

# Program Endorsement Brief:

Automotive Engine Machining and Repair occupations in the Greater Sacramento region

**North Far North Center of Excellence, September 2019**

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## INTRODUCTION

This report provides an overview of the labor market demand and educational program supply for automotive engine machining and engine assembly related occupations in the Greater Sacramento region and the larger 22-county North Far North region.

## SUMMARY OF KEY FINDINGS

- Automotive engine machining and repair occupations will add 60 jobs over the next five years.
- Median hourly wages for the two study occupations fall between the Sacramento living wage thresholds of one-adult and a one-adult, one-child household.
- While the typical entry-level education required for these occupations is a high school diploma, all occupations require at least a moderate length of time of on-the-job training.
- There are no machining programs – TOP code 0956.30 – in the Greater Sacramento region.

The report contains the following sections:

- Occupational demand,
- Wages and job postings,
- Education and training,
- Regional program supply, and
- Findings and recommendations.

## OCCUPATIONAL DEMAND

The following Standard Occupational Classification (SOC) codes related to the proposed program were included in the analysis:

51-4041.00 - Machinists	
<b>Description:</b>	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.
<b>Sample job titles:</b>	Gear Machinist, Journeyman Machinist, Machine Operator, Machine Repair Person, Machinist, Maintenance Machinist, Maintenance Specialist, Production Machinist, Set-Up Machinist, Tool Room Machinist

51-2031.00 - Engine and Other Machine Assemblers	
<b>Description:</b>	Construct, assemble, or rebuild machines, such as engines, turbines, and similar equipment used in such industries as construction, extraction, textiles, and paper manufacturing.
<b>Sample job titles:</b>	Assembler, Assembly Line Worker, Cell Technician, Engine Assembler, Engine Builder, Field Service Technician, Fitter, Large Engine Assembler, Machine Assembler, Mechanical Assembler

Exhibit 1 summarizes the job trends by SOC codes in the 7-county Greater Sacramento region, the 22-county North Far North region, and California.

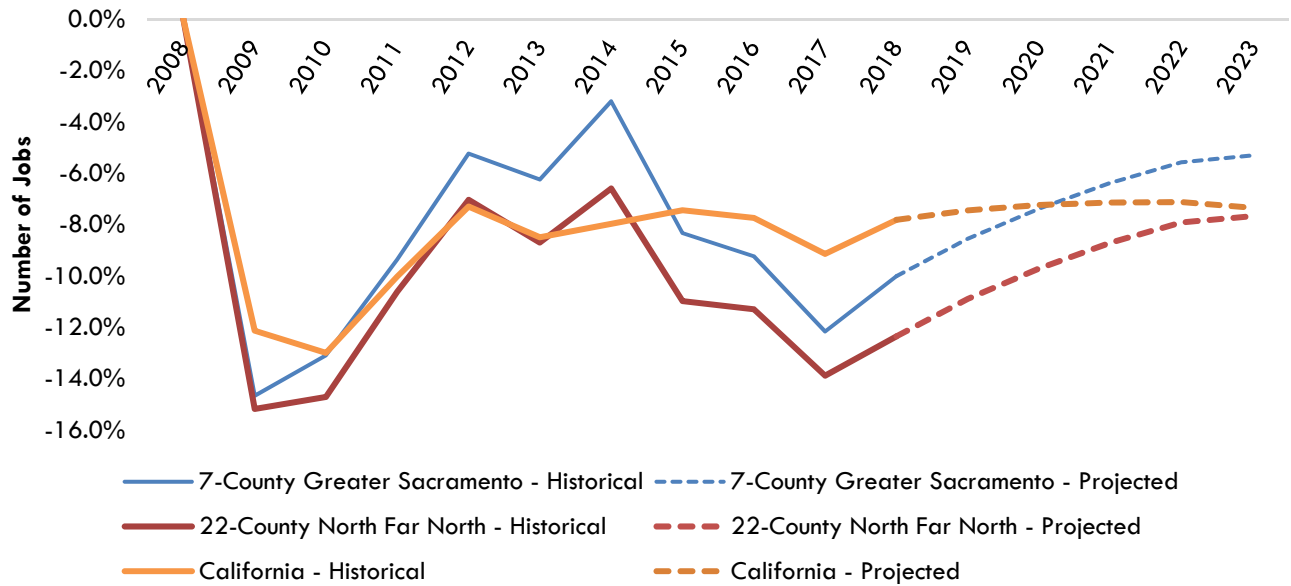
### Exhibit 1. Employment and projected occupational demand<sup>1</sup>

