

Manufacturing Strategic Plan

Southeast Region (includes Cape & Islands)

MAKE IT

in Massachusetts

Workforce Skills Cabinet Staff:

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Gap Analysis Overview

- First Line Production Supervisor of Production & Operation Workers
 - Gap Projection: -65.3
- Production Worker (Machinists)
 - Gap Projection: 131
- Welders, Cutters, Solderers & Braziers
 - Gap Projection: 455 (employers in region have given up on advertising; source directly via vocational schools)
- Maintenance & Repair Worker, General
 - Gap Projection: -306
- Sewing Machine Operators
 - Gap Projection: 95 (not reflective of actual need as hiring is done via employee referral & word of mouth among the immigrant communities)

Demand Deep Dive Detail

* source – Burning Glass

Occupation Name & SOC Code	Educational Requirements	Projected Employment Base	Demand STAR	Supply Gap (Ratio)	Training Target Based on Supply Gap	Key Regional Employers
<p>1. First Line Supervisor of Production & Operating Workers SOC Code: 51-1011.00 Also called: Mfg Supv, QA Supv, Shift Supv, Team Leader, Production Mgr</p>	<p>X Less than Bachelors _ Associates X Certificate (Credit) _ Non-Credit Training X High School <input type="checkbox"/> Bachelors <input type="checkbox"/> Masters +</p>	<p>2246</p>	<p>4</p>	<p>-65.3</p>	<p>It is expected that the training target will be geared more towards incumbent workers with the intent on building a pipeline from the UI and grads not going to college as well.</p>	<ul style="list-style-type: none"> • AccuRounds • Acushnet Company/Titleist • Ahead, LLC • Boston Gear & Machine • Cape Cod Potato Chips • Cheer Pack North America • CBM Industries • Decas Cranberry Products • Five Star Companies • Harvey Building Products • Johnson & Johnson • Morgan Advanced Materials • North Easton Machine Co • Paramount Tool • Randolph Engineering • Seamless Marine • SenCorp White • Sharp Manufacturing • Stone Tek • Symmons Industries • Tech-Etch • Tegra Medical • Twin Rivers Technology • Zildjian Cymbals • Zimmer, Inc

Demand Deep Dive Detail

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Occupation Name & SOC Code	Educational Requirements	Projected Employment Base	Demand STAR	Supply Gap (Ratio)	Training Target Based on Supply Gap	Key Regional Employers
<p>2. Machinist SOC Code: 51-4041.00 Also called Machine Operator, Journeyman Machinist, Tool Room Machinist , includes CNC operators</p>	<p>X Less than Bachelors _ Associates _ Certificate (Credit) X Non-Credit Training X High School <input type="checkbox"/> Bachelors <input type="checkbox"/> Masters +</p>	<p>1298</p>	<p>4</p>	<p>162</p>	<p>It is expected that the training target will be both incumbent and pipeline from the UI and grads populations not going to college from both Voc Tech and the Comprehensive school. Other target based are from Housing Developments , Department of Transitional Assistance, Veterans, and Women.</p>	<ul style="list-style-type: none"> • AccuRounds • Acushnet Company • Ahead, LLC • Autocam Medical • Blount Fine Foods • Bluefin Robotics • Brodeur Machine Co • Electroswitch • Evans Machine Co • Fairhaven Shipyard • FH Peterson Machine • Hubbell ,Inc • Jet Machined Products • Johnson & Johnson • Lockheed Martin • Maplewood Machine • North Easton Machine • Nye Lubricants • Precix • Rexa, Inc • Richard’s Micro Tool • Rothtec • Standex-Meder Electronics I • South Shore Mfg • Symmons Industries

Demand Deep Dive Detail

* source – Burning Glass

Occupation Name & SOC Code	Educational Requirements	Projected Employment Base	Demand STAR	Supply Gap (Ratio)	Training Target Based on Supply Gap	Key Regional Employers
<p>3. Welders, Cutters, Solderers, & Braziers SOC Code: 51-4121.00 Also Called: Fabrication Welder, Welder-Fitter, MIG Welder</p>	<p>X Less than Bachelors _ Associates Certificate (Credit) X Non-Credit Training X High School <input type="checkbox"/> Bachelors <input type="checkbox"/> Masters +</p>	1037	3	455	<p>It is expected that the training target will be both incumbent and pipeline from the UI and grads populations not going to college from both Voc Tech and the Comprehensive school. The challenge with this occupation is that welding requirements vary by employer. Some require a high school diploma and completion of employer-based welding tests. Other employers look for a certificate or undergraduate degree from a technical school, vocational school or community college.</p>	<ul style="list-style-type: none"> • AccuRounds • Davico • Electroswitch • Evans Machine Company Inc • Factory Five • Fairhaven Shipyard • FH Peterson Machine Corp. • Gladding-Hearn Shipbuilding • Horacio's • HTP Comfort Solutions • Jet Machined Products • North Easton Machine Co, Inc. • Seamless Marine • South Shore Boatworks • Tech-Etch • TMH Machining & Welding

