



HARDWARE MANUFACTURING
RESHORE READINESS REPORT
2014





INDUSTRY OVERVIEW

This sector includes companies that manufacture various forms of metal hardware such as metal hinges, metal handles, keys, brackets, bolts, locks, springs, and bed parts. Manufactured hardware is primarily used by the construction, automobile, furniture, aircraft, engine, and appliance manufacturing industries.

Tangential industries include the manufacture of wire and spring, screws, nuts and bolts, ball bearings, copier and optical machinery, navigational instruments, wiring devices, and office furniture.

Key Industry Data

TOTAL 2014 DOMESTIC DEMAND

\$11.73 BILLION

IMPORTS AS A % OF DOMESTIC DEMAND

56.5%

TOTAL VALUE OF IMPORTS, 2014

\$6.63 BILLION

TOTAL VALUE OF IMPORTS FROM CHINA, 2014

\$2.06 BILLION

INDUSTRY AVERAGE NET PROFIT MARGIN

5.3%

Manufactured hardware is primarily used in the construction, automobile manufacturing and furniture manufacturing markets. Most experts predict demand for construction-related hardware (hinges, door locks and doorknobs) will increase greatly over the next five years due to new housing starts and an increase in commercial construction activity. Additionally, hardware manufacturers supply various car components, such as door and window handles, to automobile and parts manufacturers. Activity in this market is a major determinant of industry performance due to the large portion of revenue that these products represent. Experts predict that over the next five years the automobile manufacturing sector will experience a strong expansion.

Finally, furniture-related hardware sales (bed parts, feet, hinges, locks and pulls) account for 11.0% of industry revenue. Domestic demand for household furniture is expected to increase through 2019, resulting in increased demand for related hardware.

KEY INDUSTRY PLAYERS

National, International and Pennsylvania-based manufacturers and industry leaders include companies such as:



National and International

ASSA ABLOY AB
Fortune Brands Home & Security
Ingersoll-Rand Company, Ltd.
Stanley Black & Decker, Inc.
Strattec Security Corporation

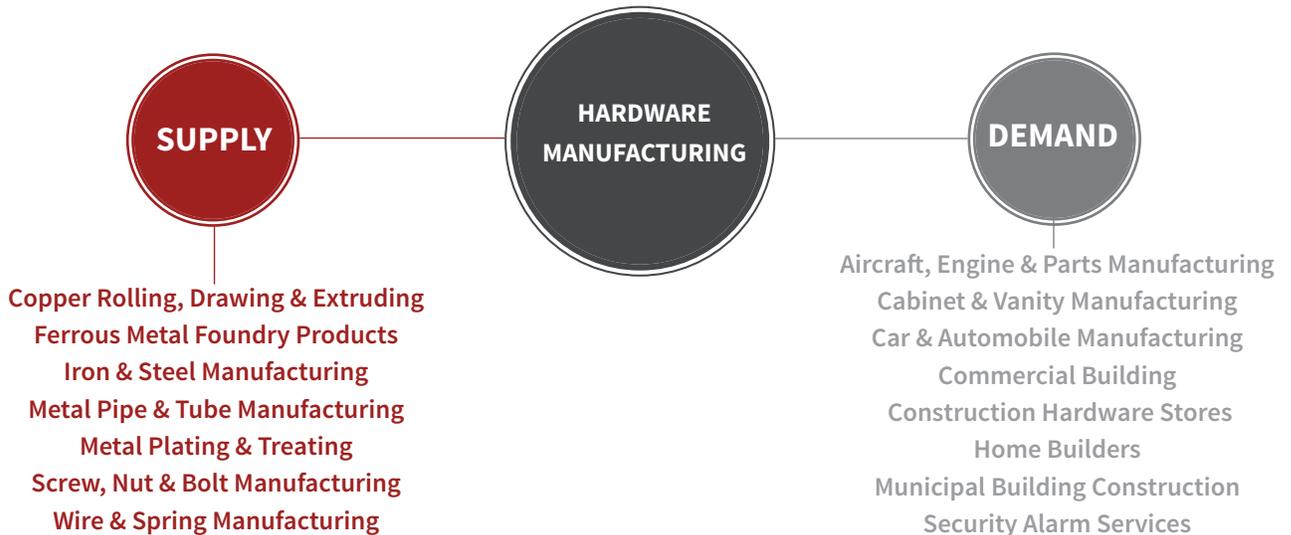


Pennsylvania-Based

Adept Corporation
Baldwin Hardware
Cobra Anchors
DORMA Architectural Hardware
Jacob Holtz Company
Keener Kitchen Manufacturing Company
Merit Metal Products
PDQ Industries, Inc.
Precision Form, Inc.
Rockwood Manufacturing Company

