

Labor Market Analysis: 0956.30 – Machining and Machine Tools
Machining and Machine Tools – Manufacturing Technology
(Associate of Science Degree)

Los Angeles Center of Excellence, September 2022

Summary

Program Endorsement:	Endorsed: All Criteria Met <input type="checkbox"/>	Endorsed: Some Criteria Met <input checked="" type="checkbox"/>	Not Endorsed <input type="checkbox"/>
Program Endorsement Criteria			
Supply Gap:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Living Wage: (Entry-Level, 25 th)	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Education:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Emerging Occupation(s)			
	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	

The Los Angeles Center of Excellence for Labor Market Research (LA COE) prepared this report to provide regional labor market supply and demand data related to four middle-skill occupations:

- ***Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic (51-4034)***
Set up, operate, or tend lathe and turning machines to turn, bore, thread, form, or face metal or plastic materials, such as wire, rod, or bar stock.¹
- ***Machinists (51-4041)*** Set up and operate a variety of machine tools to produce precision parts and instruments out of metal. 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.²
- ***Computer Numerically Controlled Tool Operators (51-9161)*** Operate computer-controlled tools, machines, or robots to machine or process parts, tools, or other work pieces made of metal, plastic, wood, stone, or other materials. May also set up and maintain equipment.³
- ***Computer Numerically Controlled Tool Programmers (51-9162)*** Develop programs to control machining or processing of materials by automatic machine tools, equipment, or systems. May also set up, operate, or maintain equipment.⁴

¹ [Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic \(bls.gov\)](#)

² [Machinists \(bls.gov\)](#)

³ [Computer Numerically Controlled Tool Operators \(bls.gov\)](#)

⁴ [Computer Numerically Controlled Tool Programmers \(bls.gov\)](#)

Middle-skill occupations typically require some postsecondary education, but less than a bachelor's degree.⁵ This report is intended to help determine whether there is demand in the local labor market that is not being met by the supply from community college programs that align with the relevant occupations.

Based on the available data, there appears to be a supply gap for these machining and machine tools occupations in the region. While entry-level wages are lower than the self-sufficiency standard wage in both Los Angeles and Orange counties, a large percentage of current workers in the field have completed either some college or an associate degree as their highest level of education. **Therefore, due to all of the criteria being met, the LA COE endorses this proposed program.** Detailed reasons include:

Demand:

- **Supply Gap Criteria** – Over the next five years, **2,204 jobs are projected to be available annually** in the region due to retirements and workers leaving the field, **which is more than the three-year average of 524 awards conferred** by educational institutions in the region.
- **Living Wage Criteria** – Within Los Angeles County, the **majority (94%) of annual job openings** for these machining and machine tools occupations have **entry-level wages below the self-sufficiency standard hourly wage** (\$18.10/hour).⁶
- **Educational Criteria** – Within the greater LA/OC region, **94% of the annual job openings** for occupations related to machining and machine tools **typically require a high school diploma or equivalent.**
 - However, the national-level educational attainment data indicates between **26% and 44% of workers in the field have completed some college or an associate degree.**

Supply:

- There are **15 community colleges** in the greater LA/OC region that issue awards related to machining and machine tools, conferring an average of **348 awards annually** between 2018 and 2021.
- Between 2017 and 2020, there was an average of **176 awards conferred annually** in related training programs by non-community college institutions throughout the greater LA/OC region.

⁵ The COE classifies middle-skill jobs as the following:

- All occupations that require an educational requirement of some college, associate degree or apprenticeship;
- All occupations that require a bachelor's degree, but also have more than one-third of their existing labor force with an educational attainment of some college or associate degree; or
- All occupations that require a high school diploma or equivalent or no formal education, but also require short- to long-term on-the-job training where multiple community colleges have existing programs.

⁶ Self-Sufficiency Standard wage data was pulled from The Self-Sufficiency Standard Tool for California. For more information, visit: <http://selfsufficiencystandard.org/california>.

Occupational Demand

Exhibit 1 shows the five-year occupational demand projections for machining and machine tools occupations. In the greater Los Angeles/Orange County region, the number of jobs related to these occupations is projected to decrease by 7% through 2026. However, there will be more than 2,200 job openings per year through 2026 due to retirements and workers leaving the field.

Exhibit 1: Occupational demand in Los Angeles and Orange Counties⁷

Geography	2021 Jobs	2026 Jobs	2021-2026 Change	2021-2026 % Change	Annual Openings
Los Angeles	14,267	13,159	(1,107)	(8%)	1,420
Orange	7,789	7,362	(426)	(5%)	785
Total	22,056	20,522	(1,534)	(7%)	2,204

Wages

The labor market endorsement in this report considers the entry-level hourly wages for these machining and machine tools occupations in Los Angeles County as they relate to the county's self-sufficiency standard wage. Orange County wages are included below in order to provide a complete analysis of the greater LA/OC region. Detailed wage information, by county, is included in Appendix A.

