

**Program Endorsement Brief: 0956.30/Machining and Machine Tools  
CNC Operator; CNC Programmer**

Orange County Center of Excellence, August 2020

**Summary Analysis**

<b>Program Endorsement:</b>	<b>Endorsed: All Criteria Met</b>	<input type="checkbox"/>	<b>Endorsed: Some Criteria Met</b>	<input checked="" type="checkbox"/>	<b>Not Endorsed</b>	<input type="checkbox"/>
<b>Program Endorsement Criteria</b>						
<b>Supply Gap:</b>	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>		
<b>Meets Living Wage: (Entry-Level, 25<sup>th</sup>)</b>	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>		
<b>Typical Entry-Level Education:</b>	HS Diploma or Less	Some College/ Cert./AA	Bachelor's Degree	Graduate Degree		
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<b>Emerging Occupation(s)</b>						
Yes <input type="checkbox"/>			No <input checked="" type="checkbox"/>			

The Orange County Center of Excellence for Labor Market Research (COE) prepared this report to provide Los Angeles/Orange County regional labor market supply and demand data related to two middle-skill occupations: Computer-Controlled Machine Tool Operators, Metal and Plastic (51-4011), and Machinists (51-4041). Middle-skill occupations typically require some postsecondary education, but less than a bachelor's degree.<sup>1</sup> 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 machining and machine tool occupations in the region. However, all of the annual openings for the occupations in this report have typical entry-level wages below the living wage in Orange County, and the Bureau of Labor Statistics (BLS) lists only a high school diploma as the typical entry-level education.

**Therefore, due to some of the criteria being met, the COE endorses this proposed program.**

Reasons include:

Demand:

- Over the next five years, there is projected to be **2,403 jobs available annually** in the LA/OC region due to retirements and workers leaving the field, **which is more than the 834 awards conferred annually** by educational institutions in the region.
- The Bureau of Labor Statistics (BLS) lists a **high school diploma as the typical entry-level education for machining occupations.**

<sup>1</sup> 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.

- However, the national-level educational attainment data indicates **between 40.3% and 42.9% of workers in the field have completed some college or an associate degree.**
- Within Orange County, **all of the annual job openings** for these machining occupations have entry-level **wages below the county's living wage** (\$17.36).<sup>2</sup>

**Supply:**

- There are **13 community colleges** in the region that issue awards related to machining and machine tools, conferring an average of **365 awards annually** between 2016 and 2019.
- Between 2014 and 2017, there was an average of **469 awards conferred annually** in related training programs by non-community college institutions throughout the region.

**Occupational Demand**

Exhibit 1, on the following page, shows the five-year occupational demand projections for these machining occupations. In Los Angeles/Orange County, the number of jobs related to these occupations is projected to decrease by 4% through 2024. However, there will be more than 2,400 job openings per year through 2024 due to retirements and workers leaving the field.

*This report includes employment projection data by Emsi which uses EDD information. Emsi's projections are modeled on recorded (historical) employment figures and incorporate several underlying assumptions, including the assumption that the economy, during the projection period, will be at approximately full employment. To the extent that a recession or labor shock, such as the economic effects of COVID-19, can cause long-term structural change, it may impact the projections. At this time, it is not possible to quantify the impact of COVID-19 on projections of industry and occupational employment. Therefore, the projections included in this report do not take the impacts of COVID-19 into account.*

**Exhibit 1: Occupational demand in Los Angeles and Orange Counties<sup>3</sup>**

Geography	2019 Jobs	2024 Jobs	2019-2024 Change	2019-2024 % Change	Annual Openings
Los Angeles	15,170	14,385	(785)	(5%)	1,518
Orange	8,561	8,458	(103)	(1%)	884
<b>Total</b>	<b>23,731</b>	<b>22,843</b>	<b>(888)</b>	<b>(4%)</b>	<b>2,403</b>

**Wages**

The labor market endorsement in this report considers the entry-level hourly wages for these middle-skill accounting and taxation occupations in Orange County as they relate to the county's

<sup>2</sup> Living wage data was pulled from California Family Needs Calculator on 7/22/20. For more information, visit the California Family Needs Calculator website: <https://insightcced.org/2018-family-needs-calculator/>.

<sup>3</sup> Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

living wage. Los Angeles County wages are included below in order to provide a complete analysis of the LA/OC region. Detailed wage information, by county, is included in Appendix A.