Occupation	SOC	2008 Jobs	2018 Jobs	2023 Jobs	2018-23 % Change	Annual Openings
Engine and Other Machine Assemblers	51-2031	64	47	49	3.0%	7
Machinists	51-4041	1,181	1,073	1,130	5.3%	133
<b>Greater Sacramento</b>	<b>TOTALS</b>	<b>1,245</b>	<b>1,120</b>	<b>1,179</b>	<b>5.2%</b>	<b>140</b>
Engine and Other Machine Assemblers	51-2031	105	84	83	-0.7%	13
Machinists	51-4041	1,478	1,304	1,379	5.7%	164
<b>North Far North</b>	<b>TOTALS</b>	<b>1,583</b>	<b>1,388</b>	<b>1,462</b>	<b>5.3%</b>	<b>177</b>
Engine and Other Machine Assemblers	51-2031	2,015	1,485	1,393	-6.2%	209
Machinists	51-4041	39,070	36,388	36,671	0.8%	4,043
<b>California</b>	<b>TOTALS</b>	<b>41,085</b>	<b>37,873</b>	<b>38,064</b>	<b>0.5%</b>	<b>4,251</b>

<sup>1</sup> Emsi 2019.2; QCEW and Non-QCEW Employees, and Self-Employed. The 7-county Greater Sacramento region includes El Dorado, Placer, Nevada, Sacramento, Sutter, Yolo and Yuba. The 22-county North Far North region includes the aforementioned counties as well as Butte, Colusa, Del Norte, Glenn, Humboldt, Lake, Lassen, Mendocino, Modoc, Plumas, Shasta, Sierra, Siskiyou, Tehama and Trinity.

Exhibit 2 compares the rates of change of the total number of jobs between 2008 and 2018 in the Greater Sacramento region, the North Far North region, and California. It also compares occupational demand projections from 2018 through 2023 across the same areas. The rate of change is indexed to the base year 2008 total number of jobs.

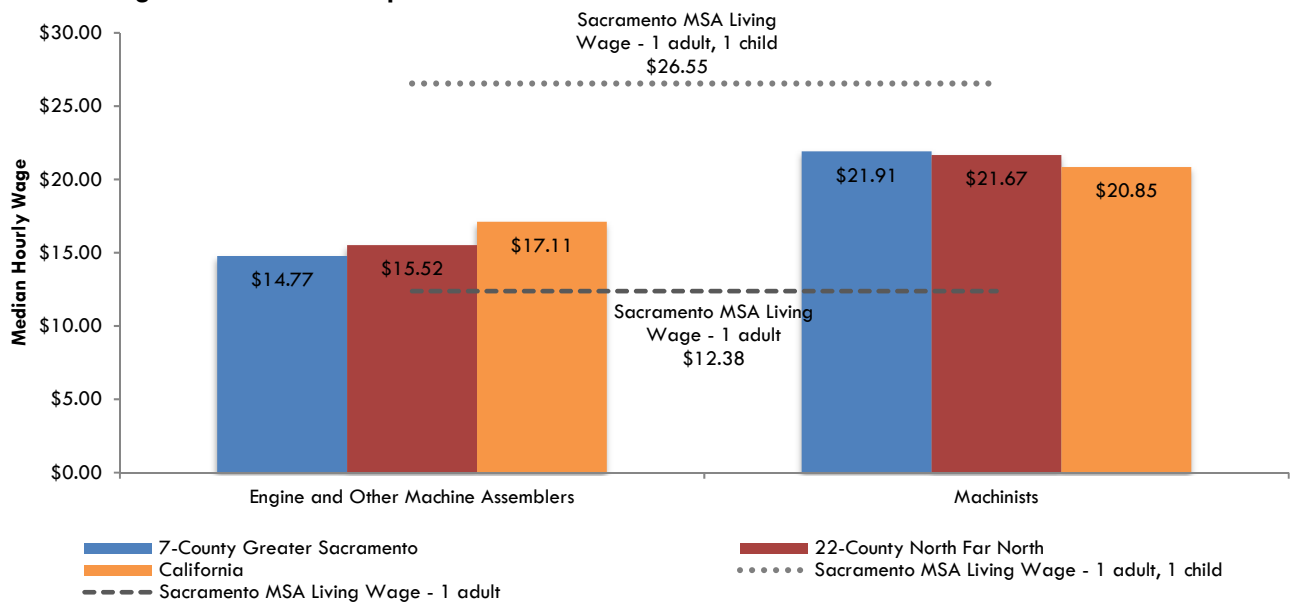
**Exhibit 2. Rate of Change for Selected Occupations<sup>2</sup>**