Los Angeles County— The majority (94%) of annual openings for machining and machine tools occupations have entry-level wages below the self-sufficiency standard wage for one adult (\$18.10 in Los Angeles County). Typical entry-level hourly wages are in a range between \$17.53 and \$29.44. Only one occupation in this report has entry-level wages higher than the county's self-sufficiency standard wage: *computer numerically controlled tool programmers* (\$29.44). Experienced workers can expect to earn wages between \$24.43 and \$39.01, which are higher than the self-sufficiency standard.

Exhibit 2: Hourly Earnings for Occupations in LA County

Occupation	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic (51-4034)	\$17.53	\$22.40	\$24.43
Machinists (51-4041)	\$17.67	\$22.63	\$28.89
Computer Numerically Controlled Tool Operators (51-9161)	\$17.98	\$22.45	\$24.87
Computer Numerically Controlled Tool Programmers (51-9162)	\$29.44	\$36.63	\$39.01

⁷ Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

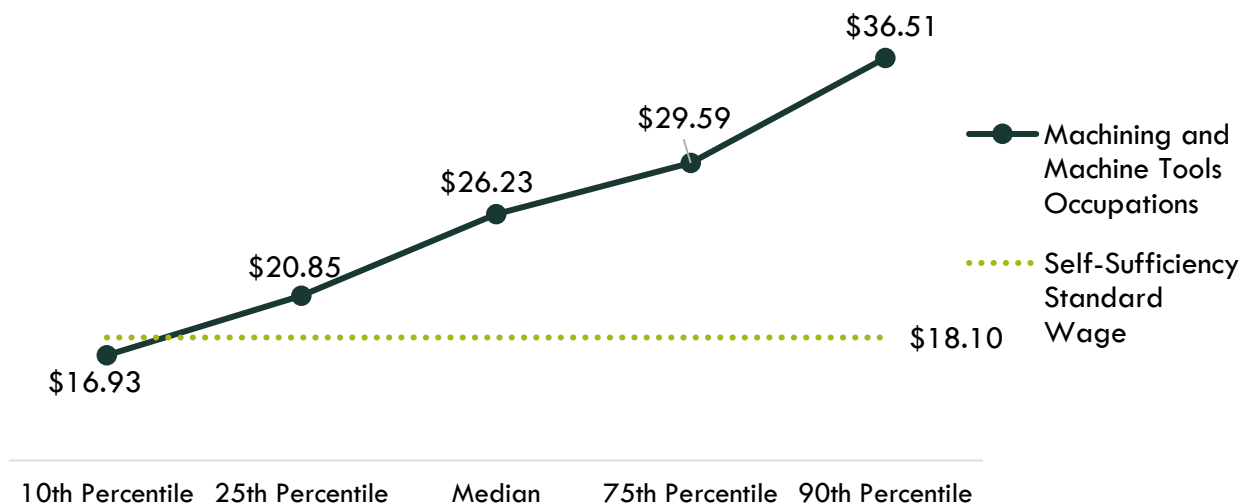
Orange County— The majority (94%) of annual openings for machining and machine tools occupations have entry-level wages below the self-sufficiency standard wage for one adult (\$20.63 in Orange County). Typical entry-level hourly wages are in a range between \$18.00 and \$30.19. Only one occupation in this report has entry-level wages higher than the county’s self-sufficiency standard wage: *computer numerically controlled tool programmers* (\$30.19). Experienced workers can expect to earn wages between \$25.37 and \$39.99, which are higher than the self-sufficiency standard.

Exhibit 3: Hourly Earnings for Occupations in Orange County

Occupation	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic (51-4034)	\$18.20	\$23.27	\$25.38
Machinists (51-4041)	\$18.00	\$22.95	\$29.27
Computer Numerically Controlled Tool Operators (51-9161)	\$18.37	\$22.91	\$25.37
Computer Numerically Controlled Tool Programmers (51-9162)	\$30.19	\$37.55	\$39.99

On average, the entry-level earnings for the occupations in this report are \$20.85; this is above the living wage for one single adult in Los Angeles County (\$18.10). Exhibit 4 shows the average wage for the occupations in this report, from entry-level to experienced workers.