PRIMARY SUPPLY CHAIN PARTNERS

Hardware manufacturers rely upon robust supply chain partners as illustrated in the graphic below. Industry demand for hardware is primarily determined by the level of residential housing construction and consumer demand for cars, both of which are expected to increase over the next five years due to new housing starts and a shift in consumer preference for “green” cars.



MAJOR DEMAND MARKETS

Demand within the hardware industry is driven primarily by a few major sectors which include automobile and parts manufacturers, wholesalers, contractors, hardware and home improvement stores, furniture manufacturers and other manufacturing industries.



AUTOMOBILE PARTS

\$1.6 BILLION



WHOLESALERS

\$1.3 BILLION



CONTRACTORS

\$1.2 BILLION



HARDWARE AND HOME IMPROVEMENT

\$1.2 BILLION

INDUSTRY **RESHORING** FACTORS

Several recent industry trends are fueling reshoring decisions among manufacturers and industry supply chain companies.

Robotics, Automation and Reduced Emphasis on Direct Labor

Because the production of hardware has traditionally been labor-intensive, much of the initial wave of offshore production and outsourcing decisions was fueled by real or perceived labor cost savings often associated with foreign production at that time. While direct labor continues to be an important element of total production costs, employee wages as a percentage of sales have diminished over time, from 18.7% in 2004 to 17% in 2014. This trend is expected to continue throughout the next 5 years as companies continue to implement Lean Enterprise manufacturing techniques and integrate robotics and increased automation into their production processes. Such advances have already led domestic manufacturers to realize increases in average revenue per employee metrics. In 2004, for example, domestic industry

revenue per employee stood at \$241,240. In 2014, that metric is expected to exceed \$285,800.

As production becomes less labor intensive, any remaining Chinese or other foreign producer labor cost advantage becomes even less insignificant, and is more easily outweighed by other overseas production costs, such as the cost of poor quality, transportation costs and the opportunity costs associated with longer product lead times.

Cheaper Domestic Prices of Natural Gas

Domestic manufacturers have a powerful and unique cost advantage due to the wealth of natural gas reserves uncovered recently in Pennsylvania and other parts of the U.S., made possible by hydraulic fracturing. For many years to come, all U.S. manufacturers will enjoy the cost advantage of cheaper natural gas and industrial electricity, estimated to be half that of major export nations — China, Japan, Germany, France, and Italy.

Made in USA Brand

Hardware manufacturers rely on a strong brand name for attracting and retaining customers. Increasingly, American consumers are choosing American made brands over foreign ones. According to a September 2012 survey by the Boston Consulting Group, more than 80 percent of American consumers stated that they are willing to pay more for products labeled “Made in USA” than for those labeled “Made in China.”

China represents 31% of all hardware imported into the U.S., but rapid and significant increases in Chinese manufacturing wages have eroded overseas cost advantages.



Advanced Manufacturing Techniques

The U.S. remains the largest producer of advanced technology products. To maintain and increase competitiveness, U.S. manufacturers continue to invest in new technology and new product development. The U.S. supports manufacturing by making strong investments in the research and development of advanced manufacturing products, processes, systems and enterprises. This strengthens the connection between U.S. manufacturing and our nation's success in inventing, innovating, producing and competing. America Makes, the National Additive Manufacturing Innovation Institute, is a resource that U.S. companies can use to collaborate on innovations, overcome challenges quickly and accelerate time to market. Advanced manufacturing resources like America Makes strengthen the global competitiveness of existing U.S. manufacturers.

