

INSIDE

Focus

MANUFACTURING



Great industry, great future

Todd Bingham, president and CEO of the Utah Manufacturing Association, suggests that with a little help in a couple of areas — like more qualified workers and a bit of deregulation — the manufacturing sector has a bright future. It's already showing strong increases over the past few years

page F3

Manufacturing List:

Utah Manufacturing Regions
page 22

Issue Sponsor:



With a little help, manufacturing jobs can come back to Utah

Utah's manufacturing industry consists of approximately 3,500 companies that provide 125,000 jobs throughout the state. The output of the manufacturing industry represents more than 14 percent of the gross state product, whereas it accounts for only 9 percent of the state's employment. Almost 80 percent of the 3,500 Utah manufacturers employ 20 or fewer employees and, thus, these small businesses form the backbone of the Utah manufacturing industry.

Reports about the manufacturing industry generally focus on a decline of the number of jobs, largely due to manufacturers off-shoring production overseas and robots replacing production workers. However, the Utah manufacturing industry has experienced an upward trend over the past years. Since 2010, manufacturing employment has grown between 1.5 percent and 2.8 percent per year, adding more than 15,000 jobs between 2010 and 2016, according to data from the Bureau of Labor Statistics.

Manufacturing jobs also contribute to societal prosperity in Utah, as the average monthly manufacturing salary in Utah in 2015 was \$4,533, whereas the statewide average monthly wages across all industries was \$3,621, according to data from the Utah Department of Workforce Services. Thus, continuing the trend of bringing manufacturing jobs back to Utah is desirable and it is a realistic goal. Three key points can accelerate accomplishing it:

First, manufacturers can drive production back to the United States as global manufacturing economics

start to change. The cost advantage of off-shoring production has steadily declined for certain categories of products.

Manufacturers also report inherent problems with an off-shored supply chain, such as quality control, increased lead times, reverse engineering, stolen intellectual property and high freight costs, which are difficult to address.

Additionally, re-shoring, i.e., bringing production back to the United States, offers distinct advantages. It allows for decreasing product development cycle times, which in turn enables flexibility and a fast response time to customer and market demands. The Boston Consulting Group reports that the shifting economics of global manufacturing no longer justify off-shoring many products intended for the North American market. Some manufacturers are exploring the possibility or are already moving their production back to the United States. The nonprofit Reshoring Initiative documented that since the manufacturing employment low of September 2010, almost 250,000 manufacturing jobs have been brought back to the United States.

Today the number of manufacturing jobs returning to the United States is on par or exceeds slightly the manufacturing jobs leaving the United States. The Reshoring Initiative reports that the main reasons manufacturers cite for re-shoring their production are government incentives, availability of skilled workforce, proximity to customers and brand concerns.

Second, manufacturers need to embrace automation and robotics. Robots will replace manual labor jobs in the United States and around the world. However, they also create new high-skilled, high-paying manufacturing jobs including programmers, maintenance operators, quality and safety personnel and high-tech technicians, to name only few. While disagreement exists about how many jobs robots will eliminate, it is important for manufacturers to actively make the shift to automation and not be left behind. This includes adapting their administrative and operational systems, plant layout, and staffing and staff training. Throughout this shift the workforce must be actively educated and engaged about the new benefits and career opportunities that automation brings.

Third, firms should provide training to adapt the manufacturing workforce to a changing industry. Manufacturing jobs today are not the same as they were yesterday, in part due to the increasing influence of robotics and automation. Hence, the technological revolution that is changing the manufacturing industry also changes the nature of its jobs. Manufacturing jobs are now well-paid, high-tech jobs that often require information technology and programming skills, maintenance of precision equipment and engineering of automation and robotics equipment. Training is needed to keep the manufacturing workforce abreast of these changes.

Adapting to a changing industry is often overwhelming for small and medium-sized manufacturers. Limited



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Modern industry has a bright future... just a few things to tweak first

Today's modern manufacturer is an incredible entity — innovative, advanced, creative and the ultimate entrepreneur.

Manufacturers exist to make things from raw materials, creating value and new wealth by creating a quality of life for consumers. Being makers is inherent in their nature.

Advanced manufacturing has seized the imagination of the public. From TV shows to podcasts, we are enthralled with watching a television show about how to make baseballs, airplanes, composite materials and even doughnuts. It is a different industry than it was in our parents' and grandparents' generation — innovative, creative, advanced, automated, technological and amazingly interesting. Manufacturing is the engine that drives both the state and the U.S. economy.