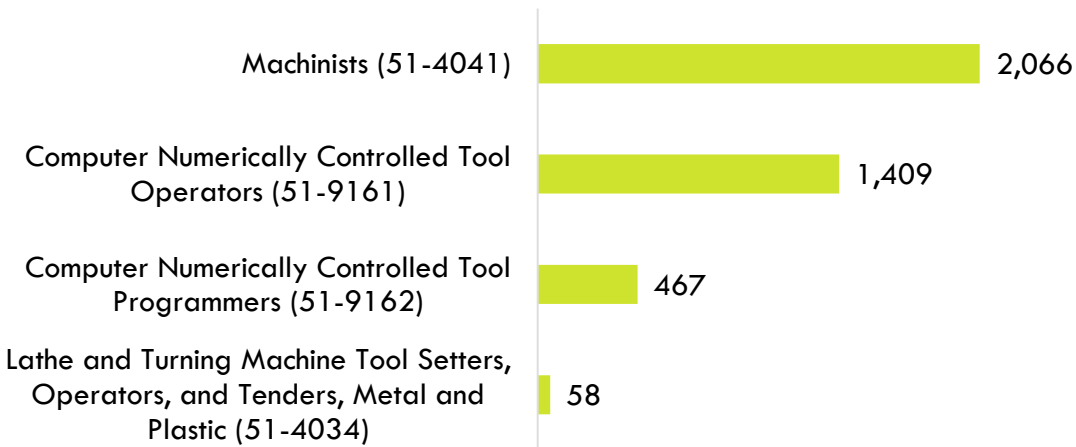
Exhibit 4: Average Hourly Earnings for Machining and Machine Tools Occupations in LA/OC



Job Postings

There were 4,000 online job postings related to machining and machine tools occupations listed in the past 12 months. Exhibit 5 displays the number of job postings by occupation. The majority of job postings (52%) were for *machinists*, followed by *computer numerically controlled tool operators* (35%) and *computer numerically controlled tool programmers* (12%). The highest number of job postings were for CNC machinist, machinists, CNC operators, CNC programmers, and CNC machine operators. The top skills were computer numerical control (CNC), machining, lathes, machinery, and use of micrometers. The top three employers, by number of job postings, in the region were: Orchid Orthopedics, Flowserve Corporation, and Precision Castparts.

Exhibit 5: Job postings by occupation (last 12 months)



Educational Attainment

The Bureau of Labor Statistics (BLS) lists the following typical entry-level education levels for the occupations in this report:

- **Postsecondary non-degree award:** *Computer numerically controlled tool programmers*
- **High school diploma or equivalent:** *Lathe and turning machine tool setters, operators, and tenders, metal and plastic; Machinists; Computer numerically controlled tool operators*

In the greater LA/OC region, the majority of annual job openings (94%) typically require a high school diploma or equivalent. However, the national-level educational attainment data indicates between 26% and 44% of workers in the field have completed some college or an associate degree.

Educational Supply

Community College Supply—Exhibit 6 shows the three-year average number of awards conferred by community colleges in the related TOP codes: Manufacturing and Industrial Technology (0956.00) and Machining and Machine Tools (0956.30). The colleges with the most completions in the region are: Santa Ana, Orange Coast, and Cerritos.

Exhibit 6: Regional community college awards (certificates and degrees), 2018-2021

TOP	Program	College	2018-19 Awards	2019-20 Awards	2020-21 Awards	3-Year Average
0956.00	Manufacturing and Industrial Technology	Cerritos	2	-	1	1
		El Camino	2	-	-	1
		Glendale	-	2	-	1
		LA Trade-Tech	5	9	9	8
		LA Valley	3	9	7	6
		Mt San Antonio	13	14	4	10
		LA Subtotal	25	34	21	27
		Fullerton	9	38	20	22
		Irvine	3	-	4	2
		Saddleback	11	7	4	7
		Santa Ana	-	3	2	2
		Santiago Canyon	41	10	12	21
		OC Subtotal	64	58	42	55
Supply Subtotal/Average			89	92	63	81
0956.30	Machining and Machine Tools	Cerritos	30	37	14	27
		Compton	19	12	-	10
		El Camino	47	22	4	24
		Glendale	7	7	1	5
		LA Pierce	12	8	2	7
		LA Trade-Tech	14	4	2	7
		LA Valley	6	3	3	4
		Pasadena	-	-	2	1
		LA Subtotal	135	93	28	85
		Orange Coast	116	74	41	77
		Santa Ana	134	102	76	104
		OC Subtotal	250	176	117	181
		Supply Subtotal/Average			385	269
Supply Total/Average			474	361	208	348

