop, test, or supervise the manufacturing and installation of electrical equipment, components, or systems for commercial, industrial, military, or scientific use. Excludes “Computer Hardware Engineers” (17-2061).

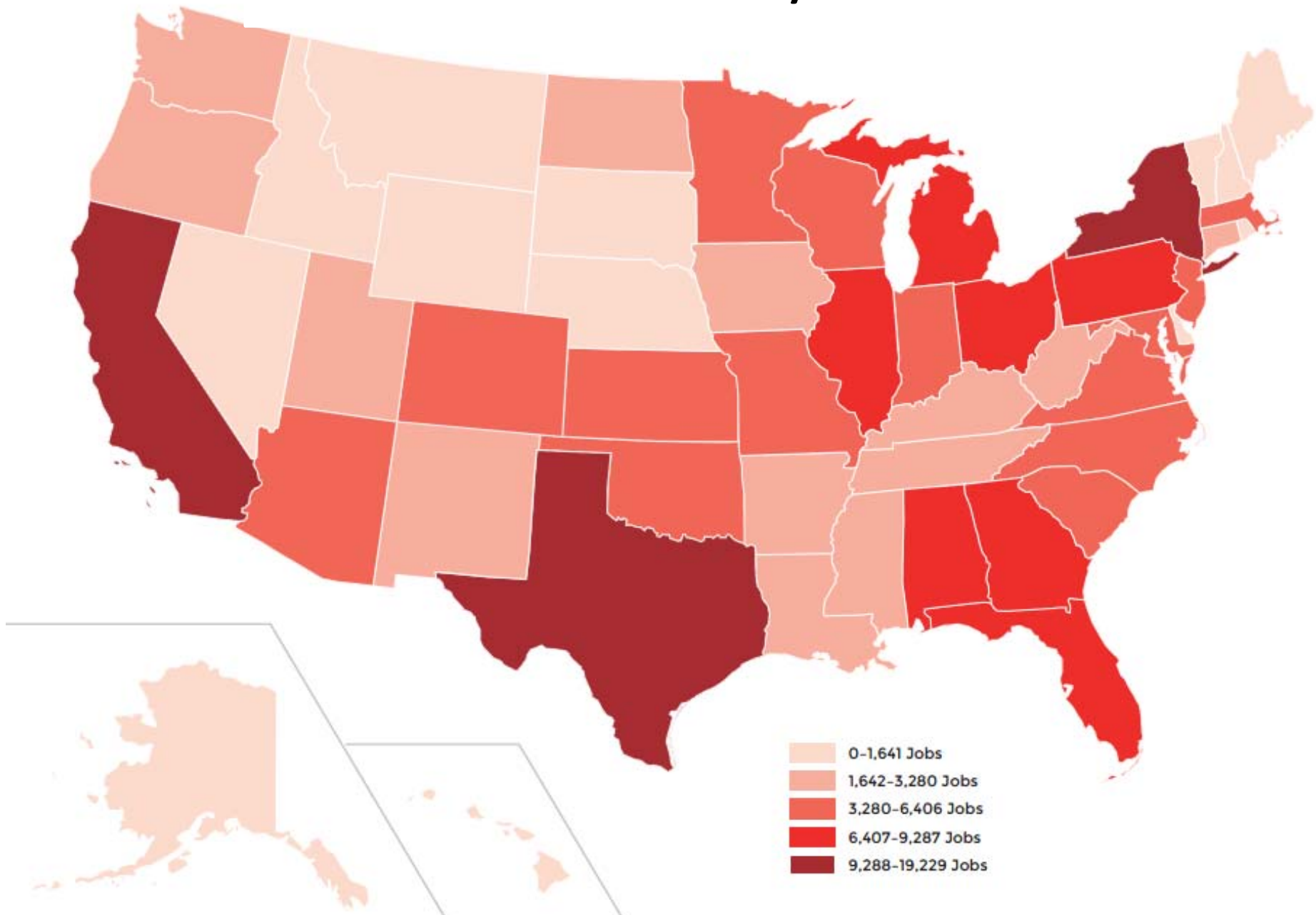
17-2081 Environmental Engineers—Research, design, plan, or perform engineering duties in the prevention, control, and remediation of environmental hazards using various engineering disciplines. Work may include waste treatment, site remediation, or pollution control technology.

