



Stationary Power Generation

May 2018

Prepared by the Los Angeles/Orange County Center of Excellence
for Labor Market Research

Research Summary

The Los Angeles/Orange County Center of Excellence (COE) compiled this report to provide regional labor market supply and demand data related to **stationary power generation**.

The following list summarizes key findings from this brief for stationary power generation:

- The number of jobs for stationary power generation-related occupations is expected to grow by 5% through 2022, resulting in nearly 1,300 annual job openings.
- Six of the seven occupations in this report have entry-level hourly earnings **above** the MIT Living Wage¹ estimate for the region – \$13.54, per hour.
- Between 35% and 57% of the current workforce has some postsecondary coursework training.
- In 2017, there were **nearly 900 ads** for jobs related to stationary power generation.
- The majority of job postings in 2017 with specified education requirements listed high school or vocational training.
- Between 2014 and 2017, community colleges in the county conferred an average of 383 awards (associate degrees and certificates) in programs training students for occupations of interest.

¹ MIT Living Wage Calculator. <http://livingwage.mit.edu/>

Occupation Codes and Descriptions

Currently, there are seven occupations in the standard occupational classification (SOC) system that are related to stationary power generation. The occupation titles and descriptions, as well as reported job titles are included in Exhibit 1.

Exhibit 1 – Occupations, descriptions, and sample job titles

SOC Code	Title	Description	Sample of Reported Job Titles
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	Repair, test, adjust, or install electronic equipment, such as industrial controls, transmitters, and antennas.	Control Technician, Electrical and Instrument Mechanic, Electrical and Instrument Technician (E&I Tech), Electrical Maintenance Technician, Electrical Technician, I&C Tech (Instrument and Control Technician), Instrument and Electrical Technician (I&E Tech), Repair Technician, Service Technician, Technical Support Specialist
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	Electrical and Instrumentation Technician (E & I Technician), Electrical Technician, Instrument and Control Technician (I & C Technician), Instrumentation and Control Technician (I&C Technician), Relay Technician, Substation Electrician, Substation Mechanic, Substation Technician, Substation Wireman, Wireman
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	Diagnose, adjust, repair, or overhaul buses and trucks, or maintain and repair any type of diesel engines. Includes mechanics working primarily with automobile or marine diesel engines.	Bus Mechanic, Diesel Mechanic, Diesel Technician, Fleet Mechanic, General Repair Mechanic, Mechanic, Service Technician, Trailer Mechanic, Transit Mechanic, Truck Mechanic
49-3041	Farm Equipment Mechanics and Service Technicians	Diagnose, adjust, repair, or overhaul farm machinery and vehicles, such as tractors, harvesters, dairy equipment, and irrigation systems.	Agricultural Mechanic, Agricultural Technician, Agriculture Mechanic, Farm Equipment Mechanic, Farm Equipment Service Technician, Field Technician, Mechanic, Service Technician, Tractor Mechanic, Tractor Technician

49-3042	Mobile Heavy Equipment Mechanics, Except Engines	Diagnose, adjust, repair, or overhaul mobile mechanical, hydraulic, and pneumatic equipment, such as cranes, bulldozers, graders, and conveyors, used in construction, logging, and surface mining.	Construction Equipment Mechanic, Equipment Mechanic, Equipment Technician, Field Mechanic, Field Service Technician, Field Technician, Heavy Equipment Mechanic, Heavy Equipment Technician, Mechanic, Mobile Heavy Equipment Mechanic
51-8012	Power Distributors and Dispatchers	Coordinate, regulate, or distribute electricity or steam.	Control Operator, Distribution Dispatcher, Distribution Operations Supervisor, Distribution System Operator, Electric System Operator, Journeyman Lineman, Power System Dispatcher, Power System Operator, System Operator, Transmission System Operator
51-8021	Stationary Engineers and Boiler Operators	Operate or maintain stationary engines, boilers, or other mechanical equipment to provide utilities for buildings or industrial processes. Operate equipment, such as steam engines, generators, motors, turbines, and steam boilers.	Boiler Operator, Boiler Technician, Building Engineer, Fireman, Operating Engineer, Plant Operator, Plant Utilities Engineer, Stationary Engineer, Stationary Steam Engineer, Utilities Operator

Source: O*NET Online

Current and Future Employment

In Los Angeles County, the number of jobs for occupations related to stationary power generation is expected to increase by 5% over the next five years. Nearly 1,300 job opportunities will be available annually for this occupation group through 2022 due to new job growth and replacement need (e.g., retirements). Exhibit 2 contains detailed employment projections data for each occupations.