Demand Deep Dive Detail

* source – Burning Glass

Occupation Name & SOC Code	Educational Requirements	Projected Employment Base	Demand STAR	Supply Gap (Ratio)	Training Target Based on Supply Gap	Key Regional Employers
4. Maintenance & Repair Worker, General SOC Code: 49-9071.00 Also called: Equipment Engineering Tech, Maintenance Mechanic, Maintenance Worker	<input checked="" type="checkbox"/> Less than Bachelors <input type="checkbox"/> Associates <input type="checkbox"/> Certificate (Credit) <input checked="" type="checkbox"/> Non-Credit Training <input checked="" type="checkbox"/> High School <input type="checkbox"/> Bachelors <input type="checkbox"/> Masters +	3595	4	-306	It is expected that the training target will be both incumbent and pipeline from the UI and grads from VTs and Comprehensive schools not going to college .	<ul style="list-style-type: none"> • AccuRounds • Acushnet Company • Ahead, LLC • Blount Fine Foods • Boston Gear & Machine • Cape Cod Potato Chips • Cheer Pack North America • CBM Industries • Decas Cranberry Products • Five Star Companies • Evans Machine Company, Inc • FH Peterson Machine Corp. • Harvey Building Products • Jet Machined Products • Joseph Abboud • North Easton Machine • Ocean Spray Cranberries • Precix

Demand Deep Dive Detail

* source – Burning Glass

Occupation Name & SOC Code	Educational Requirements	Projected Employment Base	Demand STAR	Supply Gap (Ratio)	Training Target Based on Supply Gap	Key Regional Employers
5. Sewing Machine Operator SOC Code: 51-6031.00 Also called: Sample Maker, Machine Operator, Line Closer, Prototype Sewer	X Less than Bachelors _ Associates _ Certificate (Credit) X Non-Credit Training X High School <input type="checkbox"/> Bachelors <input type="checkbox"/> Masters +	1307	3	95	Supply gap may not be accurate based on conversations with employers in region as most hiring is done through word of mouth and or walk-ins off the street. Niche, Inc recently hired 30 from the local ESOL population.	<ul style="list-style-type: none"> • A & A Products • American Engineering Fabrics, Inc • Better Image Apparel • DarnIt! • Fall River Apparel • Joseph Abboud • Matouk, Inc • Merrow Manufacturing • New England Water Jet Cutting • Niche, Inc • Penny Pockets • Precision Leather Goods • US Saddle Bags • Vanson Leathers

