

# ENGINEERING NEEDS Survey Results – at 3/31/17

**A joint project by:** South Bay Workforce  
Investment Board, West Los Angeles College,  
Training Funding Partners and Tooling U-SME

# Table of Contents

I.	<b>Executive Summary</b> .....	2
II.	<b>Methodology</b> .....	2
III.	<b>Contact Information of Respondents to Date: .....</b>	3
IV.	<b>27 Responses - 22 Companies .....</b>	3
V.	<b>Survey Results</b> .....	4

# Executive Summary

---

Companies in the Advanced Manufacturing sector were asked to participate in an ENGINEERING NEEDS survey to help the project team evaluate the need in Los Angeles County for workers in engineering roles and to determine the skill gaps that employers see with this workforce. The goal of the project is to create both pre-Apprenticeship and Apprenticeship tracks in engineering which would be innovative and customized to employer needs.

The overarching goal is to create a pipeline of workers to serve the employers' needs for years to come.

This survey is the first of two surveys distributed by the project team.

The Survey related to this report can be found at: <https://surveyplanet.com/5768899626f371f8547b7519>

## Methodology

---

The survey form questions and form were developed with input from project partners including West LA College (West), South Bay Workforce Board (SBWIB), Tooling U-SME (TU-SME) and Training Funding Partners (TFP). The survey went through a variety of tests, drafts and edits before being finalized.

The final survey asked respondents about their needs in the areas below and respondents were asked to complete the survey online which automatically records their responses. In some cases, employers were provided a survey form to be completed by hand if easier for the employer.

The survey distribution list was developed jointly by project partners with all providing contacts to include. The lists were scrubbed and duplicates removed and the SBWIB managed the main form of distribution via email including a one-page flyer about the development of Pre-Apprenticeship and Apprenticeships. The SBWIB used Constant Contact to manage the distribution and tracking of clicks and sending follow-ups and reminders.

Survey topics included:

- Method of contact
- Impact of Defense budget reductions
- Types of training and delivery methods used to train Engineers currently
- Types of Engineering and Engineering-related job openings and links to open job descriptions
- Skill gaps identified in the workforce
- Knowledge of Apprenticeship models

The survey administrator checked returned surveys via the online tool used – surveyplanet.com. Responses are summarized herein and detailed responses are available in Word, .pdf or Excel format upon request.

**Note:** The results reported can only be considered the opinions of the survey participants. They cannot be generalized to represent the entire LA County employer population as a whole.

## Contact Information of Respondents to Date: 27 Responses - 22 Companies

---

Respondent Contact Information Removed

# Survey Results

Below are summary survey results. Detailed results are available upon request in Word, .pdf or Excel.

## Impacted by Defense budget reductions

Type	Count	% of Responses
Have experienced loss of employment of at least 5% and/or are facing loss	5	12.5%
Experiencing or facing imminent loss of sale or production of at least 25%	3	7.5%
Prime	3	7.5%
1 <sup>st</sup> Tier	3	7.5%
2 <sup>nd</sup> Tier	7	17.5%
3 <sup>rd</sup> Tier	8	20%
Other	4	10%
Not impacted	7	17.5%
<p>Other Descriptions: Largest supplier to Boeing for sheet metal on C17; vendor to prime, 1<sup>st</sup>-3<sup>rd</sup> tier supplies many of whom affected; OEM; provides wireless components and connectivity circuits for Military applications. SMC is an air force agency; defense cuts impact us differently than contractors. Civilian funding is separate budget item from program funding.</p> <p>We experienced a loss of employment of at least 5% and/or are facing an imminent threat of employment loss</p>		

## If looking for employees with new skills sets this need is due to?

Type	Count	% of Responses
New Product Design	12	16%
New Production Line/Product	8	10.7%
New Industries Targeted/Served	6	8%
New Technology/Software/Equipment	16	21.3%
Maintaining Production Levels Consistent with Customer Requirements	10	13.3%
Maintaining Quality Levels Consistent with Customer Requirements	15	20%
Not looking or employees with new skill sets	4	5.3%
Other	4	5.3%
<p>Other Descriptions: Always looking for qualified engineers/programmers/tool designers/inspectors; aging workforce, constantly hiring in one engineering discipline or another</p> <p>We continuously need new engineers, scientists and computer programmers with the latest technical skills and good teamwork.</p>		

## Trying to increase veteran recruitment?

Response	Count	% of Responses
Yes	15	55.6%
No	12	44.4%

Notes Provided by Respondents: Prefer to hire vets due to crossover in required skills; bad experience with a batch of non-tailored resumes; survey forwarded to HR; always focused on veterans; we do hire vets but do not have a formal program in place to specifically manage the hiring of vets

