

# Plumbing, Pipefitting, and Steamfitting

*Inland Empire/Desert Region (Riverside and San Bernardino counties)*

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*This workforce demand report uses state and federal job projection data developed before the economic impact of COVID-19. The COE is monitoring the situation and will provide more information as it becomes available. Please consult with local employers to understand their current employment needs.*

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## Summary

- The community college plumbing, pipefitting, and steamfitting programs provide the knowledge, skills, and abilities that lead to the plumbers, pipefitters, and steamfitters occupation.
- Employment is expected to increase by 9% through 2025, with 693 job openings available annually over this period.
- This occupation's 50<sup>th</sup> percentile hourly earnings are \$26.32 per hour, above the regional \$24.36 per hour self-sustainable earnings standard for a single adult with one child.
- Regional community colleges do not currently offer plumbing pipefitting, and steamfitting programs.
- The Centers of Excellence recommends expanding plumbing, pipefitting, and steamfitting programs to meet the regional demand for plumbers, pipefitters, and steamfitters. For more information, see the [recommendation section](#).

## Introduction

California Community College plumbing, pipefitting, and steamfitting (TOP 0952.30) programs prepare students for employment through the instruction of theories, principles, methods, technical skills, and use of equipment in plumbing, pipefitting, and steamfitting (Taxonomy of Programs, 2012). The knowledge, skills, and abilities trained by plumbing, pipefitting, and steamfitting programs lead to the plumber, pipefitter, and steamfitter occupation.

### **Plumbers, Pipefitters, and Steamfitters (47-2152)**

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 sprinkler fitters.

**Sample job titles:** Drain Technician, Fire Sprinkler Service Technician, Pipe Fitter, Pipe Welder, Pipefitter, Plumber, Residential Plumber, Service Plumber, Sprinkler Fitter, Steamfitter

*Entry-Level Educational Requirement: High school diploma or equivalent*

*Work Experience Required: None*

*Training Requirement: Apprenticeship*

*Incumbent workers with a Community College Award or Some Postsecondary Coursework: 33%*

## Job Counts and Projections

In 2020, there were 5,886 plumber, pipefitter, and steamfitter jobs in the Inland Empire/Desert Region. Employment for this occupation is expected to grow by 9% through 2025. Over this period, there are 693 annual job openings projected for plumbers, pipefitters, and steamfitters in the region. Exhibit 1 displays the job counts, five-year projected job growth, job openings, and the share of incumbent workers age 55 years and greater in the region.

*Exhibit 1: Five-year projections, 2020-2025*

2020 Jobs	2025 Jobs	5-Yr % Change (New Jobs)	5-Yr Openings (New + Replacement Jobs)	Annual Openings (New + Replacement Jobs)	% of workers age 55+
5,886	6,430	9%	3,466	693	20%

Source: Emsi 2021.3

A search of online job advertisements over the last 12 months for plumber, pipefitter, and steamfitter jobs was conducted to reveal the details about the employers seeking these workers, including the time it takes to fill positions, earnings information, and in-demand skills. Over the previous 12 months, 467 job ads for plumbers, pipefitters, and steamfitters were posted in the region.

Exhibit 2 shows the number of job ads posted during the last 12 months in the region and the regional and statewide average time to fill this job. On average, regional employers fill online job ads for plumbers, pipefitters, and steamfitters within 37 days. The regional average time to fill is one day shorter than the statewide average time to fill, indicating that regional employers may face similar challenges filling open positions as other employers in California.

*Exhibit 2: Job ads and time to fill*

Job Ads	Regional Average Time to Fill (Days)	Statewide Average Time to Fill (Days)
467	37	38

