

# Manufacturing Notes

---

Spoke with Brent Weil (via introduction from Nicole Rice) from the Manufacturing Institute:

- A major goal is to reach out to youths and parents about manufacturing
- NAMs is an advocate of manufacturers and the core competencies involved in the industry
  - Do not play any role in training or certifications
- 14 partners were identified for national endorsement, with NIMs amongst them
- NAMs wants to align and build capacities with community colleges
- The most identified skill gap at the moment is in technical work (involves some post-secondary education, but not necessarily a 2yr degree)
- Interested in developing a 'competency-based credential'
- NAMs is very interested in developing a stackable credential system
  - The initial step would be a 'work-readiness' certificate
  - Afterwards, work in tandem with the 'Manufacturing Skills Standards Council' to develop four components, which will lead to a skills certification that will be cross-cutting

Spoke briefly with David Morgan at NIMs ([dmorgan@nims-skills.org](mailto:dmorgan@nims-skills.org); 815-484-3898)

- NIMs currently has a large presence in the LA area
- NIMs accredited a community college in Cupertino
- California is currently the 3<sup>rd</sup> largest credentialing area
- 95% of the NIMs credentialing in California is the level 1 machines certification (NIMs has over 50 certification levels)

Imran Farooq provided the workgroup with several documents regarding the Inland Empire and the Advanced Manufacturing industry; Deputy Sector Navigator Kenneth Eaves provided a wealth of information regarding certificates and credentials offered in the region

Stephen Baiter and Mark Martin provided documents highlighting the Advanced Manufacturing industry sector for the East Bay, as well as some leads with regards to NIMs

# Inland Empire

---

According to LMID, the number of employed people in the Riverside Metropolitan Area is:

Manufacturing Employment	
2014	90,200
2013	87,300

This represents an increase of 3.2% in manufacturing employment for the Riverside/Inland Empire area According to the “Advanced Manufacturing Industry & Occupations in the Inland Empire” document:

- Currently (2014), there are 4,350 advanced manufacturing businesses, generating \$24 billion in revenue
- It is difficult for the advanced manufacturing industry to expand and grow if they cannot find ‘skilled individuals’
- The highest percentage of education requirement for the occupations in advanced manufacturing in the Inland Empire area require a ‘Postsecondary Certificate/Associate Degree’ (35%)
- With respect to community college programs, of the 183 awards in 2011-2012, **89%** were identified as Certificates in manufacturing.
- With respect to ‘proprietary education’, a total of 531 certificates were earned; 458 for machine tools from NTMA Center and 76 in welding technology from CET San Bernardino
- Among the top Certificates and Credentials offered in the region:
  - Industrial Electrical
  - Industrial Maintenance Mechanics
  - Industrial Electronics
  - Welding
- Inland Empire is also home to the National Center for Construction Education and Research (NCCER) – The NCCER allows all 112 public community colleges, public K-12 systems, and correctional institutions to use the nationally recognized industry standardized curriculum in over 70 crafts. They can provide industry recognized certification to their students/trainees. Many industry partners require and use this curriculum such as Associated Builders and Contractors (ABC), Associated General Contractors (AGC) and Molycorp.
- Between 7/13 and 3/2015, the California Community College System through its ATEF's, 19 NCCER instructors provided instruction to 313 trainees/students.
- They completed 3,588 modules and were awarded national recognized industry certification for those modules that total trainee contact hours of 40,313.

Top 5 Manufacturing Occupations in the region:

- Industrial Maintenance Electrical and Instrumentation Technicians
- Control System Technicians
- Machinist/Millwrights
- Engineering
- Quality Assurance

Based on a conversation with Deputy Sector Navigator Ken Eaves on May 1, the table below is a list of the programs available in the Inland Empire Region by Community College.

- Please note the term ‘Stackable Certificate’ is based on the Chancellor’s Office’s definition as a series of courses in a pathway that contains at least 3 units and less than 12 units
- There is no consistency between any college programs such as welding, unless they are based on nationally recognized certification. Welding programs such as San Bernardino and Barstow typically provide instruction and training that could lead to AWS (American Welding Society) certification, but may or may not provide the testing required to do so.
- Other programs such as electrical, according to industry, currently taught by Community Colleges and even unions do not provide the same level of skills, thereby leaving industry with the uncertainty of the employee or potential employee brings to the workplace.
- Mr. Eaves is “pushing national certification at events such as CWA to promote this (uniformed certification across Community Colleges). As more and more industries are exposed to the benefits, they (employers) will look for them (certifications) in their hiring. I am seeing this more and more. As the demand increases especially from the CWIB, more college programs will adopt them (uniformed certification).”