**Orange County**—All of the annual openings for these machining occupations have entry-level wages below the California Family Needs Calculator hourly wage (living wage) for one adult (\$17.36 in Orange County).<sup>4</sup> Typical entry-level hourly wages are in a range between \$15.01 and \$16.30. Entry-level wages for both of these occupations are lower than the living wage for one adult in Orange County. Experienced workers can expect to earn wages between \$24.64 and \$27.25, which are higher than the living wage estimate. Orange County's average wages are below the average statewide wage of \$22.29 for these occupations.

**Los Angeles County**—The majority (73%) of annual openings for these machining occupations have entry-level wages above the living wage for one adult (\$15.04 in Los Angeles County). Typical entry-level hourly wages are in a range between \$14.57 and \$15.84. Entry-level wages for Machinists are higher than the living wage for one adult in Los Angeles County, while entry-level wages for Computer-Controlled Machine Tool Operators, Metal and Plastic are lower than the county's living wage. Experienced workers can expect to earn wages between \$23.91 and \$26.50, which are higher than the living wage estimate. Los Angeles County's average wages are below the average statewide wage of \$22.29 for these occupations.

**Job Postings**—There were 3,624 online job postings related to machining and machine tools listed in the past 12 months. The highest number of job postings were for Machinists, CNC Machinists, CNC Operators, CNC Machine Operators, and CNC Lathe Machinists. The top skills were knowledge of: Computer Numerical Control (CNC), machining, lathes, Computerized Numerical Control lathes, and micrometers. The top three employers, by number of job postings, in the region were: Arconic, Applied Medical Resources Corporation, and Precision Castparts.

*It is important to note that the job postings data included in this section reflects online job postings listed in the past 12 months and does not yet demonstrate the impact of COVID-19. While employers have generally posted fewer online job postings since the beginning of the pandemic, the long-term effects are currently unknown.*

**Educational Attainment**—The Bureau of Labor Statistics (BLS) lists a high school diploma as the typical entry-level education for machining occupations. The national-level educational attainment data indicates between 40.3% and 42.9% of workers in the field have completed some college or an associate degree. Of the 41% of machining and machine tools job postings listing a minimum education requirement in Los Angeles/Orange County, 98% (1,470) requested a high school diploma and 2% (32) requested an associate degree.

## **Educational Supply**

**Community College Supply**—Exhibit 2, on the following page, 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 El Camino. Over the past

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<sup>4</sup> Living wage data was pulled from California Family Needs Calculator on 7/6/2020. For more information, visit the California Family Needs Calculator website: <https://insightcced.org/2018-family-needs-calculator/>.

12 months, there were five other related program recommendation requests from regional community colleges.

**Exhibit 2: Regional community college awards (certificates and degrees), 2016-2019**

TOP Code	Program	College	2016-2017 Awards	2017-2018 Awards	2018-2019 Awards	3-Year Award Average
0956.00	Manufacturing and Industrial Technology	Cerritos	3	6	2	4
		Compton	-	2	-	1
		El Camino	3	3	2	3
		LA Trade-Tech	-	-	5	2
		LA Valley	4	2	3	3
		Mt San Antonio	19	9	13	14
		<b>LA Subtotal</b>	<b>29</b>	<b>22</b>	<b>25</b>	<b>25</b>
		Fullerton	3	11	9	8
		Irvine	7	1	3	4
		Saddleback	5	9	11	8
		Santa Ana	-	1	-	0
		Santiago Canyon	-	27	41	23
		<b>OC Subtotal</b>	<b>15</b>	<b>49</b>	<b>64</b>	<b>43</b>
<b>Supply Subtotal/Average</b>			<b>44</b>	<b>71</b>	<b>89</b>	<b>68</b>
0956.30	Machining and Machine Tools	Cerritos	22	38	30	30
		Compton	3	1	19	8
		El Camino	39	32	47	39
		Glendale	2	-	7	3
		LA Pierce	11	10	12	11
		LA Trade	19	17	14	17
		LA Valley	7	3	6	5
		<b>LA Subtotal</b>	<b>103</b>	<b>101</b>	<b>135</b>	<b>113</b>
		Fullerton	5	9	-	5
		Orange Coast	54	92	116	87
		Santa Ana	64	78	134	92
		<b>OC Subtotal</b>	<b>123</b>	<b>179</b>	<b>250</b>	<b>184</b>
		<b>Supply Subtotal/Average</b>			<b>226</b>	<b>280</b>
<b>Supply Total/Average</b>			<b>270</b>	<b>351</b>	<b>474</b>	<b>365</b>