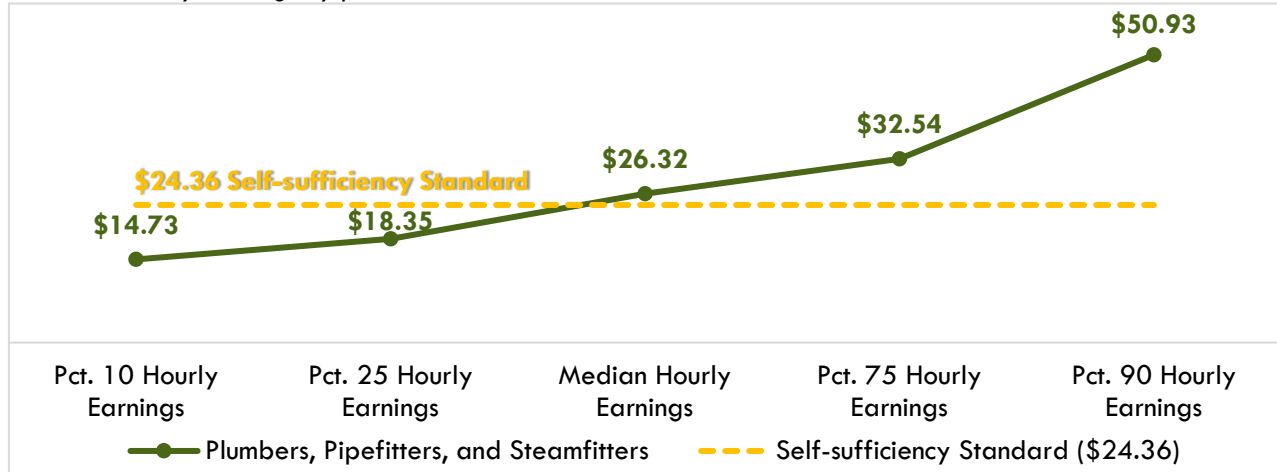
Source: Burning Glass – Labor Insights

## Earnings and Benefits

Community colleges should ensure their training programs lead to employment opportunities that provide self-sustainable income. The University of Washington estimates that a self-sufficient hourly rate for a single adult with one school-age child is \$24.36 per hour or \$51,452 annually in Riverside County; \$23.73 per hour or \$50,119 annually in San Bernardino County (Pearce, 2021). For this study, the higher hourly earnings requirement in Riverside County is adopted as the self-sufficiency standard for the two-county region.

The 50<sup>th</sup> percentile hourly earnings for plumbers, pipefitters, and steamfitters surpass the self-sustainability rate, indicating that the top 50% of workers earn a self-sustainable wage. Exhibit 3 displays the hourly earnings for plumbers, pipefitters, and steamfitters.

Exhibit 3: Hourly earnings by percentile



Source: Emsi 2021.3

According to the occupational guides developed by the California Labor Market Information Division, benefits for plumbers, pipefitters, and steamfitters typically include health insurance, vacation, and retirement plans. Self-employed plumbers must provide their own insurance and retirement. For union members, the benefit packages are negotiated in contracts between employers and unions (Detailed Occupational Guides, 2021).

### Advertised Salary from Online Job Ads

Exhibit 4 displays online job ad salary data for plumbers, pipefitters, and steamfitters over the last 12 months. Online job ad salary information reveals that employers are willing to pay plumbers, pipefitters, and steamfitters a median annual salary of \$67,000, above the region's \$51,452 annual (\$24.36 hourly) self-sufficiency standard. Consider the salary information with caution since only 67% (313 out of 467) of online job ads for this occupation provided salary information. The salary figures are prorated to reflect full-time, annual earnings status.

Exhibit 4: Advertised salary information

Number of job ads	Real-Time Salary Information				Median Annual Salary
	Less than \$35,000	\$35,000 to \$49,999	\$50,000 to \$74,999	More than \$75,000	
313	2%	26%	28%	44%	\$67,000

Source: Burning Glass – Labor Insights

## Employers, Skills, Education, and Work Experience

Exhibit 5 displays the employers that posted ten or more job ads for plumbers, pipefitters, and steamfitters in the region over the last 12 months. Showing employer names provides some insight into where students may find employment after completing a program. All City Plumbing posted the most job ads for plumbers, pipefitters, and steamfitters over the last 12 months.

*Exhibit 5: Employers posting the most job ads for plumbers, pipefitters, and steamfitters*

Top Employers	Job Ads
All City Plumbing	21
Canyon Hills Plumbing	16
All Pro Plumbing Heating	15
Park West	12
Pacific Production Plumbing	11
BHI Plumbing Heating and Air Conditioning	11
<i>All other employers</i>	<i>381</i>
<b>Total</b>	<b>467</b>

Source: Burning Glass – Labor Insights

Exhibit 6 lists a sample of specialized and employability skills employers' seek when looking for workers to fill plumber, pipefitter, and steamfitter positions. Specialized skills are occupation-specific skills that employers request for industry or job competency. Employability skills are foundational skills that transcend industries and occupations; this category is often referred to as "soft skills." The skills requested in job ads may be utilized to guide curriculum development.