Need for Collaborative Innovation and R&D

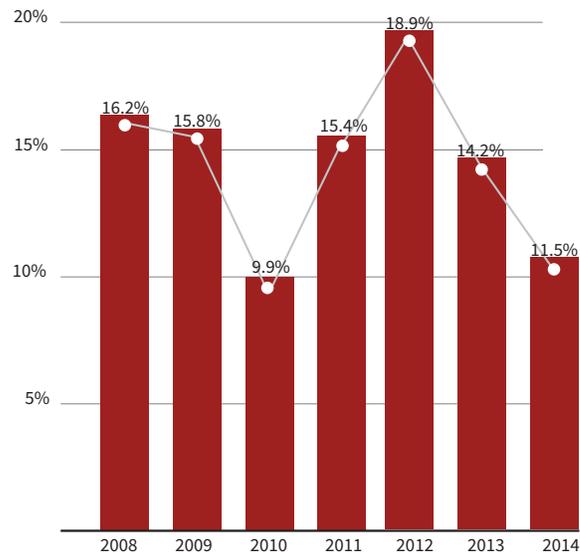
Investment in research and development is key in participating in this industry's growing product segments. For example, the use of electromechanics in security doors is an area of increasing complexity. Similarly, there is an increasing complexity and precision required by customers who buy automobile body and appliance parts, which require customization and flexible machinery and equipment to meet the various needs of customers. Product innovation, in terms of aesthetics and functionality, is also critical for consumer-related products.

Companies that co-locate manufacturing and design so that design engineers can work more closely with manufacturers find that they can improve design, eliminate waste, improve quality, increase productivity, and make the product more easily, often at a lower cost. In addition, having access to design centers, research universities, technical schools, training assistance, additive manufacturing techniques, and other innovations within the U.S. provides industry manufacturers with a competitive edge as they develop new products, more efficient and flexible production techniques and grow product segments.

Rising Chinese Labor Rates

The supply of China's low-cost labor is expected to dwindle over the next few years, as the competition for labor and minimum pay rate increases in China considerably narrow China's direct cost advantage. According to the Boston Consulting Group, pay and benefits for the average Chinese factory worker rose by 10 percent a year from 2000 through 2005 and by 19 percent a year from 2005 through 2010. Additionally, the Chinese government has set a target for annual increases in the minimum wage of 13 percent from 2010 through 2015. Rising wages, higher U.S. productivity and other factors have significantly eroded the cost advantage of many low-cost manufacturing countries. According to the Boston Consulting Group, China's manufacturing-cost advantage over the U.S. has shrunk to less than 5 percent.

ANNUAL CHINA MANUFACTURING WAGE INFLATION RATES 2008-2014



PENNSYLVANIA SPECIFIC RESHORING BENEFITS

In addition to the industry-wide reshoring factors mentioned, Pennsylvania offers several reshoring benefits to hardware manufacturers and their supply chain partners.

Unique Material & Operating Cost Advantages Through Marcellus Shale

Pennsylvania is situated atop the 2nd largest energy field in the world, with Marcellus Shale gas existing beneath approximately two-thirds of the Commonwealth's land mass. Marcellus Shale is just one of eight gas formations in Pennsylvania. Pennsylvania's safe, efficient and environmentally-sound natural gas production has already had significant beneficial impacts to manufacturers within the Commonwealth

Robust Existing Metal Fabrication Industry

In total, the Commonwealth's metal fabrication products industry provides employment for more than 81,000 full-time workers – or over 14.3% of all manufacturing industry employees. Due to Pennsylvania's focus on the

metal fabrication industry and its unparalleled network of trade schools, technical colleges, and universities, over 29% of Pennsylvania's current metal fabrication industry workers possess an Associate's Degree. Over 15% hold a Bachelor's Degree, Master's Degree or higher level of designation.

Extensive Network of Supply Chain Partners & Prospective Customers

Pennsylvania supports its hardware industry with an extensive network of potential suppliers and prospective buyers. The Commonwealth is home over 60 ferrous metal foundries and an additional 60 iron and steel manufacturers.

Pennsylvania has a robust supply chain network for the hardware industry as shown below.