## WAGES AND JOB POSTINGS

Exhibit 3 compares the median hourly wages of the selected occupations in the study regions to the Sacramento Metropolitan Statistical Area (MSA) living wage for a one-adult household and a one-adult, one-child household.<sup>3</sup>

**Exhibit 3. Wages for selected occupations<sup>4</sup>**



<sup>2</sup> Ibid.

<sup>3</sup> Living Wage Calculator: Counties and Metropolitan Statistical Areas in California, <http://livingwage.mit.edu/>

<sup>4</sup> Emsi 2019.2; QCEW Employees, Non-QCEW Employees and Self-Employed.

Burning Glass identified a pool of 140 job postings in the Greater Sacramento region for the selected occupations. This data represents job listings posted online within the last year, from September 1, 2018 through August 31, 2019.

Exhibit 4 compares a seven-year job posting trends of the selected occupations to the median number of job postings in the Greater Sacramento region.

**Exhibit 4: Job postings trend for selected occupations<sup>5</sup>**

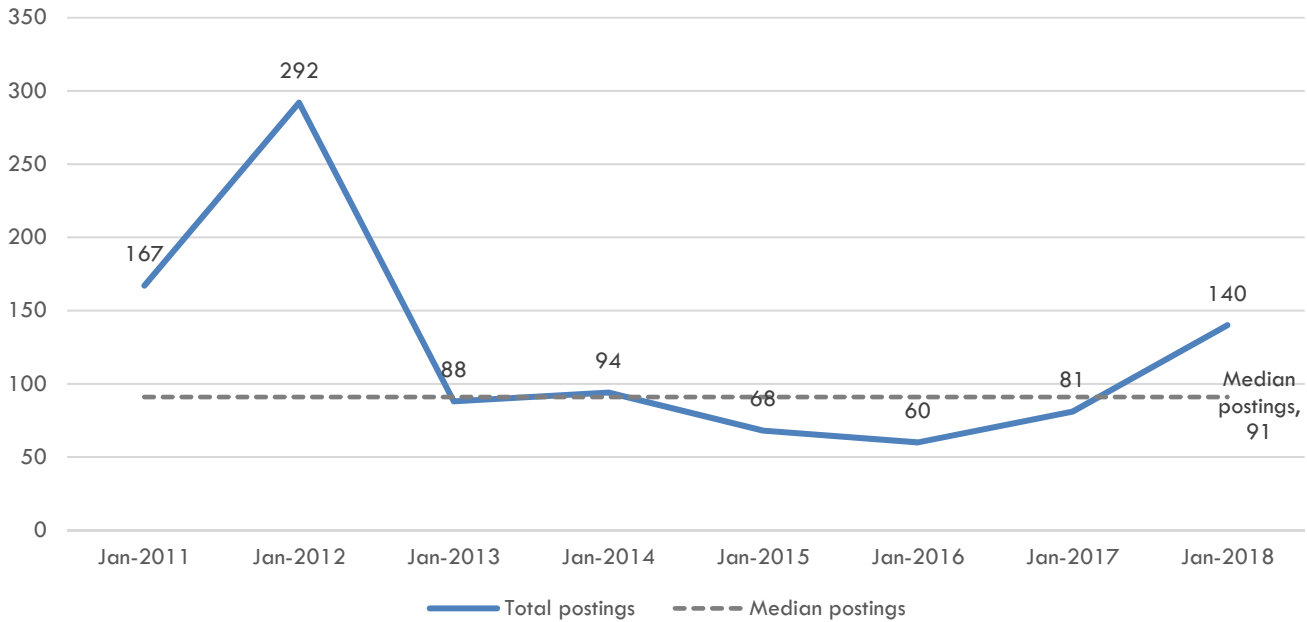
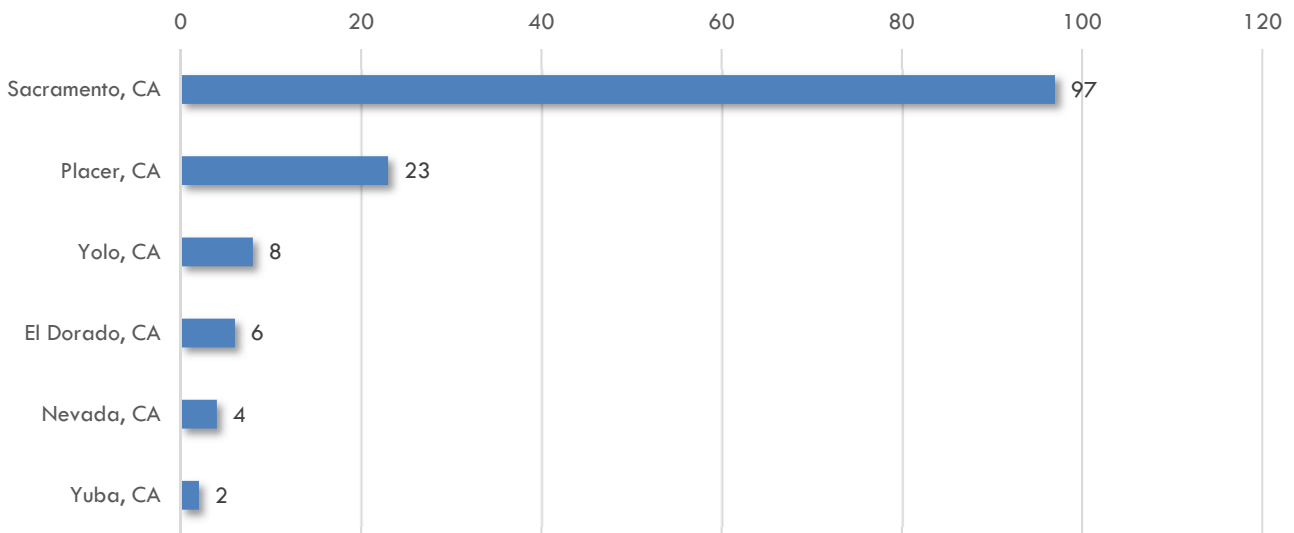


Exhibit 5 shows the number of job postings by county for the selected occupations.

**Exhibit 5. Top job postings locations for selected occupations<sup>6</sup>**



<sup>5</sup> Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool," <http://www.burning-glass.com>, 2019.

<sup>6</sup> Ibid.

Exhibit 6 lists the employers with the most job openings for the selected occupations within the study region. Of the 140 job postings, 97 included the employer's name.

**Exhibit 6: Top employers by number of job postings<sup>7</sup>**

Employer	Greater Sacramento (n = 97)	
	Number of Postings	Percent of Postings
Kratos Defense & Security Solutions	20	21%
SVS, SVS Group Incorporated	15	15%
Micro Systems Incorporated	6	6%
Martin Sprocket Gear Incorporated	6	6%
Tri Tool Incorporated	4	4%
Snowline Engineering	4	4%
State of california	3	3%
Atwork	3	3%
Watts Water Technologies	2	2%
The Tps Family Of Companies	2	2%
Kratos Defense & Security Solutions	20	21%

Exhibit 7 shows the top job titles for the selected occupations in the Greater Sacramento region. All 402 job postings included job titles.