Manufacturing is diversifying, expanding rapidly, increasing output and bringing us transformative technologies that will continue to mold the face of manufacturing as we now know it. We are charting new frontiers and supporting new types of jobs with amazing technological skill sets. This is the state of manufacturing.

The past year alone has brought us headlines of autonomous vehicles, promising new medical treatments and the smartest technology to date. As manufacturers, we are innovating and improving the human condition. We contribute significantly to the economy. Manufacturers produce our quality of life. They invest in the economy on a daily basis. For every dollar invested in manufacturing, another \$1.81 is added to the economy.

Manufacturers today support more than 18 million American jobs. Across

the state of Utah and the nation, confidence is increasing that the business climate will improve. Our future is filled with promise.

However, we still have our challenges, one of which is the increasing demand for a much more skilled and advanced workforce.

Today, more than 350,000 manufacturing jobs are unfilled. And, over the next decade, as many as 2 million jobs could go unfilled because we don't have enough people with the right skills for today's advanced manufacturing industry.

"Who are those people?" you ask.

They are people, who as critical thinkers and problem solvers, turn the unimaginable into reality. They develop code for machines and programs. They are scientists who daily discover advancements in various industries and technicians who advance automation and precision daily. All of those people make the engine of manufacturing turn the economy both here in the state and nationally.

To encourage more of today's individuals to seek a career in manufacturing, we need to tell our story more efficiently and much, much more loudly. We need to tell our story of success, advancement, innovation and creation — a story that relates to many of today's individuals seeking a career where they can be a part of something bigger than themselves; where they can be critical thinkers and problems solvers and be hired first for their minds and secondly for their hands.

That's today's manufacturing industry.

A second challenge to today's manufacturer is the increasing regulations on the industry. A recent National Association of Manufacturers study

found that manufacturers are subject to 297,696 regulations. And the cost of regulatory compliance for small manufacturers is nearly \$35,000 per employee per year.

It is absolutely possible to have safe workplaces and environmental stewardship at the same time our economy is experiencing robust growth. Regulatory reform — making regulations smarter, simpler and streamlined — is one of the quickest ways to create jobs and give manufacturers the confidence to expand.

To spur investment and job creation, effective business tax reform would:

- Reduce the U.S. corporate tax rate to 15 percent.
- Reduce taxes for small businesses and "pass-through" entities.
- Shift our system of international taxation to a modern and territorial one.
- Strengthen research and development incentives and provide immediate deductions for capital investments.

Such bold changes could result in a boost of more than \$3.3 trillion in investments and more than 6.5 million jobs for American workers.

There are three things the market doesn't bear: fear, uncertainty and doubt. Making the necessary changes in overall tax structure now will create optimism and confidence and stir investment in a very capital-intensive manufacturing industry.

Manufacturers want to be in the business of empowering Americans to better their lives. And we need the policies that empower us to do exactly that. Manufacturers are the dreamers, the makers, the doers and will continue to inspire and change the world for the better.

What Utah makes, makes Utah.



TODD BINGHAM

Utah Manufacturing Facts



Manufacturers in Utah account for 11.7 percent of the total output in the state, employing 9.1 percent of the workforce. Total output from manufacturing was \$17.24 billion in 2015. In addition, there were 125,300 manufacturing employees in Utah in 2015, with an average annual compensation of \$65,712 in 2015.

Manufacturing Output and Firms

Total Manufacturing Output (\$billions, 2015)	\$17.24
(Percent share of total gross state product)	11.7%
Manufacturing Firms in Utah (2014)	3,068

Employment and Compensation

Manufacturing Employment (2015)	125,300
(Percent share of nonfarm employment)	9.1%
Average Annual Compensation (Manufacturing, 2015)	\$65,712
(Nonfarm Businesses, 2015)	\$43,543