PA HARDWARE MANUFACTURING SUPPLY CHAIN

Supply Chain Sector	# of Establishments in PA
Copper Rolling, Drawing & Extruding (NAICS 33142)	25
Ferrous Metal Foundry Products (NAICS 33151)	61
Iron & Steel Manufacturing (NAICS 33111)	60
Metal Pipe & Tube Manufacturing (NAICS 33121)	38
Metal Plating & Treating (NAICS 33281)	279
Screw, Nut & Bolt Manufacturing (NAICS 33272)	113
Wire & Spring Manufacturing (NAICS 33261)	68

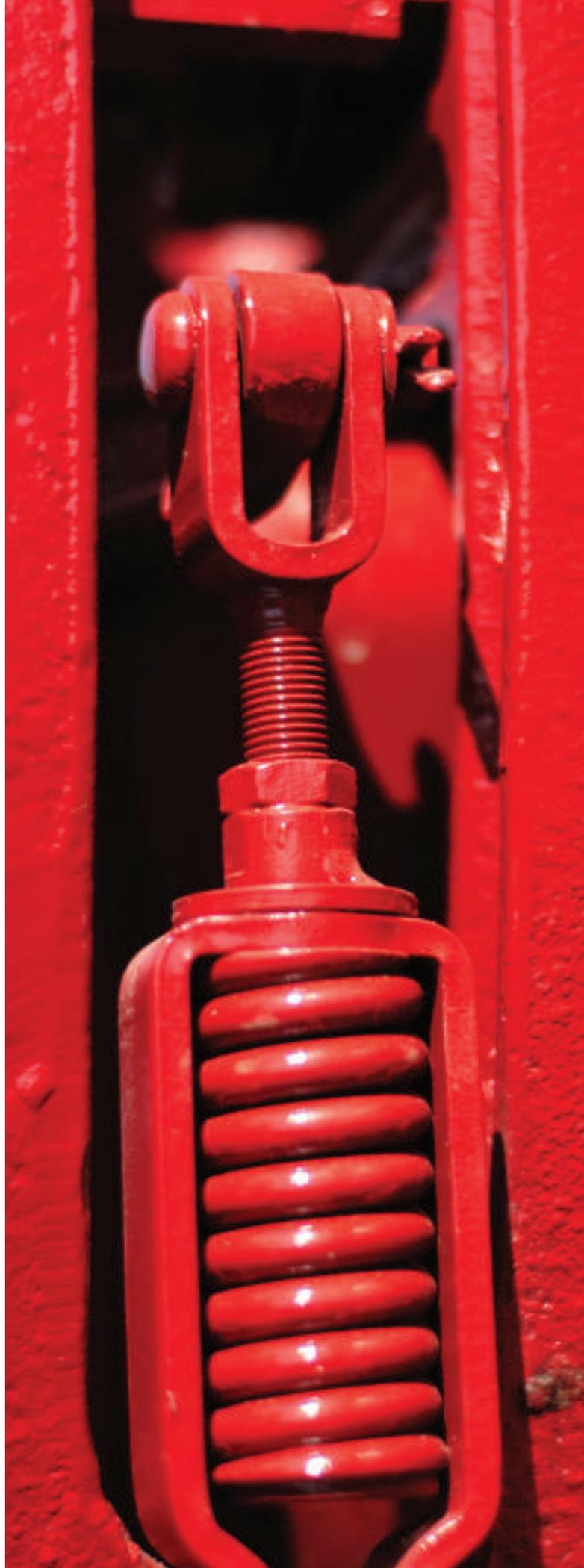
Diverse Energy Sources & Low Energy Costs