Demand Deep Dive Sector Detail

Manufacturing Sector	Business Types	Key Regional Employers
Precision Parts	<p>Number of establishments. Precision Machining is a subcategory of manufacturing, a component industry of fabricated metals and a stand-alone industry under NAICS 333327: Aerospace, Defense, Medical, Automotive; Custom Work; Doctor Blades (printing); Industrial Material Handling Systems</p>	<p>Accurounds, Potentia Holdings LLC; North Easton Machine Company; Evans Machine Co; Bendon Gear; Tech Etch; Depuy Synthes Companies; Flexco Concepts; Lockheed Martin, Five Star Companies, Tegra Medical, Raytheon, General Dynamics, GE, Precix, Atkore International, Maplewood Machine,, Johnson & Johnson, Belcan, Teufelberger Fiber Rope Corp, Randolph Engineering,, HTP Comfort Solutions LLC; Symmons Industries, Inc; Poyant, Blount Fine Foods, Morgan Advanced Materials.</p>
Welding	<p>NAICS 333992 - Welding and Soldering Equipment Manufacturing - This industry comprises establishments primarily engaged in manufacturing welding and soldering equipment and accessories (except transformers), such as arc, resistance, gas, plasma, laser, electron beam, and ultrasonic welding equipment; welding electrodes; coated or cored welding wire; and soldering equipment</p>	<p>Horacio’s, Inc; MA Automation Corporation; SenCorp, Inc; Bobby T’s Machine, Davico, Epec Engineered Technologies, Reliable Truss, Dartmouth Building Supply, Edge Tech, Flexo Concepts, Ever Source, ITPI Composites. Whaling City Iron, Marine Hydraulics,</p>
Ship/Boat Building	<p>NAICS Code 336611 - Ship Building and Repairing is a final level code of the Manufacturing Sector. There are 381 companies classified in this industry in the USA with an estimated employment of 104,760 people.</p>	<p>Gladding-Hearn Shipbuilding/Duclos Corp; Cape Cod Shipbuilding Co, Brownell Boat, East Coast Fabrications, New Bedford Ship Supply, Ocean Marine Fabricating, TMH Machining & Welding, Concordia Company, Davis & Tripp, West Marine, Jose Matos Marine Repair, South Shore Boatworks, Bethlehem Steel Company, Son’s Marine and Industrial, American Overseas Marine Corp, Avalon Bay Shipyard LLC, Cape Cod Shipbuilding, LWS Inc., Antonio Macedo, Triad Boatworks, Teufelberger Fiber Rope Corp.</p>
Appliances	<p>NAICS 335220 - Major Household Appliance Manufacturing -This industry comprises establishments primarily engaged in manufacturing household-type cooking appliances, household-type laundry equipment, household-type refrigerators, upright and chest freezers, and other electrical and nonelectrical major household-type appliances , hot water heaters , garbage disposal units and sewing machines</p>	<p>Whirlpool Corporation; Merrow Sewing Machine Company, Stan & Paul’s , Nate Lions, Advance Air and Heat Co, Cape Cod's Barbecue Grill, Fireplace & Patio Superstore, HTP Comfort Solutions LLC, The O’Keefe Group LLC, Advanced Compactors, LLC.</p>

Supply Deep Dive Overview -Training Providers

1. First Line Supervisor of Production & Operation Workers
 - Bristol Community College, Cape Cod Community College, Massasoit Community College. MassMEP (customizable on-line training), Umass Dartmouth, Bridgewater State University, Quincy College
2. Production Workers (Machinists)
 - Bristol Community College, Cape Cod Community College, Blue Hill Regional Technical High School GNB Voc Tech, Bristol Plymouth Voc Tech, Dighton-Rehoboth VT, Old Colony Voc Tech, South Shore Voc Tech, Southeastern Regional VT, Tri-County Regional Vocational Technical High School ,MassMEP (customizable on-line training)
3. Welders, Cutters, Solderers, & Braziers
 - GNB Voc Tech, Bristol Plymouth Voc Tech, Old Colony Voc Tech, South Shore Voc Tech, Upper Cape Cod Regional Technical High School, Southeastern Regional VT, Tri-County Regional Vocational Technical High School , MassMEP(customizable on-line training)
4. Maintenance & Repair Worker, General
 - South Shore Voc Tech, Blue Hill Regional Technical High School , Tri-County Regional Vocational Technical High School Peterson School, MassMEP – Instructor lead or (customizable on-line training), Mass Maritime Academy
5. Sewing Machine Operators/Water Jet Cutters
 - Providers: Update - One of our CBO is currently working on securing space in the heart of NB to create a training lab. The CBO has a skilled industrial stitching instructor. The intention is to train the unrepresented populations. The WB will work with companies from Fall River that have been awarded Capital Skills grants for sewing machines (in planning stage).

Note: All MassMEP on-line classes also available in Spanish

Supply Deep Dive Detail - Credentials

	Credential Asset Map	Notes
Occupation & SOC Code	Welders, Cutters, Solderers & Braziers 51-4121.00. This includes Fabrication Welder, Welder-Fitter, MIG and TIG Welding.	Needed for Off-Shore Wind G2, G4 and G6 welders
Training Provider	Greater New Bedford Voc Tech; Old Colony Voc Tech; Bristol Plymouth RTHS; Diman Voc Tech, Upper Cape Voc Tech; South Shore Voc Tech; SE Regional Voc Tech	Need VTs to become Accredited Test Facilities (ATF). This will provide increased awareness and recognition throughout the welding industry and the ability to provide our job seekers with a certification in welding rather than just a certification for completion of a training class. ATF Facility Accreditation information page.
Type of Training	MIG , TIG, stick Welding w/OSHA 10 classroom & hands-on	
Annual Capacity	270	
Number of Hours	50 - 130 hours	Fifty hours has proven to be ineffective unless the trainee has some welding background. Need curriculum and number of hours offered the same or close at Voc Techs. Curriculum for GNBVT needs to be upgraded.
Type of Credential & Title of Credential	Welding certificate of completion from Vocational High School; OSHA 10 Certificate	Need a certificate from American Welding Society (AWS) who can provide the testing
Credential Provider	Department of Labor – OSHA 10	
Integrated/Accelerated	Accelerated	Welders-to-be are instructed in welding techniques, metallurgy, blueprint reading, and safety procedures. Learning the welding trade may take anywhere from a few months to a few years.
Online/Classroom/Work-based	Classroom	
Pell-eligible	No	
Fee	\$8,500 to \$20,000	