**Non-Community College Supply**—It is important to consider the supply from other institutions in the region that provide training programs for machining and machine tool occupations. Exhibit 3 shows the annual and three-year average number of awards conferred by these institutions in the related Classification of Instructional Programs (CIP) Codes: Manufacturing Engineering

Technology/Technician (15.0613), Machine Tool Technology/Machinist (48.0501), and Computer Numerically Controlled (CNC) Machinist Technology/CNC Machinist (48.0510). Due to different data collection periods, the most recent three-year period of available data is from 2014 to 2017. Between 2014 and 2017, four-year colleges in the region conferred an average of 469 awards annually in related training programs.

**Exhibit 3: Regional non-community college awards, 2014-2017**

<b>CIP Code</b>	<b>Program</b>	<b>College</b>	<b>2014-2015 Awards</b>	<b>2015-2016 Awards</b>	<b>2016-2017 Awards</b>	<b>3-Year Award Average</b>
15.0613	Manufacturing Engineering Technology/Technician	California State University-Long Beach	2	5	2	3
48.0501	Machine Tool Technology/Machinist	NTMA Training Centers of Southern California	512	447	276	412
		Pomona Unified School District Adult and Career Education	3	12	3	6
		California Career School	3	9	8	7
48.0510	Computer Numerically Controlled (CNC) Machinist Technology/CNC Machinist	Hacienda La Puente Adult Education	17	21	22	20
		NTMA Training Centers of Southern California	-	10	16	9
		Pomona Unified School District Adult and Career Education	22	6	10	13
<b>Supply Total/Average</b>			<b>559</b>	<b>510</b>	<b>337</b>	<b>469</b>

**Appendix A: Occupational demand and wage data by county**

**Exhibit 4. Orange County**

Occupation (SOC)	2019 Jobs	2024 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25 <sup>th</sup> Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 <sup>th</sup> Percentile)
Computer-Controlled Machine Tool Operators, Metal and Plastic (51-4011)	2,344	2,214	(130)	(6%)	236	\$15.01	\$19.17	\$24.64
Machinists (51-4041)	6,218	6,244	26	0%	648	\$16.30	\$21.40	\$27.25
<b>Total</b>	<b>8,561</b>	<b>8,458</b>	<b>(103)</b>	<b>(1%)</b>	<b>884</b>			

**Exhibit 5. Los Angeles County**

Occupation (SOC)	2019 Jobs	2024 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25 <sup>th</sup> Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 <sup>th</sup> Percentile)
Computer-Controlled Machine Tool Operators, Metal and Plastic (51-4011)	4,177	3,802	(375)	(9%)	414	\$14.57	\$18.60	\$23.91
Machinists (51-4041)	10,993	10,583	(410)	(4%)	1,104	\$15.84	\$20.80	\$26.50
<b>Total</b>	<b>15,170</b>	<b>14,385</b>	<b>(785)</b>	<b>(5%)</b>	<b>1,518</b>			

**Exhibit 6. Los Angeles and Orange Counties**

Occupation (SOC)	2019 Jobs	2024 Jobs	5-Yr Change	5-Yr % Change	Annual Openings
Computer-Controlled Machine Tool Operators, Metal and Plastic (51-4011)	6,521	6,015	(506)	(8%)	650
Machinists (51-4041)	17,211	16,828	(383)	(2%)	1,752
<b>Total</b>	<b>23,731</b>	<b>22,843</b>	<b>(888)</b>	<b>(4%)</b>	<b>2,403</b>

## Appendix B: Sources

- O\*NET Online
- Labor Insight/Jobs (Burning Glass)
- Economic Modeling Specialists, International (Emsi)
- Bureau of Labor Statistics (BLS)
- Employment Development Department, Labor Market Information Division, OES
- California Community Colleges Chancellor's Office Management Information Systems (MIS)
- California Family Needs Calculator, Insight Center for Community Economic Development
- Chancellor's Office Curriculum Inventory (COCI 2.0)

For more information, please contact:

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