Exhibit 2 – Five-year projections for stationary power generation-related occupations

SOC	Occupation	2017 Jobs	2022 Jobs	2017 - 2022 Change	2017 - 2022 % Change	Annual Openings
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	5,638	6,094	456	8%	605
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	3,427	3,574	147	4%	358
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	1,107	1,090	(17)	(2%)	95
51-8021	Stationary Engineers and Boiler Operators	826	852	26	3%	92

49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	819	808	(11)	(1%)	70
51-8012	Power Distributors and Dispatchers	387	374	(13)	(3%)	33
49-3041	Farm Equipment Mechanics and Service Technicians	110	118	8	7%	12
Total		12,314	12,911	597	5%	1,265

Source: EMSI 2018.2 – QCEW, non-QCEW, Self-Employed.

Earnings

In Los Angeles County, the entry-level average wage for stationary power generation-related occupations is between \$13.14 and \$32.69 per hour. Six of the studied occupations have entry-level hourly wages above the MIT Living Wage estimate of \$13.54 per hour for a single adult in the region. The average annual earnings for the occupations in the region is between \$37,309 and \$84,053 per year, assuming full-time employment.

Exhibit 3 contains hourly wages and annual average earnings for the occupation group studied in this report. Entry-level hourly earnings is represented by the 10th percentile of wages, median hourly earnings is represented by the 50th percentile of wages, and experienced hourly earnings is represented by the 90th percentile of wages, demonstrating various levels of employment.

Exhibit 3 – Earnings for stationary power generation-related occupations

SOC	Occupation	Entry-Level Hourly Earnings	Median Hourly Earnings	Experienced Hourly Earnings	Average Annual Earnings
49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	\$32.69	\$39.87	\$50.28	\$84,053
51-8012	Power Distributors and Dispatchers	\$31.84	\$37.63	\$61.22	\$87,090
51-8021	Stationary Engineers and Boiler Operators	\$26.24	\$37.85	\$48.86	\$77,771
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	\$18.45	\$28.08	\$45.93	\$63,497
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	\$16.48	\$28.53	\$45.52	\$61,485
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	\$14.13	\$25.92	\$35.65	\$52,185
49-3041	Farm Equipment Mechanics and Service Technicians	\$13.14	\$15.52	\$27.48	\$37,309

Source: EMSI 2018.2 – QCEW, non-QCEW, Self-Employed.

Employer Job Postings

In this research brief, real-time labor market information is used to provide a more nuanced view of the current job market, as it captures job advertisements for occupations relevant to the field of study. Employer job postings are consulted to understand who is employing in the field of stationary power generation, and what they are looking for in potential candidates. To identify job postings related to stationary power generation, the SOC codes listed in Exhibit 1 were used.

Top Titles

The most common titles for stationary power generation-related jobs are listed in Exhibit 4. Diesel mechanic was mentioned in 22% of all relevant job postings (195 out of 885 postings).

Exhibit 4 –Job titles (n=885)

Title	Job Postings, Full Year 2017
Diesel Mechanic	195
Heavy Equipment Mechanic	119
Truck Mechanic	117
Diesel Technician	90
Mechanic	63
Fleet Mechanic	55
Equipment Mechanic	36
Stationary Engineer	32
Trailer Mechanic	24
Water Distribution Operator	22
Forklift Mechanic	14

Source: Labor Insight/Jobs (Burning Glass)

Top Employers

Exhibit 5 lists the major employers hiring professionals in the field of stationary power generation. Employers postings the most job ads included Waste Management, the California Department of Transportation, and American States Water Company. The top worksite cities in the region for these jobs were Los Angeles, Long Beach, La Mirada, Baldwin Park, and Compton.

Exhibit 5 – Top employers (n=603)

Employer	Job Postings, Full Year 2017
Waste Management	112
California Department of Transportation	34
American States Water Company	20
Rush Truck Centers	20
Penske	19

MV Transportation, Inc.	17
Sunbelt Rentals Incorporated	16
Sunstate Equipment	16
Republic Services Incorporated	12
United Rentals	12
Ahern Rentals	11

Source: Labor Insight/Jobs (Burning Glass)

Job Skills

Job-specific skills desired by employers are listed in Exhibit 6. Repair, preventative maintenance, machine operation, and welding were the skills that appeared the most in job ads.