Supply Deep Dive Detail Credentials

	Credential Asset Map	Notes
Occupation & SOC Code	Maintenance & Repair Worker, General 49-9071.00. This includes Equipment Engineering Tech, Maintenance Mechanic, Maintenance Worker.	FY20 curriculum to include a complete program for pipeline training.
Training Provider	SS VocTech	Pilot in spring '19. Plan to replicate at all VTs. Looking to expand to MassMEP – Instructor lead or (customizable on-line training), Mass Maritime Academy
Type of Training	Classroom	Elements of Peterson school training. Entertaining on-line training.
Annual Capacity	10-15	
Number of Hours	90	Looking to expand the number of hours in FY20.
Type of Credential & Title of Credential	OSHA 10 Certificate	Planning for MACWIC Levels 1&2 for an industry recognized credential if training done through a VT with MassMEP as the provider.
Credential Provider	Department of Labor – OSHA10	
Integrated/Accelerated	Accelerated	
Online/Classroom/Work-based	Classroom	
Pell-eligible	No	
Fee	\$30,000	

Supply Deep Dive Detail Credentials

	Credential Asset Map	Notes
Occupation & SOC Code	Sewing Machine Operators 51-6031.00 . Includes sample maker, machine operator, line closer, prototype sewer	Need to develop training curriculum to be used at different locations. OJT training plans currently being used.
Training Provider	Individual Instructor on-site at Fall River Manufacturer. Niche also has experienced stitches for Military and Contract Sewing	Working on a New Bedford site through CEDC Community Economic one of our Community Based Organization. On-site skilled sewing machinists. Need line item for planning costs.
Type of Training	7 weeks @ 24 hours per week	
Annual Capacity	78 (6 cohorts @ 13/cohort)	
Number of Hours	160	
Type of Credential & Title of Credential	N/A	Need to develop a credential
Credential Provider		TBD
Integrated/Accelerated	Integrated to possibly include ESOL classes	
Online/Classroom/Work-based	Classroom/hands-on; dedicated space at manufacturer; individuals are hired by local manufacturers once they complete the program	Also looking to create Sewing Machine Operator Collaborative between New Bedford and Fall River workforce board areas. Need line item for planning costs.
Pell-eligible	No	
Fee	TBD	

Supply Deep Dive Detail Credentials

	Credential Asset Map	Notes
Occupation & SOC Code	Machinists 51-4041.00. This includes machine operator, journeyman machinist, tool room machinist, Computer Numerical Control (CNC).	
Training Provider	Greater New Bedford Voc Tech; Old Colony Voc Tech; Bristol Plymouth RTHS; Diman Voc Tech, Upper Cape Voc Tech; South Shore Voc Tech	
Type of Training	Classroom & hands on	Training includes CAD/CAM and solid works related classes.
Annual Capacity	96	
Number of Hours	270 - 585	
Type of Credential & Title of Credential	Certificate of completion, OSHA10 card New credential - Level 1 & 2 Industry Recognized credential pre-apprenticeship ready	Need to incorporate the MACWIC Level 1 & 2 throughout all the VTs providing this training.
Credential Provider	MassMEP Level 1& 2 Testing	
Integrated/Accelerated	Accelerated	
Online/Classroom/Work-based	Classroom/work-based	
Pell-eligible	No	
Fee	75,000	

Supply Deep Dive Detail Credentials

	Credential Asset Map	Notes
Occupation & SOC Code	First-line Supervisor of Production & Operators Workers SOC Code 51-1011.00	FY20 curriculum to include a complete program not just one class for pipeline training. This includes Mfg Supv, QA Supv, Shift Supv, Team Leader, Production Mgr.
Training Provider	Bristol Community College	Other possible providers Cape Cod Community College, Massasoit Community College. MassMEP (customizable on-line training), Umass Dartmouth, Bridgewater State University, Quincy College.
Type of Training	Effective Communication and Problem Solving	Incumbent Worker Training
Annual Capacity	48	
Number of Hours	16	
Type of Credential & Title of Credential	Certificate of completion	
Credential Provider	Bristol Community College	Looking to expand to college credits and other credentials
Integrated/Accelerated		
Online/Classroom/Work-based	Classroom	
Pell-eligible	No	
Fee	\$300 per hour	