17-2111 Health and Safety Engineers, Except Mining Safety Engineers and Inspectors—Promote worksite or product safety by applying knowledge of industrial processes, mechanics, chemistry, psychology, and industrial health and safety laws. Includes industrial product safety engineers.

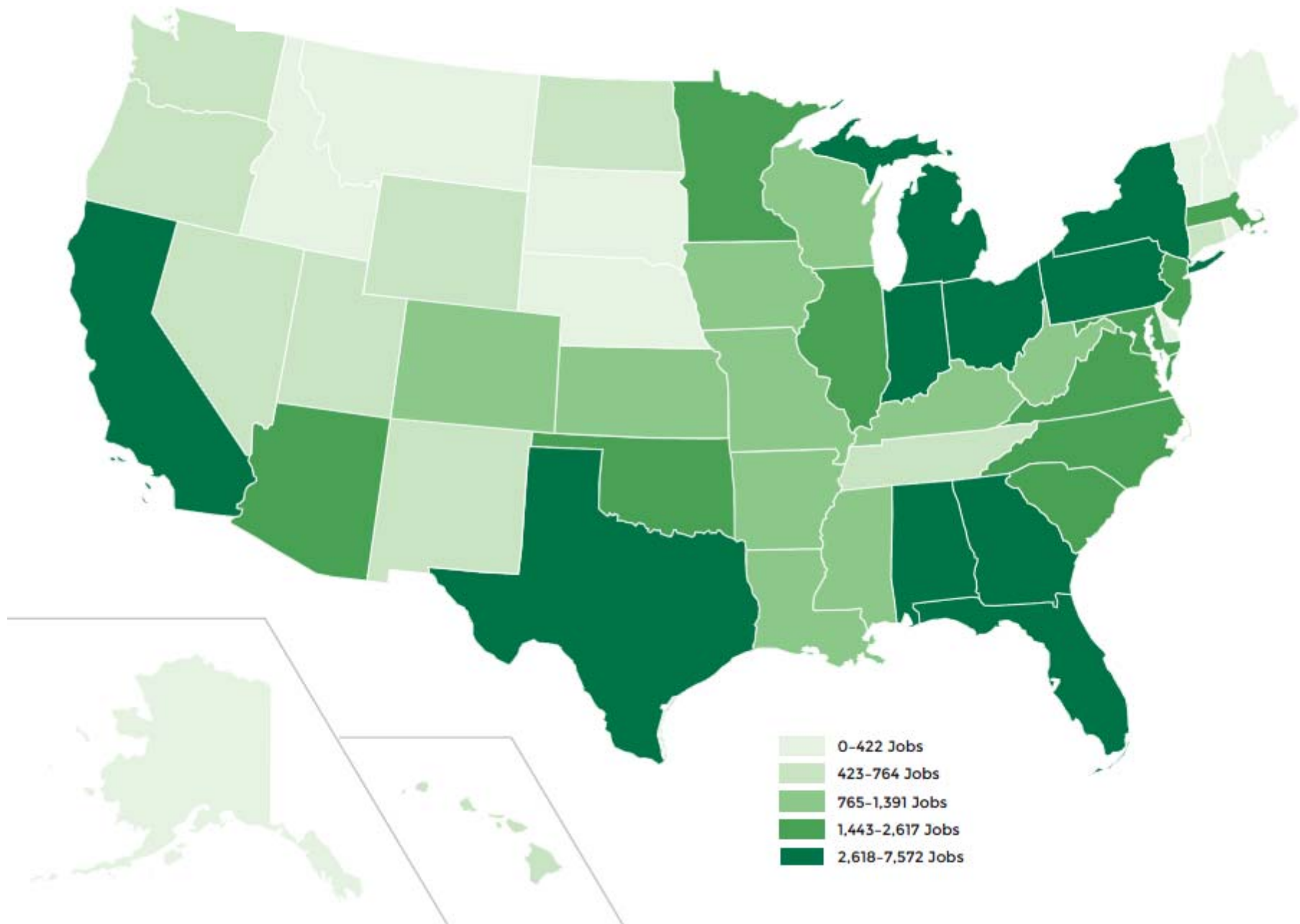
17-2141 Mechanical Engineers—Perform engineering duties in planning and designing tools, engines, machines, and other mechanically functioning equipment. Oversee installation, operation, maintenance, and repair of equipment such as centralized heat, gas, water, and steam systems.