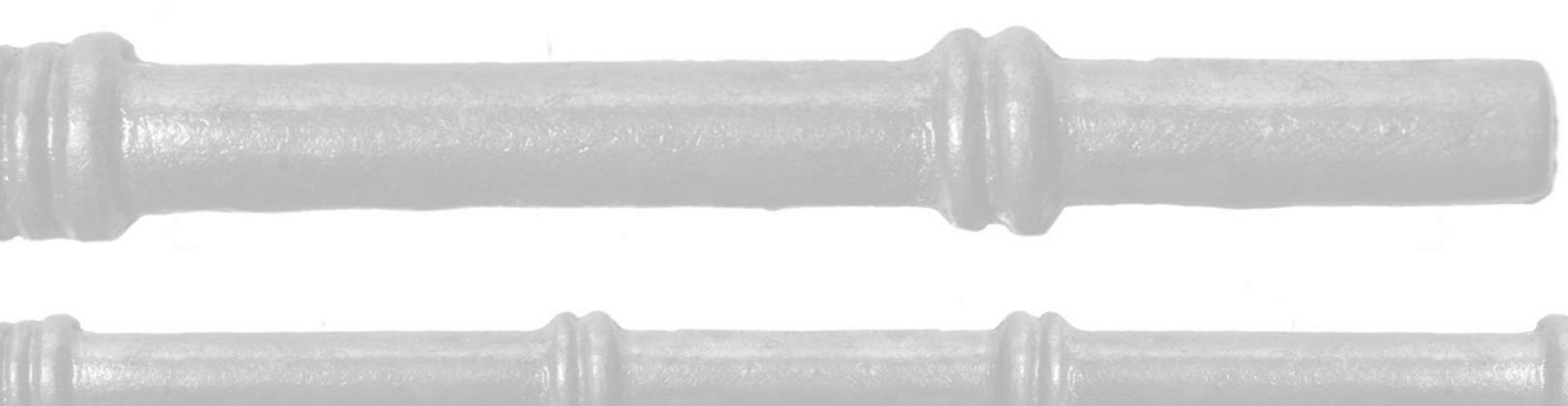
Pennsylvania is among national leaders in low-cost energy for manufacturers. In addition to leveraging the world's 2nd largest Marcellus Shale reserves to reduce the cost of natural gas, the Commonwealth's energy portfolio consists of coal, clean-coal technology, nuclear power, hydropower and other renewable energy sources to fuel manufacturing growth. In the last six years, Pennsylvania's abundant resources have reduced natural gas prices by 50% and electricity costs by 40% for industrial users.

Access to Innovative Additive Manufacturing Labs

Additive manufacturing has the potential to revolutionize the metals industry. Pennsylvania manufacturers have access to world-class additive manufacturing labs, research facilities, prototyping services and training programs, enabling them to stay ahead of the additive manufacturing curve and lead the way, profiting from this new technology. The University of Pennsylvania's PennDesign Fabrication Lab, Penn State University's CIMP-3D Applied Research Lab, the Research for Advanced Manufacturing in Pennsylvania program managed by Carnegie Mellon University in collaboration with Lehigh University and the University of Pittsburgh's research being performed under a National Additive Manufacturing Innovation Institute (America Makes) Award are examples of just some of the additive manufacturing resources that hardware manufacturers can rely upon to help them evaluate and adopt additive manufacturing techniques and technology.

Across the Commonwealth, additive manufacturing training curriculum, simulation labs, research capabilities and industry-to-university collaborations are growing in support of the metals industry.





Access to Nationwide & World Markets

Having a presence in Pennsylvania gives hardware manufacturers the competitive advantages of quick customer response and other customer-focused advantages that overseas or out-of-state suppliers cannot easily duplicate. A presence in Pennsylvania also places manufacturers within a reasonable commute to 40% of the U.S. population, 6 of the 10 largest domestic markets and 60% of Canada's population. Despite its proximity to such markets, Pennsylvanians enjoy a lower cost of living than all 7 other northeastern states.

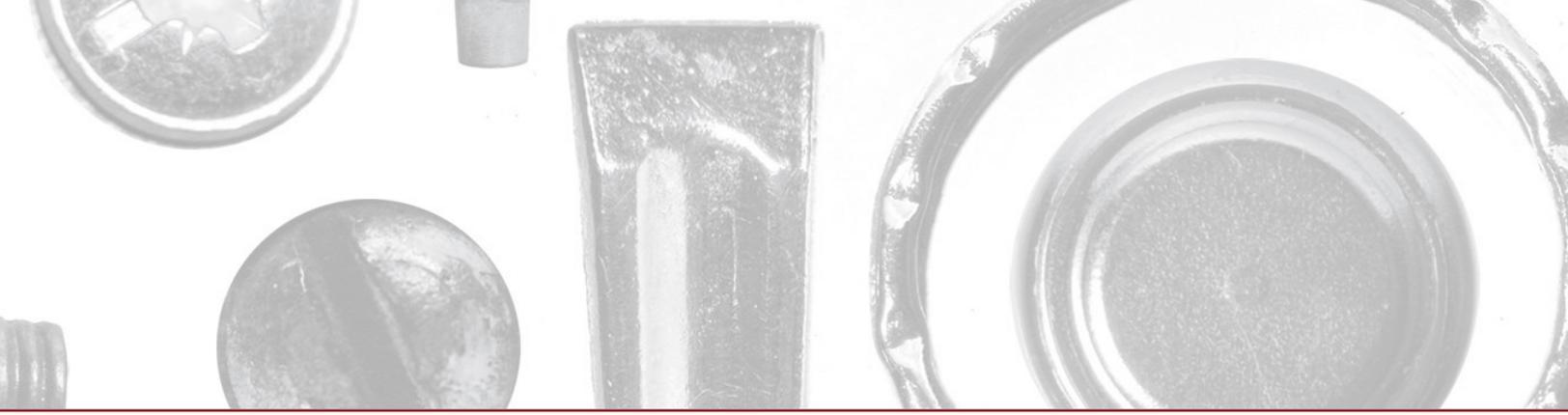
In addition, Pennsylvania offers access to the world market through six international airports and three major ports to the Atlantic Ocean, Great Lakes and Gulf of Mexico. Pennsylvania also provides resident manufacturers with a state-supported network of 27 overseas offices that cover more than 62 world markets.