Supply Deep Dive Detail Credentials

	Credential Asset Map	Notes
Occupation & SOC Code	First-line Supervisor of Production & Operators Workers SOC Code 51-1011.00	FY20 curriculum to include a complete program not just one class for pipeline training. This includes Mfg Supv, QA Supv, Shift Supv, Team Leader, Production Mgr.
Training Provider	Bristol Community College	Other possible providers Cape Cod Community College, Massasoit Community College. MassMEP (customizable on-line training), Umass Dartmouth, Bridgewater State University, Quincy College.
Type of Training	Principles of Lean Manufacturing	Incumbent Worker Training
Annual Capacity	48	
Number of Hours	24	
Type of Credential & Title of Credential	Certificate of completion	
Credential Provider	Bristol Community College	Looking to expand to college credits and other credentials
Integrated/Accelerated		
Online/Classroom/Work-based	Classroom	
Pell-eligible	No	
Fee	\$300 per hour	

Supply Deep Dive Detail Credentials

	Credential Asset Map	Notes
Occupation & SOC Code	First-line Supervisor of Production & Operators Workers SOC Code 51-1011.00	FY20 curriculum to include a complete program not just one class for pipeline training. This includes Mfg Supv, QA Supv, Shift Supv, Team Leader, Production Mgr.
Training Provider	Bristol Community College	Other possible providers Cape Cod Community College, Massasoit Community College. MassMEP (customizable on-line training), Umass Dartmouth, Bridgewater State University, Quincy College.
Type of Training	Blueprint Reading	Incumbent Worker Training
Annual Capacity	48	
Number of Hours	8	
Type of Credential & Title of Credential	Certificate of completion	Looking to expand to college credits and other credentials
Credential Provider	Bristol Community College	
Integrated/Accelerated		
Online/Classroom/Work-based	Classroom	
Pell-eligible	No	
Fee	\$300 per hour	

Demand Supply Gap Analysis

Occupation & SOC Code	Demand Target		Projected Employment Base				Supply Gap (Ratio)		Training Target	Notes to Supply Gap	
	Annual		<i>Demand Star 4</i>				2019	2023			
1. <i>Production Worker</i> Machinist SOC: <i>51-4041</i>	146		Training Source	Total Annual FTE Enrollment		Total Annual Graduates Completers		-61	358*	Many employers in the area are looking for 2-5 years of experience when advertising, however will accept individuals with a strong work history that have been 'upskilled'.	*over the course of 4 years; Currently the only credential provided by the Vocational schools is an OSHA certificate
				2019	2023	2019	2023				
			Secondary Grade 12	75	300	38	152				
			Community Colleges (New)	-	-	-	-				
			Community Colleges (Inc)	-	-	-	-				
			Grant Funded (New)	57	268	53	244				
			Company Funded (Internal)	-	12	-	12				
			OSCC (UI)	233	233	47	47				
			Registered Apprenticeship (INC)	-	6	-	6				
			Registered Apprenticeship (New)	-	-	-	-				
Total	280	819	85	461							

Demand Supply Gap Analysis

Occupation & SOC Code	Demand Target		Projected Employment Base				Supply Gap (Ratio)		Training Target	Notes to Supply Gap			
	Annual	—	Star Demand 3				2019	2023					
2. Welders, Cutters, Solders & Braziers SOC 51-4121.00 Structural Metal Fabricators and fitters SOC	106						289	729					
			Training Source		Total Annual FTE Enrollment						Total Annual Graduates Completers		
				2019	2023	2019					2023		
			Secondary Grade 12	278	1,112	139					556		
			Community Colleges (New)	-	-	-					-		
			Community Colleges (Inc)	-	-	-					-		
			Grant Funded (New)	78	312	70					281		
			Company Funded (Internal)	-	-	-					-		
			OSCC (UI)	177	177	35					35		
			Registered Apprenticeship (INC)	-	-	-					-		
Registered Apprenticeship (New)	-	-	-	-									
Total	455	1,601	244	872									