**Exhibit 7. Top job titles by number of job postings<sup>8</sup>**

51-4041.00 - Machinists (n = 128)			51-2031.00 - Engine and Other Machine Assemblers (n = 12)		
Title	Job Postings	% Job Posting	Title	Job Postings	% Job Posting
CNC Machinist	70	55%	Composite Assembler	11	92%
Machinist	49	38%	Assembler	1	8%
Manual Machinist	4	3%			
Journeyman Machinist	3	2%			
CNC Lathe Machinist	2	2%			

<sup>7</sup> Ibid.

<sup>8</sup> Ibid.

Exhibit 8 shows the skills most in-demand for the selected occupations in the Greater Sacramento region. 139 of the 140 job postings included required skills information.

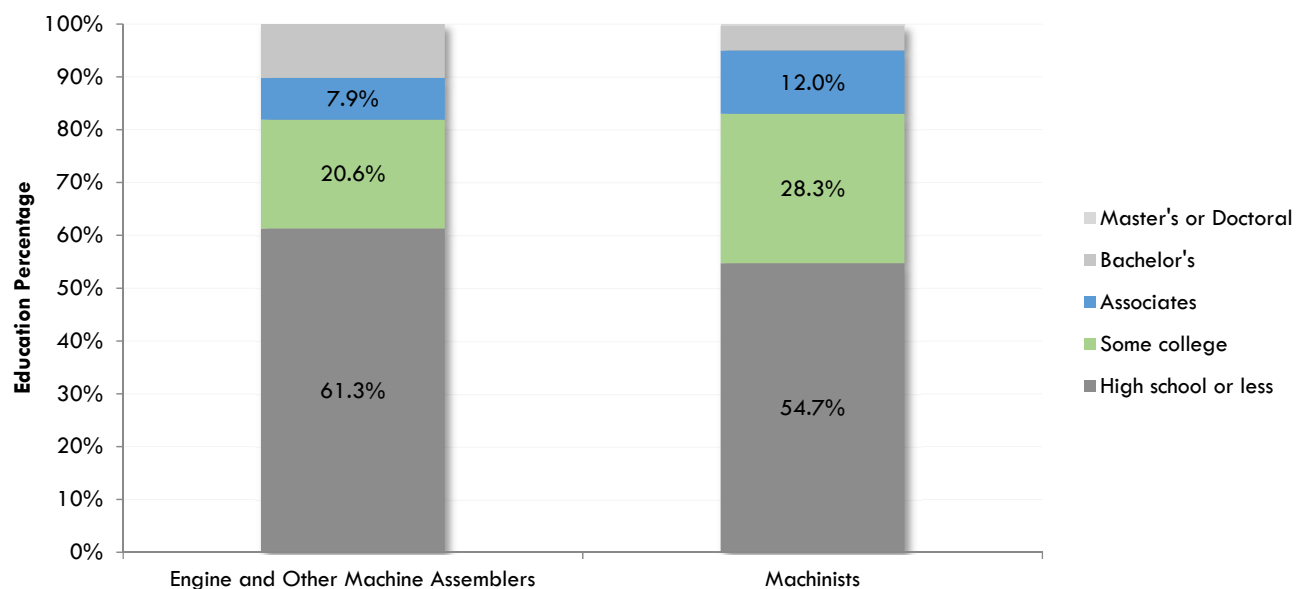
**Exhibit 8. Top skills by number of job postings<sup>9</sup>**

51-4041.00 – Machinists (n = 128)			51-2031.00 - Engine and Other Machine Assemblers (n = 12)		
Title	Job Postings	% Job Posting	Title	Job Postings	% Job Posting
Machining	128	100%	5S Methodology	11	92%
Computer Numerical Control (CNC)	91	71%	Basic Mathematics	11	92%
Lathes	63	49%	Engineering Drawings	11	92%
Geometric Dimensioning and Tolerancing (GD&T)	36	28%	Hand Tools	11	92%
Micrometers	36	28%	Lifting Ability	11	92%
Machinery	35	27%	Machinery	11	92%
Grinders	33	26%	Pneumatic Tools	11	92%
Repair	33	26%	Process Improvement	11	92%
Computerized Numerical Control Lathes	28	22%	Prototype Fabrication	11	92%
Calipers	26	20%	Repair	11	92%

## EDUCATION AND TRAINING

Exhibit 9 shows the typical educational attainment for workers 25 years and old by occupation across the U.S. At the national level, the typical education for the existing workforce based on survey data from 2016-2017 for the selected occupations is a high diploma or less.