Sources: U.S. Bureau of Economic Analysis and the U.S. Census Bureau

Figure 1: Utah Manufacturing Output, in Billions of Dollars, 2005–2015

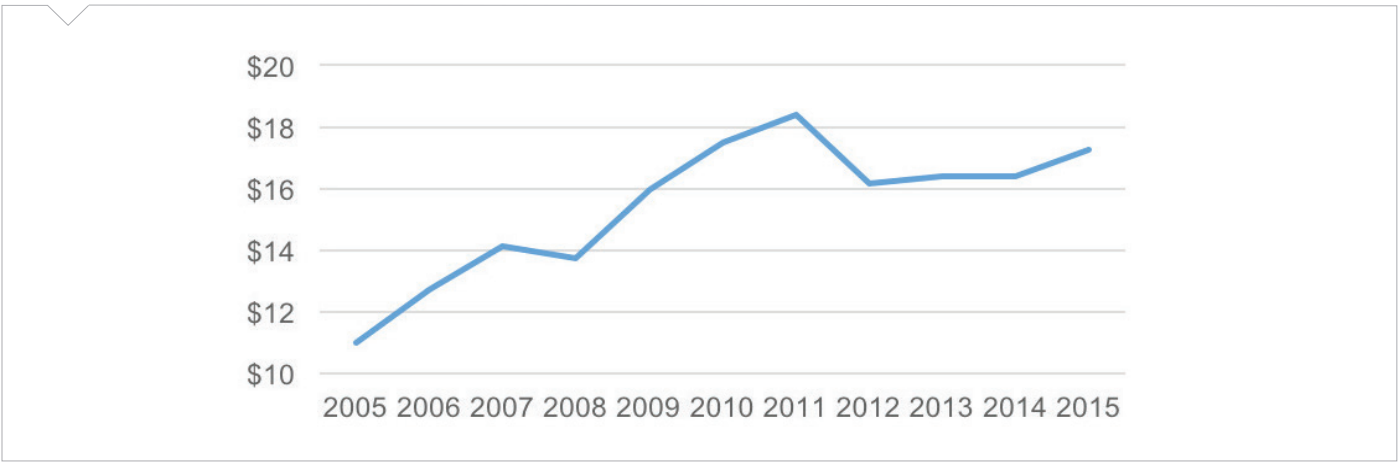
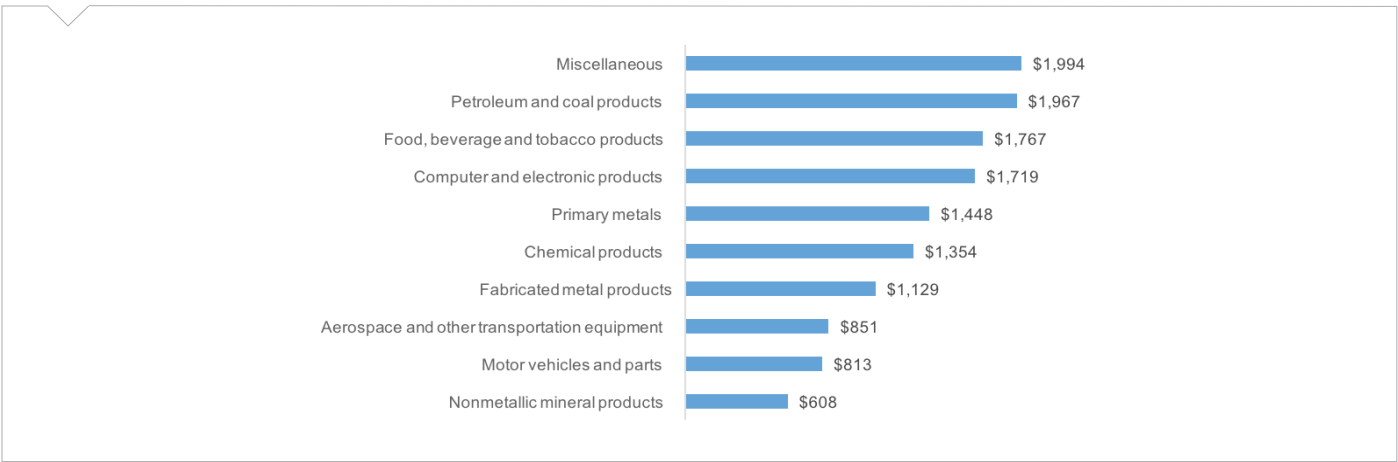


Figure 2: Top 10 Utah Manufacturing Sectors, in Millions of Dollars, 2014



Utah Export Facts

Manufacturers help to drive Utah's economy, with \$12.65 billion in manufactured goods exports in 2015. That same year, \$3.19 billion in exports was with our free trade agreement (FTA) partners. This helps create jobs in the state, and 19.90% percent of its employment stemmed from exports in 2011. Small businesses comprised 86 percent of all exporters in Utah.