Demand Supply Gap Analysis

Occupation & SOC Code	Demand Target		Projected Employment Base				Supply Gap (Ratio)		Training Target	Notes to Supply Gap																																												
	Annual	—	Demand Star 4				2019	2023																																														
4. First Line Supervisor of Production and Operating Workers SOC 51-1011.00	456		<table border="1"> <thead> <tr> <th rowspan="2">Training Source</th> <th colspan="2">Total Annual FTE Enrollment</th> <th colspan="2">Total Annual Graduates Completers</th> </tr> <tr> <th>2019</th> <th>2023</th> <th>2019</th> <th>2023</th> </tr> </thead> <tbody> <tr> <td>Secondary Grade 12</td> <td>75</td> <td>375</td> <td>38</td> <td>188</td> </tr> <tr> <td>Community Colleges (New)</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>Community Colleges (Inc)</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>Grant Funded (New)</td> <td>-</td> <td>12</td> <td>-</td> <td>12</td> </tr> <tr> <td>Company Funded (Internal)</td> <td>-</td> <td>12</td> <td>-</td> <td>12</td> </tr> <tr> <td>OSCC (UI)</td> <td>233</td> <td>233</td> <td>75</td> <td>375</td> </tr> <tr> <td>Total</td> <td>308</td> <td>632</td> <td>113</td> <td>587</td> </tr> </tbody> </table>				Training Source	Total Annual FTE Enrollment		Total Annual Graduates Completers		2019	2023	2019	2023	Secondary Grade 12	75	375	38	188	Community Colleges (New)	-	-	-	-	Community Colleges (Inc)	-	-	-	-	Grant Funded (New)	-	12	-	12	Company Funded (Internal)	-	12	-	12	OSCC (UI)	233	233	75	375	Total	308	632	113	587	- 343	- 1680		
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Demand Supply Gap Analysis

Occupation & SOC Code	Demand Target		Projected Employment Base				Supply Gap (Ratio)		Training Target	Notes to Supply Gap
	Annual	—	Training Source		Total Annual FTE Enrollment		Total Annual Graduates Completers			
				2019	2023	2019	2023	2019	2023	
5. Sewing Machine Operators SOC 51-6031.00	84							-15	67	
			Grant Funded (New)	-	-	-	-			
			Company Funded (Internal)	50	250	30	192			
			OSCC (UI)	194	970	39	195			
			Total	244	1220	69	387			

Strategy – SWOT Analysis

❑ Strengths of the Manufacturing Training System

- Committed funding
- Capital Skills Grant Funding
- Committed employers
- Government support - we have a dedicated Manufacturing Caucus – need to further develop legislative advocacy strategies and actions
- Manufacturing critical part of the Commonwealth's economy for over 100 years
- We have leadership presence in the Manufacturing USA Institutes
- Our average salary is more than state average
- MA has much State support i.e. workforce, business support, finance, tax credits, international exports
- There are several existing collaboratives i.e. Advanced Manufacturing Collaborative (AMC), Southeastern Massachusetts Advanced Manufacturing Collaborative (SMAMC), MassMEP, MassTech Collaborative, Commonwealth Corporation
- Well positioned as world leaders in innovation
- We have world class Universities
- Manufacturing is 10%+ of state's GDP
- Over 7,500 companies and 252,000 employees
- Productivity in the state is at an all-time high
- Creation of Advanced Manufacturing Certificate Programs at our Vocational Schools
- Demand driven customized programs
- Registered Apprenticeships

Strategy – SWOT Analysis

❑ Weaknesses of the Manufacturing Training System

- Poor perception of manufacturing - People lack the proper information to know the benefits of working in manufacturing
- Retention - the average worker does not stay in the same position or industry for decades, more like seven years and they move on. It usually takes over two years for newcomers to be adept at specific skills — mathematical skills of measuring, technical skills for rolling, founding and slitting, and trouble-shooting skills
- Transportation
- It takes an average of 94 days to recruit employees in the engineering/research/scientific fields and an average of 70 days to recruit skilled production workers
- Wall between credit & non-credit courses
- Collaboration between manufacturers, community colleges, technical high schools and regional work force boards in order to create regionally-specific talent pipelines
- Large number of manufacturers are small, therefore have limited resources (\$\$ and time to train)
- Training tends to be grant driven vs. systematic training
- Reflective of needs and customers of the Career Centers – candidates tend to have lower expectations/abilities
- No post secondary direct preparation for high school students for manufacturing
- Career paths unclear
- High School Administrators have limited information about career opportunities in manufacturing