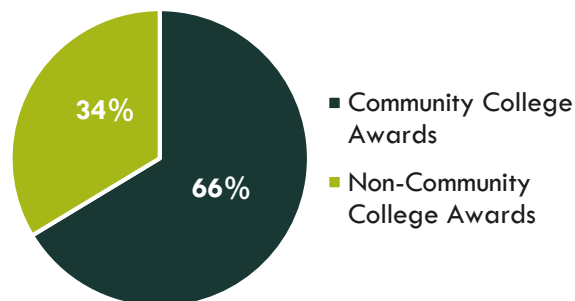
Non-Community College Supply—For a comprehensive regional supply analysis, it is important to consider the supply from other institutions in the region that provide training programs for machining and machine tools. Exhibit 7 shows the annual and three-year average number of awards conferred by these institutions in relevant programs. Due to different data collection periods, the most recent three-year period of available data is from 2017 to 2020. Between 2017 and 2020, non-community college institutions in the region conferred an average of 176 awards.

Exhibit 7: Regional non-community college awards, 2017-2020

CIP	Program	Institution	2017-18 Awards	2018-19 Awards	2019-20 Awards	3-Year Average
48.0501	Machine Tool Technology/Machinist	NTMA Training Centers of Southern California	233	225	-	153
		Pomona USD Adult and Career Ed	7	9	-	5
48.0503	Machine Shop Technology/Assistant	Pomona USD Adult and Career Ed	12	3	-	5
		California Career School	3	4	4	4
48.0510	Computer Numerically Controlled (CNC) Machinist Technology/CNC Machinist	Hacienda La Puente Adult Ed	13	11	-	8
		NTMA Training Centers of Southern California	5	-	-	2
Supply Total/Average			273	252	4	176

Exhibit 8 shows the relationship between the number of community college awards conferred in LA/OC versus the number of non-community college awards for the programs in this report. One-third of awards conferred in programs related to machining and machine tools are awarded by community colleges in the LA/OC region.

Exhibit 8: Community College Awards Compared to Non-Community College Awards in LA/OC Region, 3-Year Average



Appendix A: Occupational demand and wage data by county
Exhibit 9. Los Angeles County

Occupation (SOC)	2021 Jobs	2026 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic (51-4034)	810	675	(135)	(17%)	74	\$17.53	\$22.40	\$24.43
Machinists (51-4041)	8,405	7,901	(504)	(6%)	823	\$17.67	\$22.63	\$28.89
Computer Numerically Controlled Tool Operators (51-9161)	4,218	3,758	(459)	(11%)	432	\$17.98	\$22.45	\$24.87
Computer Numerically Controlled Tool Programmers (51-9162)	834	826	(9)	(1%)	90	\$29.44	\$36.63	\$39.01
Total	14,267	13,159	(1,107)	(8%)	1,420	-	-	-

Exhibit 10. Orange County

Occupation (SOC)	2021 Jobs	2026 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic (51-4034)	452	371	(81)	(18%)	41	\$18.20	\$23.27	\$25.38
Machinists (51-4041)	4,591	4,435	(156)	(3%)	455	\$18.00	\$22.95	\$29.27
Computer Numerically Controlled Tool Operators (51-9161)	2,296	2,098	(197)	(9%)	238	\$18.37	\$22.91	\$25.37
Computer Numerically Controlled Tool Programmers (51-9162)	450	458	8	2%	50	\$30.19	\$37.55	\$39.99
Total	7,789	7,362	(426)	(5%)	785	-	-	-

Exhibit 11. Los Angeles and Orange Counties

Occupation (SOC)	2021 Jobs	2026 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Typical Entry-Level Education
Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic (51-4034)	1,262	1,045	(216)	(17%)	116	HS diploma or equivalent
Machinists (51-4041)	12,996	12,336	(660)	(5%)	1,278	HS diploma or equivalent
Computer Numerically Controlled Tool Operators (51-9161)	6,513	5,857	(657)	(10%)	670	HS diploma or equivalent
Computer Numerically Controlled Tool Programmers (51-9162)	1,284	1,284	(0)	(0%)	141	Postsecondary non-degree award
Total	22,056	20,522	(1,534)	(7%)	2,204	-

Appendix B: Sources

- O*NET Online
- Labor Insight (Burning Glass Technologies)
- Lightcast (formerly Emsi)
- Bureau of Labor Statistics (BLS)
- California Employment Development Department, Labor Market Information Division, OES
- California Community Colleges Chancellor's Office Management Information Systems (MIS)
- Self-Sufficiency Standard at the Center for Women's Welfare, University of Washington
- Chancellor's Office Curriculum Inventory (COCI 2.0)

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