Manufactured Goods Exports (\$billions, 2015)	\$12.65
(Percent share of total goods exports)	95.20%
Growth in Manufactured Goods Exports (2010–2015)	-3.60%
U.S. Jobs Supported by Goods Exports (2014)	61,251
Employment from Manufacturing Exports (Export share of manufacturing jobs, 2011)	19.90%
Small Business Share of Total Exporters (2013)	86%

Manufactured Goods to Free Trade Agreement Partners (\$billions, 2015)	\$3.19
(Percent of total exports, 2015)	25.20%
Total Manufactured Goods Exports to TPP (2015)	\$3.36
Top Five Export Markets (Percent of total manufactured goods exports, 2015)	62.10%
<ul style="list-style-type: none">United Kingdom (24.00%)Hong Kong (15.40%)Canada (11.50%)China (5.70%)Taiwan (5.50%)	

Sources: International Trade Administration, U.S. Census Bureau

JOBS

from page 15

resources and staff require them to focus on today's clients and filling next week's orders, and no time is left to plan how their business will navigate the next five or 10 years. However, a forward-looking approach is critical for the long-term viability of a manufacturing business. This includes developing new products based on market demand, finding new markets in which to expand, using rigorous financial and operational planning tools, implementing the technology to support growth and implementing a company culture that supports these activities.

Hence, several organizations exist to support small and medium-sized manufacturers in all aspects of their business, specifically in helping them prepare for or respond to a changing industry. They include the Manufacturing Extension Partnership (MEP) centers and the Small Business Administration with its Small Business Development Centers. In Utah, these resources are crucial to support the growth of the manufacturing industry, specifically because the vast majority of the manufacturing industry consists of very small manufacturers (fewer than 20 employees).

Finally, continuing the growth of the manufacturing industry in Utah is also affected by the ultra-low unemployment in the state. This presents a major limitation to Utah's manufacturers and further emphasizes the need for workforce training to increase participation and enable workers to gain marketable skills to work in the manufacturing industry. The Utah System of Technical Colleges is perhaps the largest provider of that market-driven technical education to meet the needs of Utah manufacturers. Also, the University of Utah MEP Center works with manufacturers on customized workforce training, in addition to any manufacturing or business-related project.

Utah is among the top states in the nation in terms of manufacturing employment growth. As Utah manufacturers keep focusing on 1. Re-shoring production to Utah, 2. Embracing robotics and automation, and 3. Adapting their workforce to the changing industry through specific training, it seems possible for the Utah manufacturing industry to continue that growth trajectory and maintain a thriving manufacturing industry that plays an important role in the state economy.

Bart Raeymaekers is a professor in the Department of Mechanical Engineering at the University of Utah and a co-founder of the Manufacturing Extension Partnership Center there.

Utah Manufacturers Association counting 'Make Manufacturing Your Future' as a huge success

Utah's manufacturing community is committed to developing a skilled manufacturing workforce. As part of that commitment, Utah Manufacturers Association (UMA) employers have led efforts this past year to create, track and evaluate a targeted education and messaging campaign for talent pipeline development.

Through a \$250,000 grant provided by the Department of Workforce Services, as well as financial and in-kind contributions from Utah manufacturers, over 400 companies and eight Utah post-secondary institutions piloted a comprehensive statewide outreach and messaging campaign dubbed "Make Manufacturing Your Future."

The major objectives for the campaign were to educate adult learners and graduating high school students about manufacturing as a valid career pathway and to increase statewide enrollment in technician-level manufacturing training within one year by 150 students.

UMA used a baseline of 674 total students enrolled Sept. 30, 2016, with a pilot goal to enroll 824 students by Sept. 30, 2017. As of July 21, the number of new enrollees in programs such as advanced manufacturing, automation, welding and computer-control machining totaled 1,612 statewide, exceeding the project goal by 938 new enrollees. Approximately 33 percent of these new enrollees represented high school students who opted to jump-start education through concurrent manufacturing coursework from a regional post-secondary institution.

"We are very pleased with the success of the 'Make Manufacturing Your Future' campaign," UMA said in a release. "It has been an incredible success in reaching out to and enrolling future employees in manufacturing-related career pathways."

The "Make Manufacturing Your Future" campaign focused on a consistent look, feel and message through its website www.exploremfg.org; coordinated social media campaign via Facebook, Instagram and Twitter; and employers and education partner messaging at career fairs and onsite company visits.

Metrics contributing to the 1,612 new enrollees showed over 5,787 students had been exposed to manufacturing-specific pathways through targeted activities and 11,834 new

contacts were established through social media channels.

"This campaign was successful, we believe, in part because of outreach efforts in the world where millennials live. Social media is all around us and has been a very effective method of educating today's generation of the tremendous possibilities of a career in manufacturing," said Todd Bingham, president and CEO of UMA.

A technician at the Barnes Bullets factory in Mona packages ammunition. An initiative spearheaded by the Utah Manufacturing Association is having success encouraging young people to consider a career in manufacturing.



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The University of Utah Manufacturing Extension Partnership Center and the Procurement Technical Assistance Center are partnering to host two cybersecurity workshops on Aug. 29 at Salt Lake Community College Miller Campus and at Weber State University Davis Campus.