## What type of training do you currently provide to ENGINEERING related employees?

Response	
A wide range of short classes on technical and business skills	Model Based Definition
Aerospace related compliance standards	Model Based Design
Agile Engineering	NASA Certification
Air Force	New Design Trends
AS 9100	New Manufacturing Trends
Assembly	Non-Destructive Testing
CAD/CAM	None – expected to have training and experience when they arrive
CATIA and NX Design, NX 10	On the Job
Communication and Team Building	Peer Training
Computational Fluid Dynamics	Pneumatic (machinist, then can move up)
Corporate Orientation	Process Training
Corporate Sponsored Degrees	Project Management/Earned Value Management
Design for Reliability	Risk Management
DoD Acquisition Process	Rugged Design & Ruggedization
Electro-mechanical Technician Training	Satellite
Electro Static Discharge	Sensors
ETP Funded classes as required	Shock Vibration
Excel	Software Development
Finite Element Analysis	Software Programming
FMEA	Software specific training
GD&T	Solid Works
IPC-A-610	Space Professional Development
J-Standard Certification	Structural Dynamics
J-STD-001	System Specific Training
Launch	Systems Engineering
Leadership	Testing
Mastercam	Thermal Analysis & Design
Metrology Hardware Applications	Vendor supplied training on different types of production equipment
Metrology Software Applications	

### What in-house training delivery methods do you use?

Type	Count	% of Responses
Instructor Led/Classroom	19	18.4%
Instructor Led/Shop Floor	7	6.8%
OJT – Live Production	16	15.5%
Read and Understand	16	15.5%
Job Shadowing	16	15.5%
Self-Paced Online Learning	12	11.7%
Tuition Assistance Program for College Coursework	12	11.7%
Other	5	4.9%
Other Descriptions: ETP through El Camino College		

### Do you need to hire Engineers?

Type	Count	% of Responses
Aerospace Engineer	15	17.2%
Electrical Engineer	15	17.2%
Mechanical Engineer	18	20.7%
Manufacturing Engineer	13	14.9%
Process Engineer	7	8%
Production Engineer	6	6.9%
Other - List below	9	10.3%
No - we do not need to hire Engineers	4	4.6%
Other Descriptions: CNC Programmers, Tool Designers, Trained Machinists, Scheduling & Planning Engineers Computer, thermodynamics, aerospace/astronautical, systems, Software		

### What other Engineering-Related job openings do you have available?

Type	
Applications Engineer CATIA & Abaqus	No - we do not need to hire Engineers
CNC Programmer	Project Engineer – mid to senior
Design Engineer	OBD Senior Engineer
Electrical Engineer (multiple)	Quality Inspector/Quality Engineering and Design
Electronic Equipment Service Technician	See jobs website of most respondents for openings
Engineer LTWTA Subsystems	Software Sales Engineer
Engineering Specialist - mid	Structural Analysis Engineer
Industrial Engineer (mid level)	Systems Engineers
Mechanical Engineers/Mechanical Designer	Technical Engineer
Member of the Technical Staff - entry level	Test Engineer
Mold Engineer	Vehicle Senior Engineer

What related job openings do you foresee in next 12-24 months?

Type	
Aerospace Engineer	No - we do not need to hire Engineers
Applications Engineer CATIA & Abaqus / Dimensional Metrology	Project Engineer - mid
CNC Programmer	Quality engineer/ QA
Design Engineer / Ruggedized Military Products	Sales Engineer – Dimensional Metrology
Electrical Engineer (multiple)	See jobs website of most respondents for openings
Engineer Electronic Test Equipment	Software Engineers
Engineering Specialist - mid	Software Sales Engineer
Finite Element Analyst	Structural Analysis Engineer
Industrial Engineer	Systems Engineering
Infor LN ERP Technical Systems Analyst	Technical Engineer
Mechanical Engineer/Mechanical Design	Test Engineer
Member of the Technical Staff - entry	Thermal Engineer
NDT Inspector Level 2	Tool Designer
NDT Inspector Level 2 /Quality Inspector	

Do you have positions in the field of engineering that DO NOT REQUIRE a college degree?