**Table 1 – Labor Market Data for Primary Occupations, Inland Empire**

Description	2013 Jobs	2015 Jobs	% Change	Median Hourly Earnings
Electricians	4,680	4,576	2%	\$23.56
Welders, Cutters, Solderers, and Brazers	3,163	3,048	4%	\$17.30
Machinists	2,776	2,755	1%	\$18.69
Industrial Machinery Mechanics	2,376	2,457	3%	\$23.52
Sheet Metal Workers	1,629	1,526	-6%	\$22.91
Electrical and Electronics Engineering Technicians	1,064	1,085	2%	\$28.97
Maintenance Workers, Machinery	677	683	1%	\$21.02
Mechanical Drafters	378	367	-3%	\$26.29
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	304	292	-4%	\$15.94
Industrial Engineering Technicians	219	219	-	\$24.14
Chemical Plant and System Operators	218	197	-10%	\$25.79
Mechanical Engineering Technicians	201	201	-	\$23.82
Electro-Mechanical Technicians	188	193	3%	\$24.78
<b>Total/Average</b>	<b>17,873</b>	<b>17,599</b>	<b>-2%</b>	<b>\$24.78</b>

**Table 2: List of Certificate/Credentials Offered by Community College, Inland Empire**

College	Stackable Certificate	Certificate of Achievement	AS Degree
Barstow	Industrial Maintenance Mechanic Level I	Residential Electrical	Residential Electrical
	Industrial Maintenance Mechanic Level II	Electronics Technology	Electronics Technology
	Electrical	Welding	Welding
		Industrial Maintenance Mechanic Technology	Industrial Maintenance Mechanic Technology
Cerro Cosco	Welding	Welding	Welding
			Engineering
Chaffey College	Industrial electrical Technology – Fiber Optical Tech	Industrial Electrical Technology – Level I	Industrial Electrical Technology
	Industrial electrical Technology – Cabling Tech	Industrial Electrical Technology – Level II	
		Industrial Electrical Technology – Level III	
College of the Desert		Drafting/CAD	Drafting/CAD
Mt. San Jacinto College		Green Collar Manufacturing	Engineering Technology
		Manufacturing Quality Assurance	
Norco		Automated Systems Technician	Automated Systems Technician
		Computer Numerical Control Programming	Computer Numerical Control
		Computer-Aided Production Technology	Computer-Aided Production Technology
		Digital Electronics	Digital Electronics
			Engineering Technology
		Engineering Graphics	

College	Stackable Certificate	Certificate of Achievement	AS Degree
Palo Verde College		Welding Technology	Welding Technology
Riverside City College		Welding Technology	Welding Technology
San Bernardino College		General Electrician	General Electrician
		Electronics Technology	Electronics Technology
		Electric Power Technology	Electric Power Technology
		General Welding	General Welding
		Welding Inspection Technology	
	Basic Machine Operator		
	Basic Operations Computer Numerical Control		
	Machine Technology		
	Machinist Standard		
		Computer Numerical Control: CAD/CAM	Computer Numerical Control: CAD/CAM
Victor Valley College		Basic Electrical Technician	Not Applicable
		Electronic Engineering Technology	Electric Engineering Technology
		Electronics Technology	Not Applicable
San Bernardino County ROP	Adult Eligible Courses		
	District Served		
Riverside County ROP	High School ROP Course Schedule		
	Welding Schedule		
San Bernardino City Unified School District ROP	Computer Aided Drafting and Design		

**Table 3: In-Depth Look at Welding Certificates/AA's Offered**

Skill/Course	Barstow*	Cerro Coso*	Palo Verde*	Riverside*	San Bernardino*
Intro to Welding					X
Oxyacetylene Welding	X	X	X	X	X
Shielded Metal Arc Welding (SMAW)	X	X	X	X	X
Intermediate Shielded Metal Arc Welding					X
Gas Metal Arc Welding (GMAW)	X	X	X		
Intermediate Gas Metal Arc Welding			X		
Gas Tungsten Arc Welding (GTAW)	X	X	X	X	X
Intermediate Gas Tungsten Arc Welding (GTAW)					X
Wire Welding	X			X	X
Position Welding	X				
Soldering, Brazing, and Braze Welding					
Consolidated Welding			X		
Testing (Destructive or Non-Destructive)					X
Los Angeles City Welding Certification					X
Welding Fabrication		X			

\*Indicates that **both** Certificate/Credential and AA's are offered.

# Contra Costa

---

According to LMID, the number of people employed in the manufacturing industry for the Oakland, Hayward, Berkeley Metro-Division (East Bay) are is:

Manufacturing Employment	
2014	81,800
2013	80,100

This represents an increase of 2.1% in manufacturing employment for the East Bay area

According to the “Advanced Manufacturing in Contra Costa County, June 2013” and “Job Opportunities in Advanced Manufacturing in Contra Costa County” document:

- The major subsectors are relatively stable and do not anticipate job growth but Contra Costa projects a 2.5% job growth over the next 3-5 years
- Replacement jobs are also projected to rise
- Five subsectors in manufacturing expected to see growth in the Contra Costa local economy includes:
  - Petroleum Refining & Products
  - Digital and Electronic Devices & Components
  - Metal Processing & Fabrication
  - Life Sciences including Pharmaceuticals, Biotechnology, Medical Devices & Equipment
  - Food & Beverage Processing
- Manufacturers report that they experience difficulty finding qualified workers with basic academic and technical skills.
- **72%** of employers surveyed said they believe there is a need for new or more effective soft skills/work readiness training
- **Specific Recommendations from “Advanced Manufacturing in Contra Costa” Document:**
  - Target veterans through outreach and by working collaboratively with veterans’ organizations as veterans offer both foundational and technical skills needed by the manufacturing sector
  - Convene a Skills Panel (with sub-panels for the five key subsectors) to assess the Priority and Demand Occupations and their need for new or improved local training programs
  - Collaborate with educational and business/industry partners to provide Pre-Employment and Certificated Work Readiness Training to address employability and foundational skills
  - Focus training resources on key manufacturing subsectors and on Priority and Demand Occupations and career pathways leading to those occupations
  - Expand business outreach and engagement activities and knowledge base of service-providing WDB and One-Stop Center staff to improve their understanding of the manufacturing sector’s workforce needs and business characteristics
  - Improve the promotion and marketing of WDB, SBDC, and One-Stop Centers so that business and industry has a better understanding of the services available to employers
  - Collaborate with educational and business/industry partners to promote to the younger generations an awareness of career pathways in manufacturing, including STEM careers
- Middle Skill jobs are defined as “more than high school but less than a bachelor’s degree. Middle-skill occupations are defined here as including jobs that generally require at least one year of skills development beyond high school but less than a bachelor’s degree. The postsecondary skills development may include education or training, or on-the-job training, or apprenticeship training,

or occupations that generally require one year or more of previous work experience. “

- When identifying requirements for occupations, credentials or certificates are not explicitly mentioned – this provides us with an opportunity to highlight the need and importance of this area
- How are credentials and certificates viewed in the Contra Costa area?

## Table 4: List of Occupations by Five Largest Subsectors, Contra Costa

### Petroleum Refining & Products Subsector: In-Demand Occupations (Grouped by Occupational Category)

Production Occupations	Fastest Growing	Total Job Openings	Median Hourly Earnings	Education Level
Petroleum Pump System Operators, Refinery Operators, and Gaugers	-7%	196	\$35.62	Long-term on-the-job training
First-Line Supervisors of Production and Operating Workers	-5%	51	\$33.83	Work experience in a related occupation
Mixing/Blending Machine Setters, Operators, &Tenders	-5%	38	\$20.76	Moderate-term on-the-job training

Installation Occupations	Fastest Growing	Total Job Openings	Median Hourly Earnings	Education Level
First-Line Supervisors of Mechanics, Installers, and Repairers	-8%	12	\$37.25	Associate's degree

Logistics Occupations	Fastest Growing	Total Job Openings	Median Hourly Earnings	Education Level
Heavy and Tractor-Trailer Truck Drivers	-4%	16	\$21.53	Short-term on-the-job training

### Digital and Electronic Devices & Components Subsector: In-Demand Occupations (Grouped by Occupational Category)

Production Occupations	Fastest Growing	Total Job Openings	Median Hourly Earnings	Education Level
Electrical and Electronic Equipment Assemblers	-7%	8	\$14.18	Short-term on-the-job training
Team Assemblers	-22%	5	\$13.44	Moderate-term on-the-job training
Inspectors, Testers, Sorters, Samplers, and Weighers	-10%	4	\$19.52	Moderate-term on-the-job training
Semiconductor Processors	13%	2	\$15.72	Associate's degree
Machinists	-30%	2	\$23.99	Long-term on-the-job training



## Life Sciences Subsector: In-Demand Occupations (Grouped by Occupational Category)

Production Occupations	Fastest Growing	Total Job Openings	Median Hourly Earnings	Education Level
Dental Laboratory Technicians		13	\$16.81	Moderate-term on-the-job training
Team Assemblers		8	\$13.44	Moderate-term on-the-job training
Inspectors, Testers, Sorters, Samplers		7	\$19.52	Moderate-term on-the-job training
Mixing and Blending Machine Setters, Operators, and Tenders		3	\$20.76	Moderate-term on-the-job training

Installation Occupations	Fastest Growing	Total Job Openings	Median Hourly Earnings	Education Level
Maintenance and Repair Workers, General		2	\$20.37	Moderate-term on-the-job training

## Food & Beverage Processing Subsector: In-Demand Occupations (Grouped by Occupational Category)

Production Occupations	Fastest Growing	Total Job Openings	Median Hourly Earnings	Education Level
Packaging and Filling Machine Operators and Tenders	22.5%	191	\$12.31	Moderate-term on-the-job training
Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	37.0%	54	\$27.30	Moderate-term on-the-job training

Installation Occupations	Fastest Growing	Total Job Openings	Median Hourly Earnings	Education Level
Maintenance and Repair Workers, General	21.1%	38	\$20.37	Moderate-term on-the-job training
Industrial Machinery Mechanics	38.2%	34	\$35.76	Long-term on-the-job training

Logistics Occupations	Fastest Growing	Total Job Openings	Median Hourly Earnings	Education Level
Industrial Truck and Tractor Operators	25.0%	60	\$20.50	Short-term on-the-job training