Strategy – SWOT Analysis

□ **Opportunities** for the Manufacturing Training System

- More companies should use co-ops with trade schools
- Disruptive new technologies
- Over the next five years , manufacturing companies are expected to expand employment by an estimated 65%
- Apprenticeships – Tax Credit
- Society must see manufacturing as a craft instead of a minimum wage job
- Engage human - machine convergence: Leaps in AI, sentient systems; re-defining role of humans vs. co-bots
- There are a number of game changing disruptive technologies, like additive manufacturing and the Internet of Things (IoT), that will increasingly help position the region to be a leader in advanced manufacturing’s “next wave” of innovation
- Expand industry partnership and apprenticeship opportunities so that students are increasingly matched with open industry positions and trained in critical skills necessary for a career in advanced manufacturing
- We now have better & more pathways for people to gain the skills needed for a job in today’s high-tech manufacturing sectors, whether teenagers in middle school or high school, college students or adults
- Ability to leverage funding models to scale training program models

Strategy – SWOT Analysis

❑ **Opportunities** for the Manufacturing Training System (cont.)

- We now have better & more pathways for people to gain the skills needed for a job in today's high-tech manufacturing sectors, whether teenagers in middle school or high school, college students or adults
- Career Pathways for non-college bound
- The baby boomers are not in a hurry to get out because the money is good, and they want to maximize income opportunity as long as they can. Employers should use the time for someone younger to be mentored by them
- Paid internships, providing the opportunity for them to learn a skill while making money
- Manufacturing companies have been loath to hire high school graduates in part because they feel they lack “soft skills”
- First year of the Advanced Manufacturing Certificate Program focused on advanced manufacturing, state and local education officials plan to eventually expand the strategy into other fields, such as HVAC, auto technicians, and electrical professions
- Excess capacity in post-secondary education
- State promoting other alternatives including manufacturing as a career opportunity vs. college
- Southeastern Massachusetts Advanced Manufacturing Collaborative (SMAMC) sector capacity
- Recruit via high school level by reaching out & educating guidance counselors about the possibilities of a manufacturing career
 - Wentworth 1 year certificate/2 year associates in Advanced Manufacturing

Strategy – SWOT Analysis

❑ Threats of the Manufacturing Training System

- Massachusetts has lost manufacturing jobs in recent years, threatening to drop out of the nation's top 10 markets
- No matter how many new pathways are established, one glaring problem remains: persuading people to commit to a career in manufacturing
- There is no sign that the skills gap for manufacturing is closing; it may be widening
- Lack of sustained funding
- Deloitte study found that five out of 10 manufacturing jobs remain open, including such positions as production workers, engineers, researchers, scientists, software engineers and operational managers
- The top reason why jobs go unfilled is the negative perception of the industry
- An aging manufacturing workforce
- Manufacturers report the most significant business impact of the talent shortage is their ability to meet customer demand
- Negative perception of manufacturing careers
- Rapid, continual, technological advancement within manufacturing make it more difficult to conduct career driven training
- Facilities Maintenance – Infrastructure - Maintenance

Strategy – Challenges

❑ Recruitment

- Finding talent
- CORI & SORI issues
- Placement General
- Drug Test Failure
- Not able to work 2nd and/or 3rd shift
- Transportation
- Reliability (soft skills overall)
- Day Care
- Lack of social skills - with the widespread use of social media technology, equate to lost people skills
- ESOL/ESL barriers

Strategy – Challenges

❑ Placement

- CORI & SORI issues
- Drug Test Failure
- Lack of transportation
- Lack of social skills
- Reliability (soft skills overall)
- New hires unwilling to work 2nd or 3rd shift

Strategy – Challenges

☐ Retention

- High turnover
- Excessive absenteeism and tardiness
- Transportation
- Expectation of immediate gratification and/or rapid promotion

Strategy – Challenges

❑ Technology

- Cyber attacks - the vulnerability of computer-controlled manufacturing machinery is especially troublesome for Massachusetts, where the manufacturing sector is both highly automated and global in scope
- Rapid Technology shifts - job market has changed and they have not

Strategies & Solutions

❑ Recruitment

▪ Solutions

- ✓ Career Center/Job Seeker, Signal Success for Adults, On-going Year 2
- ✓ Pilot a program to provide manufacturing as an alternative to college in High Schools – similar to college fairs – include other career paths that do not require college
- ✓ Manufacturers need to get creative in efforts to attract workers by meeting them where they're at today – not in the newspaper, radio, TV or billboards, but online. The more effective way to connect, especially with millennials, is through social media. Keep in mind that younger generations today aren't looking just for a career; they're looking for a positive culture focused on employee and community wellbeing. [Use video to highlight the benefits of working for your organization](#), and promote workplace culture as a primary asset.
- ✓ Allocate dollars to recruitment line item in our FY20 budget
- ✓ Do a better job of using our current social media outlets to for outreach to broader segments of populations
- ✓ Work more closely with employers in the marketing of our training programs with their incumbent workers to share through their social media network