*Exhibit 6: Sample of in-demand skills from employer job ads*

Specialized skills (n=416)	Employability skills
<ul style="list-style-type: none"> <li>• Repair</li> <li>• Water Heaters</li> <li>• Drain Cleaning</li> <li>• Plumbing Systems</li> <li>• Customer Service</li> </ul>	<ul style="list-style-type: none"> <li>• Troubleshooting</li> <li>• Communication Skills</li> <li>• Organizational Skills</li> <li>• Detail-Oriented</li> <li>• Teamwork/Collaboration</li> </ul>

Source: Burning Glass – Labor Insights

According to the Bureau of Labor Statistics, approximately 33% of incumbent workers in this field hold a community college-level of educational attainment; "some college, no degree" and an "associate degree." All job ads for plumbers, pipefitters, and steamfitters sought candidates with a high school diploma or vocational training. Exhibit 7 displays the typical entry-level education, educational attainment, and minimum advertised education requirements for plumbers, pipefitters, and steamfitters.

Exhibit 7: Typical entry-level education, educational attainment, and minimum advertised education requirements

Typical Entry-Level Education Requirement	CC-Level Educational Attainment*	Number of Job Ads	Real-Time Minimum Advertised Education Requirement		
			High school or vocational training	Associate degree	Bachelor's degree or higher
High school diploma or equivalent	33%	176	100%	-	-

Source: Emsi 2021.3, Burning Glass – Labor Insights

\*Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework

Exhibit 8 displays the work experience typically required and the real-time work experience requirements from employer job ads for plumbers, pipefitters, and steamfitters. Most employers sought candidates with three to five years of work experience.

Exhibit 8: Work experience required and real-time work experience requirements

Work Experience Typically Required	Number of job ads	Real-Time Work Experience		
		0 – 2 years	3 – 5 years	6+ years
None	293	35%	63%	2%

Source: Emsi 2021.3, Burning Glass – Labor Insights

## Student Completions and Programs Outcomes

Regional community colleges do not currently offer plumbing, pipefitting, and steamfitting (TOP 0952.30) programs. According to the Chancellor's Office Curriculum Inventory (COCI), 34 plumbing, pipefitting, and steamfitting programs are offered at ten community colleges in California (COCI, 2021). Apprenticeship programs are available at six of the ten community colleges in the state. Community College apprenticeship programs satisfy plumber, pipefitting, and steamfitting on-the-job training requirements. Foothill College, located in Los Altos Hills, has a plumbing technology apprenticeship program. The program description for Foothill's plumbing technology apprenticeship program, which may be helpful in program development, is displayed below (Foothill College, p. 20):

*The Associate in Science in Plumbing Technology degree program is conducted in partnership with the Pipe Trades Training Center apprenticeship program. The apprenticeship program is five years in duration, requiring a minimum of 9,000 hours of on-the-job training. After 5 years of classroom instruction and paid work experience, students are recognized as journeypersons within the Pipe Trades industry, working to protect the health and safety of the community by piping pure water to commercial and industrial buildings for drinking, cooking, washing, cleaning, manufacturing or personal use, and removing waste water after it has served its purpose. Students earning an associate degree increase their marketability and employment*

opportunities. Enrollment in apprenticeship courses is limited to apprentices registered with the California Division of Apprenticeships Standards, according to the California Labor Code, Section 3074.3.

The apprenticeship program, which includes coursework, lab work and on-the-job training, involves learning about the assessment, installation, maintenance, and repair of different types of pipe systems, effective and safe tool use, material applications, related mathematics and science and storage. Students will learn to read blueprints, apply layout and install, as well as estimate and repair both supply and waste water systems. The Associate in Science in Plumbing Technology degree builds on the Certificate of Achievement in Plumbing Technology by adding requirements for general education courses and electives.

Students are admitted to the Pipe Trades Training Center apprenticeship program based on obtaining a passing (75%) score on the Pipe Trades Entrance Exam, which measures the student's ability in math and mechanical reasoning. Students who pass the entrance exam are selected from an applicant waiting list, the order of which is established by the date the entrance exam was taken and the test score.

California program outcome data may provide a useful insight into the likelihood of success for the proposed program. Community college student outcome information based on the selected TOP code and region is provided in Exhibit 9. Among the students exiting plumbing, pipefitting, and steamfitting programs in the state, 81% of students reported working in their field of study, the median annual earnings were \$80,412, and 82% attained a living wage. The outcome methodology is available in the appendix section of this report.