Exhibit 6 – Job skills (n=776)

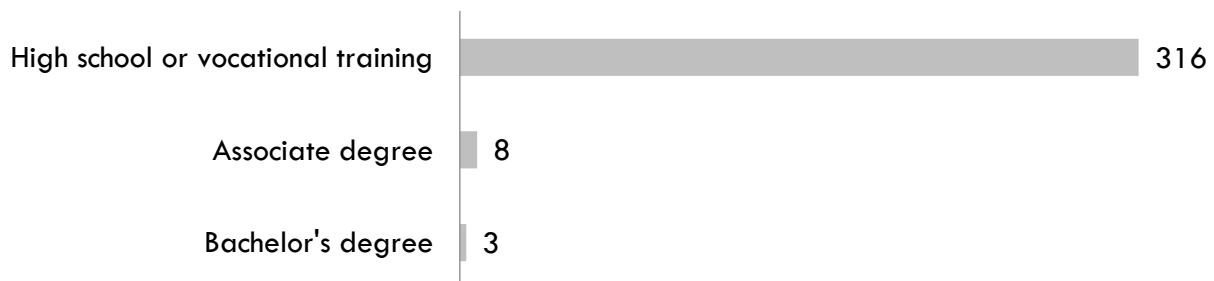
Skills	Job Postings, Full Year 2017
Repair	1,068
Predictive / Preventative Maintenance	337
Machine Operation	214
Welding	156
Heavy Equipment	138
Electrical Systems	132
Record Review	117
Hand Tools	110
Hydraulics	88
Vehicle Inspection	66

Source: Labor Insight/Jobs (Burning Glass)

Advertised Education Levels

Exhibit 7 displays the education level requested by employers in online job ads. The majority of employers were looking for a candidate with high school or vocational training. Approximately 63% of job postings did not specify a level of education.

Exhibit 7 – Advertised education requirements for stationary power generation-related occupations (n=327)



Source: Labor Insight/Jobs (Burning Glass)

Education and Training

Exhibit 8 shows the typical entry-level education requirement for the occupations of interest, along with the typical on-the-job training, and percentage of workers in the field who hold a community college award or have completed some postsecondary courses. Between 35% and 57% of the current workforce has completed some community college education as their highest level of education.

Exhibit 8 – Education and training requirements

SOC	Occupation	Typical entry-level education	Typical on-the-job training	% of Community College Award Holders or Some Postsecondary Coursework
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	Postsecondary award	Long-term	57%
49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	Postsecondary award	Moderate-term	57%
51-8012	Power Distributors and Dispatchers	HS diploma/equivalent	Long-term	51%
51-8021	Stationary Engineers and Boiler Operators	HS diploma/equivalent	Long-term	42%
49-3041	Farm Equipment Mechanics and Service Technicians	HS diploma/equivalent	Long-term	37%
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	HS diploma/equivalent	Long-term	37%
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	HS diploma/equivalent	Long-term	35%

Source: EMSI, Bureau of Labor Statistics Employment Projections (Educational Attainment)

In Los Angeles County, 15 community colleges have conferred awards in programs that have historically trained students for the occupations of interest.

Between 2014 and 2017, there was an average of 383 awards conferred across seven programs. It is important to note that an award is not equivalent to a single person in search of a job opening, since a student may earn more than one award (e.g. an associate degree and a certificate).

Exhibit 9 – CCC Student Awards (by TOP and College)

TOP Code	Program	College	2014-15 Awards	2015-16 Awards	2016-2017 Awards	3-Year Award Average
0116.00	Agricultural Power Equipment Technology	Mt San Antonio	4	N/A	1	3
Subtotal/Average			4	N/A	1	3
0934.00	Electronics and Electric Technology	East LA	7	21	12	13
		El Camino	2	2	6	3
		Glendale	7	3	9	6
		LA City	1	2	14	6
		LA Pierce	15	33	34	27
		LA Southwest	5	7	3	5
		LA Valley	12	25	23	20
		Long Beach	50	51	44	48
		Mt San Antonio	67	42	36	48
		Pasadena	19	3	27	16
		Rio Hondo	N/A	N/A	1	1
Subtotal/Average			185	189	209	194
0934.20	Industrial Electronics	El Camino	1	1	N/A	1
Subtotal/Average			1	1	N/A	1
0945.00	Industrial Systems Technology and Maintenance	LA Harbor	1	N/A	1	1
		LA Trade	52	98	122	91
		Long Beach	3	N/A	1	2
Subtotal/Average			56	98	124	93
0947.00	Diesel Technology	Citrus	8	3	1	4
		LA Trade	49	44	61	51
		Long Beach	2	3	N/A	3
Subtotal/Average			59	50	62	57
0947.20	Heavy Equipment Maintenance	Rio Hondo	6	3	1	3
Subtotal/Average			6	3	1	3