World-Class R&D and Innovation Capabilities

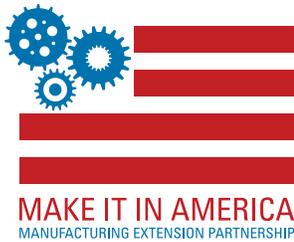
Pennsylvania is home to more than 270 colleges and universities, including four of the nation's top 50 universities, eight of the top 50 liberal arts colleges and three top business schools. Together, these colleges and universities provide not only a world-class workforce, but unparalleled collaborative R&D, innovation, materials testing and technology acceleration capabilities.

Pennsylvania also supports Centers of Excellence in metal stamping and perforation, welding, additive manufacturing, materials testing, plastics technology and other manufacturing specialties. These centers assure Pennsylvania's manufacturers that they will have access to the cutting-edge technologies, workforce training opportunities and innovations they need to remain competitive and thrive.





Make It In America: The PA Made Again Initiative



PA Made Again is a statewide initiative, funded in part with federal Make It In America Challenge Grant support, that is focused on creating jobs through the growth and retention of Pennsylvania's manufacturing economy. The initiative includes key economic development organizations from across the Commonwealth that work collaboratively to build a strong pipeline of middle and highly-skilled manufacturing workers for companies reshoring to Pennsylvania. The initiative avails companies considering reshoring their production facility or supply chain inputs to a variety of assistance.

Manufacturing Extension Partnership (MEP) Centers host industry professionals who can introduce manufacturers to Total Cost of Ownership, Assess Costs Everywhere and similar reshoring tools. These tools help companies make informed reshoring decisions based upon accurate, real-time offshore and domestic production costs and other important factors. MEP centers also offer no-cost supplier identification assistance and technical assistance to companies considering reshoring.

Economic Development Administration (EDA) Partners assist manufacturers in site selection for their businesses, along with touring, deal negotiation and financing assistance. EDA partners can provide prospective Pennsylvania manufacturers with demographic information, permit and regulatory assistance, infrastructure/utility data, quality of life statistics and similar information.

Employment & Training Administration (ETA) Partners are building a strong pipeline of skilled workers through a collaborative training environment that serves the needs of existing manufacturers and new foreign-owned businesses wishing to locate in Pennsylvania. Through regional workforce organizations, ETA partners can identify the workforce that manufacturers need today, as well as train their workforce of tomorrow.

Together PA Made Again partners are collaborating to strengthen regional assets, advance regional workforce skills and create localized supplier networks – all with the goals of attracting, supporting and growing Pennsylvania's Reshore-Ready industries.



RESHORING **SUCCESSSES**



Master Lock

Since mid-2010, Master Lock, the world's largest manufacturer of padlocks and related security products, has brought back approximately 100 jobs to its Milwaukee factory, which now runs at capacity for the first time in fifteen years.

Master Lock cited economic reasons related to increasingly higher labor and logistics costs in Asia and ongoing labor availability challenges, especially in the coastal areas, of China as their reasons for reshoring. Advantages cited were a more competitive overall cost structure, greater control and the ability to provide better service to customers.



Hampton Products International

Hampton Products International, which supplies locks and door hardware to retailers including Wal-Mart, began "resurrecting manufacturing" at its Wisconsin plant back in 2008, said CEO H. Kim Kelley.