“Cyberattacks are an international, national

According to IBM, small and medium-sized businesses are hit by cyberattacks 4,000 times a day. The U.S. National Cyber Security Alliance found 60 percent of small companies are unable to sustain their businesses over six months after a cyberattack.

The federal government published new cybersecurity guidelines as a result of the increased concerns over cyberattacks. The requirements are outlined in a publication from the National Institute of Standards and Technology (NIST) and fall into 14 areas with specific security requirements that must be implemented as documented in “NIST Special Publication 800-171.”

Categories include:

- Access Control.
- Awareness & Training.
- Audit & Accountability.
- Configuration Management.
- Identification & Authentication.
- Incident Response.
- Maintenance.
- Media Protection.
- Personnel Security.
- Physical Protection.
- Risk Assessment.
- Security Assessment.
- System & Communications

Protection.

- Systems & Information Integrity

According to NIST, 55 percent of small and medium-sized businesses have experienced a data breach or cyberattack, 43 percent of all spear-phishing attacks are targeted at small businesses and \$38,000 is the average cost for a small business to overcome a data breach.

The MEP-PTAC cybersecurity workshops will include a representative from NIST, Pat Toth, who was directly involved with documenting cybersecurity requirements, and cybersecurity experts who will discuss how to comply with the new guidelines.

Those interested can register for the workshop at Weber State University's Davis Campus or at Salt Lake Community College's Miller Campus.

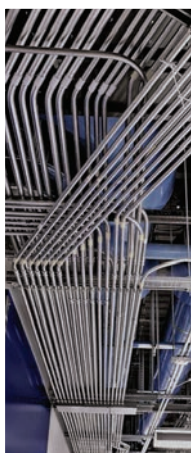
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MANUFACTURING REGIONS

Listed by Number of Manufacturing Establishments



List Development Laneace Gregersen | laneace@slenterprise.com

Counties in Region	Number of Manufacturing Establishments	Total Non-Farm Workforce	Manufacturing Workforce	Average Monthly Wage	Maufacturing Average Monthly Wage	Top Manufacturing Establishments in Region
1 Salt Lake & Tooele	Salt Lake Co. 1,946 Tooele Co. 1,632	Salt Lake Co. 708,566 Tooele Co. 4,567	57,146	Salt Lake Co. \$4,211 Tooele Co. \$3,282	Salt Lake Co. \$5,021 Tooele Co. \$4,567	L-3 Communications Corp., Becton Dickinson & Co., Merit Medical Systems Inc., Ultradent Products Inc., U.S. Magnesium LLC, Detroit Diesel Remanufacturing LLC, Morton Salt Inc., ATI Titanium LLC
2 Juab, Summit, Utah & Wasatch	766	284,063	26,477	Salt Lake Co. \$3,379 Summit, Juab & Wasatch Cos.-N/A	\$4,357	Nestle Prepared Foods Co., IM Flash Technologies LLC, Skullcandy Inc., Triumph Gear Systems Inc., Barnes Inc., Quality Craft Wood Works Inc.
3 Davis, Morgan & Weber	611	231,046	26,413	Davis Co. \$3,557 Weber Co. \$3,266 Morgan Co.-N/A	Davis Co. \$4,658 Weber Co. \$4,417	Utility Trailer Manufacturing Co., ATK Space Systems Inc., Lifetime Products Inc, Alliant, Autoliv, Fresenius USA Manufacturing Inc., Conagra Foods
4 Cache, Box Elder & Rich	325	78,383	17,173	Cache Co. \$2,789 Box Elder Co. \$3,054 Rich Co.-N/A	Cache Co. \$3,806 Box Elder Co. \$4,333	E. A. Miller, Gossner Foods Inc., Schreiber Foods Inc., Icon, Autoliv, West Liberty Foods LLC, Thiokol Corp.-Propulsion
5 Beaver, Garfield, Iron, Kane & Washington	308	88,472	5,379	Iron Co. \$2,573 Washington Co. \$2,816 Beaver, Garfield & Kane Cos.-N/A	Iron Co. \$3,636 Washington Co. \$3,116	Litehouse Inc., Deseret Laboratories Inc., Viracon Inc.a , Sunroc Corp., CCCG LLC, Ram Manufacturing Co. Inc., Wilson Electronics LLC, Smead Manufacturing Co., AMPAC Corp., Glenpak LLC, Metalcraft Technologies Inc.
Statewide	4,118	1,427,166	125,925	\$3,705	\$4,583	DNA



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