0956.00	Manufacturing and Industrial Technology	Cerritos	21	4	3	9
		El Camino	2	1	3	2
		LA Valley	9	3	4	5
		Mt San Antonio	18	12	19	16
Subtotal/Average		50	20	29	33	
Total		361	361	426	383	

Source: California Community Colleges Chancellor's Office MIS Data Mart

* Two additional programs, Electrical Systems and Power Transmission (0934.40) and Heavy Equipment Operation (0947.30), train for the occupations of interest, but no completion data exists.

Student Outcomes

The CTE LaunchBoard provides student outcome data on the effectiveness of CTE programs.

The following student outcome information was collected from exiters of the Agricultural Power Equipment Technology Taxonomy of Program (TOP) code (0116.00) in Los Angeles County.

- The median earnings in the second fiscal quarter after program completion is \$6,820
- 40% of students are earning a living wage

The following student outcome information was collected from exiters of the Electronics and Electric Technology Taxonomy of Program (TOP) code (0934.00) in Los Angeles County.

- The median earnings in the second fiscal quarter after program completion is \$7,432
- 50% of students are earning a living wage
- 70% of students are employed within six months after completing a program

The following student outcome information was collected from exiters of the Industrial Electronics Taxonomy of Program (TOP) code (0934.20) in Los Angeles County.

- The median earnings in the second fiscal quarter after program completion is \$7,508
- 100% of students are employed within six months after completing a program

The following student outcome information was collected from exiters of the Industrial Systems Technology and Maintenance Taxonomy of Program (TOP) code (0945.00) in Los Angeles County.

- The median earnings in the second fiscal quarter after program completion is \$10,004
- 62% of students are earning a living wage
- 77% of students are employed within six months after completing a program

The following student outcome information was collected from exiters of the Diesel Technology Taxonomy of Program (TOP) code (0947.00) in Los Angeles County.

- The median earnings in the second fiscal quarter after program completion is \$7,649
- 50% of students are earning a living wage
- 70% of students are employed within six months after completing a program

The following student outcome information was collected from exiters of the Heavy Equipment Maintenance Taxonomy of Program (TOP) code (0947.20) in Los Angeles County.

- The median earnings in the second fiscal quarter after program completion is \$11,358
- 60% of students are earning a living wage
- 87% of students are employed within six months after completing a program

The following student outcome information was collected from exiters of the Manufacturing and Industrial Technology Taxonomy of Program (TOP) code (0956.00) in Los Angeles County.

- The median earnings in the second fiscal quarter after program completion is \$8,000
- 54% of students are earning a living wage
- 72% of students are employed within six months after completing a program

The following student outcome information was collected from exiters of the Electrical Systems and Power Transmission Taxonomy of Program (TOP) code (0934.40) in Los Angeles County.

- The median earnings in the second fiscal quarter after program completion is \$6,479
- 38% of students are earning a living wage
- 79% of students are employed within six months after completing a program

The following student outcome information was collected from exiters of the Heavy Equipment Operation Taxonomy of Program (TOP) code (0947.30) in Los Angeles County.

- The median earnings in the second fiscal quarter after program completion is \$8,446
- 96% of students are employed within six months after completing a program

Source: CTE LaunchBoard

Sources

O*Net Online, Labor Insight/Jobs (Burning Glass), Economic Modeling Specialists International (EMSI), MIT Living Wage Calculator, Bureau of Labor Statistics (BLS) Education Attainment, California Community Colleges Chancellor's Office Management Information Systems (MIS) Data Mart, CTE LaunchBoard, and Statewide CTE Outcomes Survey

Notes

Data included in this analysis represents the labor market demand for positions most closely related to stationary power generation. Standard occupational classification (SOC) codes were chosen based on the national education level required for employment (associate degree and postsecondary certificate) as well as the proportion of current workers who hold a community college award or have had some community college training. This selection process narrows the labor market analysis to the most relevant employment opportunities for students with community college education and/or training.

Traditional labor market information was used to show current and projected employment based on data trends, as well as annual average awards granted by regional community colleges. Real-time labor market information captures job post advertisements for occupations relevant to the field of study and should not be used to establish current job openings, because the numbers may include duplicate job postings or postings intended to gather a pool of applicants. Real-time labor market information can signal demand and show what employers are looking for in potential employees, but is not a perfect measure of the quantity of open positions.