Response	Count	% of Responses
No – all require a degree	9	33.3%
Yes – we have some that DO NOT require a degree	18	66.7%
<b>Types Listed</b>		
Applications Engineer (CATIA, ENOVIA)		
Applications Technicians – Dimensional Metrology		
CNC Programming		
Drafting		
Engineering Technician		
Lab Technician		
Manufacturing Engineering		
Manufacturing/Production Jobs		
Non Destructive Testing Level 2		
Plastics Mechanic		
Product Technical Specialist		
Quality Inspection		
Solid Rocket Motor Operator		
Technicians / R&D Technicians		
Tool Design		
Will accept sufficient industry experience		
Other Descriptions: <i>Most of our positions could be filled through vocational, junior college or OJT training (from)</i> All require a degree except Electronic Equipment Service Tech requires only an Associate's		



What traits and skills are missing in the current applicant pool for qualified engineering candidates?

Type
Accountability
Assertive, courage to take on risky projects
Blueprint
CAM Applications (Mastercam, CATIA etc.)
Can-do attitude
Career oriented
Cleanroom experience
Communication Skills
Cybersecurity
Dimensional Metrology
Electro-mechanical design and design for manufacturing
Electronic Warfare
Experience / Experience working with NASA and MIL standards
GD&T Theory
Hands on manufacturing experience
High End MS Office Skills (Excel and Access Databases)
Honest assessment of their worth/self-assessment of knowledge
Information experience
In-process inspection
Magnetic Transformer Industry
Mastercam and PC DMIS
Math fundamentals
Millennial Skill Sets do not match up with expectations
Model Based System Engineering
Multi task in a fast-paced environment
Practical Knowledge
Presentation Skills
Quality Control
RADAR
Real life technical training in Model Based Definition (Solid Works/CATIA)
Realistic Expectations
Relevant experience
Software (not scripting) and Systems Engineering
Solenoids and solenoid valves
Space experience and Air Force acquisition experience
We look for well-rounded individuals with technical competencies as well as communication and project management skills
Work ethics
Works well with staff- Teamwork

Do you have job descriptions available identifying knowledge, skills, abilities required for engineering roles?

Response
Companies all responded to contact them directly or check their careers websites

Are you aware that State and Federal funds are available to fund Apprenticeship?

Response	Count	% of Responses
Yes	14	51.9%
No	13	48.1%
Other Descriptions:		

Would you benefit from having access to a pipeline of workers trained in a core/baseline curriculum?

Response	Count	% of Responses
Yes	24	88.9%
No	3	11.1%
Other Descriptions: Very difficult to recruit and train these people in-house. We are small enough that in-house training is a serious challenge Currently unable to fill positions in the machine operator category. Yes, but economy still "poor" Employees are further advanced		

Are you interested in working with high school or college students as Pre-Apprentices?

Response	Count	% of Responses
Yes	21	77.8%
No	6	22.2%
Other Descriptions: have mfg. starter positions requiring HS diploma/GED; must be at least 18 years old and HS graduate; already involved in a LaunchPath program and don't have bandwidth at this time for another program; I like the idea but the company needs to buy into it more		

Are you interested in a Pre-Apprenticeship and/or Apprenticeship (earn & learn) program customized to your needs?

Response	Count	% of Responses
Yes – would consider hiring a high school or college student as a Pre-Apprentice and/or Apprentice	17	39.5%
Yes – I have incumbent workers I would consider enrolling in a program	6	14%
Yes – I am interested in a customized program for my company	12	27.9%
No – not interested	8	18.6%
Other Descriptions:		
We would be interested in both the engineering and CNC Machinist / operator areas		
Currently working with Goodwill Industries (Tracy DiFilippis) and the U.S. Department of Labor Office of Apprenticeship (Richard Davis) to develop an Apprenticeship program for the company for hourly production level employees		
Prefer college students		
Not at this time but if we grow yes		
Yes, I would consider hiring high school or college students and Yes I have incumbent workers that I would consider enrolling		

Interested in participating in the SBWIB manufacturing sector partnership meetings to identify skill gaps in the region and build a workforce pipeline in the area?

Response	Count	% of Responses
Yes	17	63%
No	10	37%
Other Descriptions:		

Interested in participating in an Apprenticeship Committee?

Response	Count	% of Responses
Yes	16	59.3%
No	11	40.7%
Other Descriptions: Need to know more about requirements and time commitment		

Does company's workforce currently have union representation?

Response	Count	% of Responses
Yes	7	25.9%
No	20	74.1%
Other Descriptions: Need to know more about requirements and time commitment		
Electronic and Space Technicians EAST		

Is there anything you'd like to add to better serve your needs?

Response	Count	% of Responses
Other Descriptions:		
Would love to see resumes of interested candidates)		
These are all very important issues to fix. Unfortunately, I have devoted my time to other volunteer organizations and cannot help out at the moment. Keep up the good fight bringing manufacturing jobs back to Southern California!		
Thank you for tackling this need in the industry		