**Exhibit 9. Typical educational attainment for selected occupations, nationally<sup>10</sup>**



<sup>9</sup> Ibid.

<sup>10</sup> Bureau of Labor Statistics. Educational Attainment for Workers 25 Years and Older by Detailed Occupation, 2016-2017, <https://www.bls.gov/emp/tables/educational-attainment.htm>.

Exhibit 10 shows the typical entry-level education requirements, on-the-job training, and work experience requirements for the selected occupations in the Greater Sacramento region.

**Exhibit 10. Typical education, training, and work experience for selected occupations<sup>11</sup>**

Occupations	SOC	Typical Entry-Level Education	Typical On-The-Job Training	Work Experience Required
Machinists	51-4041	High school diploma or equivalent	Long-term on-the-job training	None
Engine and Other Machine Assemblers	51-2031	High school diploma or equivalent	Moderate-term on-the-job training	None

**PROGRAM SUPPLY**

There is one Taxonomy of Program (TOP) codes related to training for machinists: 0956.30 – Machining and Machine Tools. The corresponding Classification of Instructional Programs (CIP) codes for this program is 48.0501 – Maching Tool Technology/Machinist.

Analysis of existing educational programs shows that there are no machining program within the Greater Sacramento region. The closest programs within the North/Far North region are located at Shasta College in Redding, Ca and the College of the Redwoods in Eureka, Ca.

<sup>11</sup> Emsi 2019.2; QCEW Employees, Non-QCEW Employees and Self-Employed.

## FINDINGS

- Between 2008 and 2018, automotive engine machining and repair occupations lost 125 jobs in the Greater Sacramento region. This trend will appear to reverse over the next five years, adding 60 jobs at a projected growth rate of 5.2% and 140 jobs per year.
- Automotive engine machining and repair occupations in the Greater Sacramento region are projected to grow at a rate similar to the North Far North region, 5.2% and 5.3% respectively, and much faster than the rest of the state's 0.5%.
- Median hourly wages for the two study occupations fall between the Sacramento living wage thresholds of one-adult and a one-adult, one-child household. Hourly wages are highest for the machinist occupation at \$22. Engine and other machine assemblers earn almost \$15 per hour.
- While the typical entry-level education required for these occupations is a high school diploma, all occupations require at least a moderate length of time of on-the-job training.
- There are no machining programs – TOP code 0956.30 – in the Greater Sacramento region.

## RECOMMENDATIONS

- Based on a three-year average of annual award in machining programs in the Greater Sacramento region (0 certificates and degrees), and projected annual openings for automotive engine machining and repair occupations (140 openings), the region appears to have some demand for programs related to the occupation.

COE Recommendation		
Move forward with program	Program is not recommended	Additional information needed
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



## METHODOLOGY

Occupations in this report were identified using O\*Net. Findings in this report were determined using labor market data from the Bureau of Labor Statistics (BLS), U.S. Census Bureau data from Emsi, and jobs posting data from Burning Glass.

## APPENDIX A: DATA SOURCES

Sources used for data analysis purposes in this report include:

- U.S. Department of Labor/Employment and Training Administration (DOLETA) O\*NET Online
- Burning Glass, Labor Insight/Jobs
- Economic Modeling Specialists, International (EMSI)
- California Employment Development Department, Labor Market Information Division (EDD, LMID)
- Bureau of Labor Statistics, Occupational Employment Statistics (OES)
- California Community Colleges Chancellor's Office, Cal-PASS Plus LaunchBoard
- Living Insight Center for Community Economic Development, Self-Sufficiency Standard Tool for California
- California Community Colleges Chancellor's Office Management Information Systems (MIS Data Mart)
- U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS)

### **For more information, please contact:**

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