17-2161 Nuclear Engineers—Conduct research on nuclear engineering projects or apply principles and theory of nuclear science to problems concerned with release, control, and use of nuclear energy and nuclear waste disposal.

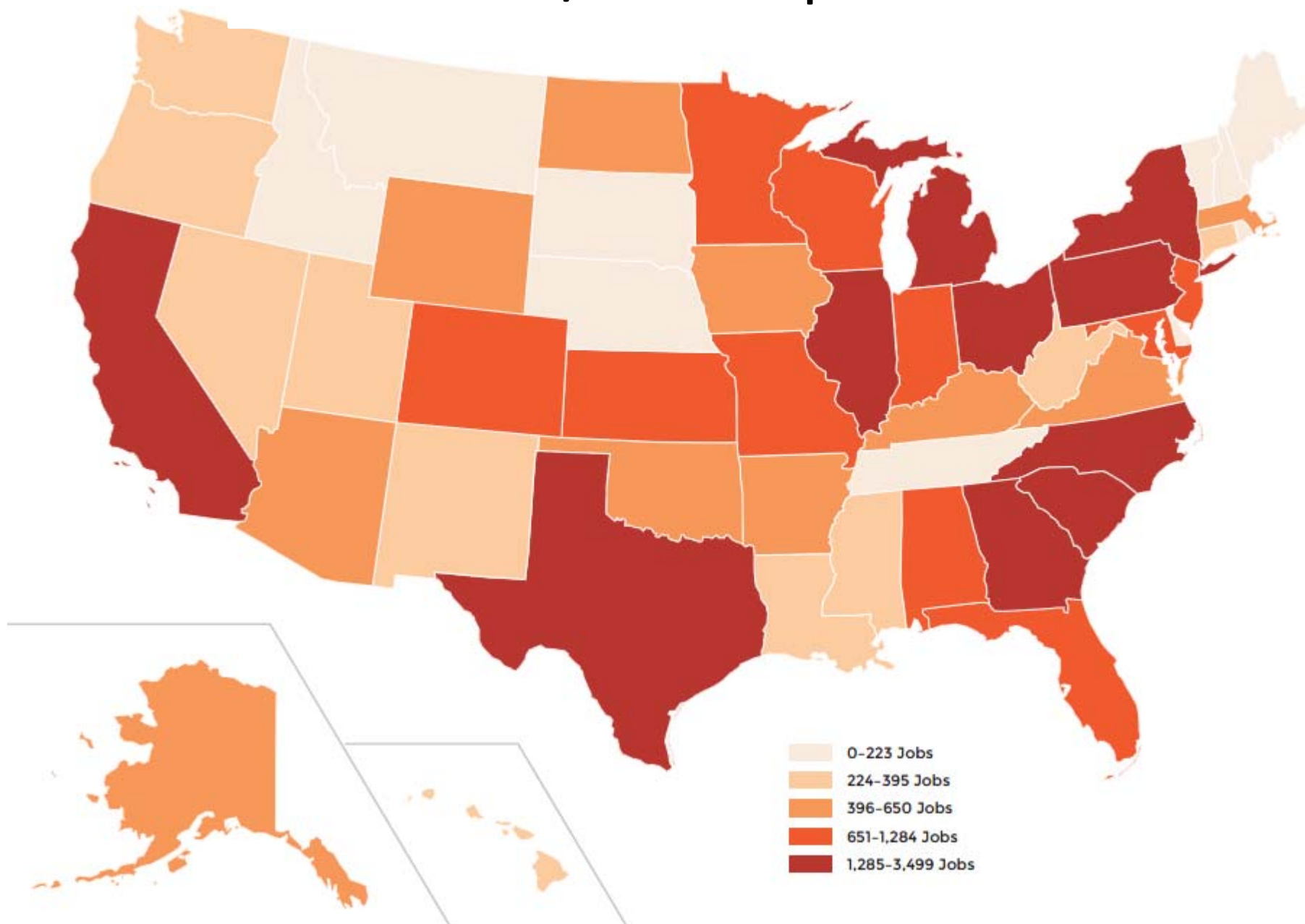
2012 Total Key Jobs



2012 Technician Jobs



2012 Plant / Field Operator Jobs



2012 Engineer Jobs