Strategies & Solutions

- ❑ Training - Hectic employee schedules. When work, family life, and a many other demands drain employee energy, there's a risk that training adds to their stress. Worse still, intruding on employees' personal time with training sessions is a surefire way to make them resist (and even resent) training.
 - Solutions
 - ✓ Avoid face-to-face training on weekends or after-hours, and limit travel requirements for training
 - ✓ Consider using a [micro-learning](#) approach and deliver useful and relevant content in bite-sized chunks. Short videos, checklists, infographics and even gifs are simple micro-learning formats that make training easier to consume.
 - ✓ Communicate several concepts at once with clever graphics. They're a valuable time-saver for learners, as well as a welcome break from reading text in emails, reports, and newsletters.
 - ✓ Include four-year public institutions to develop courses and programs that create pathways for incumbent worker to transition to management positions
 - ✓ Prioritize short, straightforward assessments wherever possible. This provides employees with quick opportunities for feedback on their learning progress.
 - ✓ [Optimize training for mobile](#). Mobile features allow learners to access the LMS and training materials anywhere, any time – including on the train to work, or during their lunch break. This makes training so much more convenient.
 - ✓ In an environment in which companies can't depend on keeping talented individuals long term, the focus must shift towards the skills of the group. Use advanced workers to spread expertise and knowledge to others, don't just wait to find the skills needed. Grow your own and start making them out of the current workforce. Even if investing knowledge in workers that move on, the stage is set for groups to constantly keep developing upward.

Strategies - Solutions

❑ Technology

▪ Solutions

- ✓ Keeping up with and utilizing new technologies. Automation, the Industrial Internet of Things (IIoT), robotics, cloud computing and more...technology is advancing at warp speed, and most manufacturers struggle to keep up, let alone stay on the leading edge. By the time many IT departments have gone through the process of researching, getting approval, purchasing and installing new technology, a faster and more agile solution may have already emerged.
- ✓ Today, manufacturers should be taking note of these important developments:
- ✓ The Internet of Things (IoT) market is growing rapidly, with 3.6 billion connected devices used for daily tasks this year. [In 2019, this growth is expected to continue.](#) Fueled by 5G connectivity and advances in sensor technology, the manufacturing industry will see opportunities to drive growth by adopting IIoT (Industrial Internet of Things) devices to boost productivity, enhance product quality and reduce costs.
- ✓ As IoT and intelligent systems are more widely used, there will be an associated surge in the amount of data manufacturers generate. What's needed is the ability to analyze all this data. Enterprise Resource Planning (ERP) technology can help manufacturers manage volumes of data and formulate insights that lead to better decision-making.
- ✓ The best first step for incorporating useful technologies to help your organization grow profitably is to work with business consulting firms that have expertise in manufacturing that can help, as they have the insights to assist in selecting the most practical, cost-effective technologies and equipment, oversee implementation, train your team, and help you get the greatest ROI.

Strategy & Priority Settings

□ Priority Setting

1. Tackle recruitment challenges
2. Shorten the gap in Maintenance & Repair Workers, General
3. Shorten the gap in Supervisors of Production & Operation Workers
4. Incorporate more soft - skills (need for social skills) training in FY20 budget

Strategy & Priority Setting

- ❑ Year 2
 - Career Center/Job Seeker, Signal Success for Adult
 - Training for Maintenance, Recruitment Challenge, Training for Supervisors of Production & Operation Workers
 - Avoid face-to-face training on weekends or after-hours, and limit travel requirements for training.

- ❑ Year 3, 4 & 5
 - Consider using a [micro-learning](#) approach and deliver useful and relevant content in bite-sized chunks. Short videos, checklists, infographics and even gifs are simple micro-learning formats that make training easier to consume.
 - Communicate several concepts at once with clever graphics. They're a valuable time-saver for learners, as well as a welcome break from reading text in emails, reports, and newsletters.
 - Prioritize short, straightforward assessments wherever possible. This provides employees with quick opportunities for feedback on their learning progress.
 - [Optimize training for mobile](#). Mobile features allow learners to access the LMS and training materials anywhere, any time – including on the train to work, or during their lunch break. This might make training more convenient.

State Contribution

- Address identified statewide challenges
- Provide relevant data to inform the process
- Develop and coordinate training standards across regions
- Help to provide scale to the training programs in regions
- Identify innovative ways to support regions and training programs statewide
- Develop a brand and a vision for the statewide system
- Continue to provide coordination among regional training systems