*Exhibit 9: 0952.30 – Plumbing, pipefitting, and steamfitting strong workforce program outcomes*

<b>Strong Workforce Program Metrics: 0952.30 – Plumbing, Pipefitting, and Steamfitting Academic Year 2018-19, unless noted otherwise</b>	<b>Inland Empire/Desert Region</b>	<b>California</b>
Unduplicated count of enrolled students (2019-20)	110	2,905
Completed 9+ career education units in one year (2019-20)	56%	29%
Perkins Economically disadvantaged students	74%	45%
Students who attained a noncredit workforce milestone in a year (2019-20)	-	88%
Students who earned a degree, certificate, or attained apprenticeship (2019-20)	-	353
Job closely related to the field of study (2017-18)	-	81%
Median annual earnings (all exiters)	-	\$80,412
Median change in earnings (all exiters)	-	77%

Strong Workforce Program Metrics: 0952.30 – Plumbing, Pipefitting, and Steamfitting Academic Year 2018-19, unless noted otherwise	Inland Empire/Desert Region	California
Attained a living wage (completers and skills-builders)	-	82%

Sources: LaunchBoard Community College Pipeline and Strong Workforce Program Metrics

## Recommendation

Employment for plumbers, pipefitters, and steamfitters is expected to increase by 9% through 2025; 693 job openings are expected annually. The 50<sup>th</sup> percentile hourly earnings for plumbers, pipefitters, and steamfitters surpass the self-sustainability rate, indicating that the top 50% of workers earn a self-sustainable wage.

Regional community colleges do not currently offer plumbing, pipefitting, and steamfitting (TOP 0952.30) programs. Among the students exiting plumbing, pipefitting, and steamfitting programs in the state, 81% of students reported working in their field of study, the median annual earnings were \$80,412, and 82% attained a living wage.

The Centers of Excellence recommends expanding plumbing, pipefitting, and steamfitting programs to meet regional demand for more qualified workers in the region. Colleges considering this program should partner with applicable employers to document their demand for plumbers, pipefitters, and steamfitters and the skills needed for students to earn self-sustainable earnings after exiting the program.

### Contact

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## Appendix: Methodology

Community college student outcome information is from LaunchBoard and based on the selected TOP code and region. These metrics are based on records submitted to the California Community Colleges Chancellor's Office Management Information Systems (MIS) by community colleges, which come from self-reported student information from CCC Apply and the National Student Clearinghouse. Employment and earnings metrics are sourced from California's Employment Development Department's Unemployment Insurance database records. When available, outcomes for completers are reported to demonstrate the impact that earning a degree or certificate can have on employment and earnings. For more information on the types of students included in each metric, please see the web link for LaunchBoard's Strong Workforce Program Metrics Data Element Dictionary in the References section (LaunchBoard, 2021 a). Finally, employment in a job closely related to the field of study comes from self-reported student responses on the CTE Employment Outcomes Survey (CTEOS), administered by Santa Rosa Junior College (LaunchBoard, 2021 a).

Job advertisement data is limited to the information provided by employers and the ability of artificial intelligence search engines to identify this information. Additionally, preliminary calculations by Georgetown Center on Education and the Workforce found that "just 30 to 40 percent of openings for candidates with some college or an associate degree, and only 40 to 60 percent of openings for high school diploma holders appear online" (Carnevale et al., 2014). Online job advertisements often do not reveal employers' hiring intentions; it is unknown if employers plan to hire one or multiple workers from a single online job ad or collect resumes for future hiring needs. A closed job ad may not be the result of a hired worker.

Table 1. 2020 to 2025 job growth, wages, entry-level education, training, and work experience required for plumbers, pipefitters, and steamfitters in the Inland Empire/Desert Region (Riverside and San Bernardino counties combined)

Occupation (SOC)	2020 Jobs	5-Year Change (New Jobs)	5-Year % Change (New Jobs)	Annual Openings (New + Replacement Jobs)	Entry-Experienced Hourly Wage (10 <sup>th</sup> to 90 <sup>th</sup> percentile)	Median Hourly Wage (50 <sup>th</sup> percentile)	Average Annual Earnings	Entry-Level Education & On-The-Job-Training	Work Experience Required
Plumbers, Pipefitters, and Steamfitters (47-2152)	5,886	544	9%	693	\$14.73 to \$50.93	\$26.32	\$59,600	High school diploma or equivalent & Apprenticeship	None

Source: Emsi 2021.3