But ultimately, Hampton's decision to manufacture some products back in the U.S. was driven by simple but compelling math. Take the example of a door hardware part. Over a six year period, the price of producing the part in China had risen to \$2.20 from \$1.77, 24%. This was due to Chinese currency appreciation and increased labor costs. Add in transport costs and U.S. tariffs, and that product delivered to the U.S. today would cost about \$2.53.

By moving production back to the U.S., Hampton can make the part today for just \$2.16, a nearly 15 percent savings, even when including the amortized investment in its new U.S. plant. In addition, Hampton has reduced inventory sitting idle on a ship or in finished goods in its distribution centers.

Relocating production to the U.S. also yields a number of soft but important benefits, Kelley said. These include better control of the manufacturing process, an ability to respond swiftly to customers, and a much smaller impact on the environment. The U.S. plant uses less energy than its Chinese counterpart and is 7,500 miles closer to where the product is sold.

"The benefits are obvious," said Kelley. "We cut our costs, improve our sustainability, reduce the cost of finished goods inventory and create U.S. jobs."

WHY RESHORE?

Top 10 most commonly cited reasons for reshoring

Taken from over 65 current reshoring cases related to the hardware manufacturing and fabricated metal manufacturing sector in general.

1 Product Quality & Rework

Offering high quality hardware products is an important factor in attaining market competitiveness. “Made in USA” branded products are synonymous with quality and command price premiums with U.S. consumers.

6 Inventory

Long lead times cause companies to maintain high inventory levels to meet customer demand. The additional costs to carry this inventory are often overlooked by companies when making production and sourcing decisions.

2 Lead Time to Markets

Meeting customer needs on a timely basis is a crucial differentiating factor in attaining market competitiveness for hardware manufacturers. Long lead times for offshore shipments cause manufactures to carry excess inventory, make it difficult to respond to market trends, and result in on-time delivery issues.

7 Proximity to Customers

Manufacturing in close proximity to customers creates synergies necessary for product customization and better flexibility in responding to changes in customer demand.

3 Brand Image

Inability to establish a brand can be a significant barrier for manufacturers in this industry. Consumers around the world commonly associate “Made in the USA” with “Quality”, which leads to increased brand loyalty and the ability to command premium prices. U.S. consumers are willing to pay more for products labeled “Made in USA” than for those labeled “Made in China.”

8 Skilled Workforce

The use of computer technology has lowered labor intensity in some parts of this industry, increasing the need for skilled labor. Over 26% of the manufacturing production workers in the U.S. are metal and plastic workers, skilled at cutting, shaping and forming metal and plastic materials.

4 Wages and Currency Changes

Escalating pay and benefit increases for the average Chinese factory worker and the appreciation of China’s currency, coupled with increased U.S. productivity, make domestic manufacturing more attractive.

9 Automation and Technology

Automation, robotics, process improvements and technology advances in the U.S. have increased productivity. In 2013, China’s GDP per worker was reported at only 17% of America’s.

5 Freight Costs

The costs to ship goods and finished products is an important concern for companies. Rising oil prices, a fall off in new shipbuilding, and a projected shortage in container port capacity in 2015 are expected to boost ocean freight rates, according to the Boston Consulting Group.

10 Total Cost of Ownership

The cost savings associated with manufacturing hardware offshore that is sold in the U.S. are only marginal because of the many risks and hidden costs involved with bringing these products to market.

TOTAL COST OF OWNERSHIP (TCO)

MAKING AN INFORMED RESHORING DECISION

Manufacturers considering reshoring their production capabilities and/or their supply chain inputs (components, sub-assemblies, packaging, consumables, etc...) to Pennsylvania can receive **NO-COST** reshoring assistance through the PA Made Again initiative.

NEPIRC and its partners provide no-cost Total Cost of Ownership analyses for manufacturers. Total Cost of Ownership (or TCO) is a comprehensive analysis that considers all outsourced product costs – including factors that are often overlooked by most internal pricing, costing and sourcing models – so that manufacturers can make informed outsourcing, domestic purchasing or internal production decisions.

More than 60% of companies use cost modeling and purchase analysis systems that do not accurately capture the true cost of offshore production or imported supply chain inputs. In many cases, these systems understate the true costs by as much as 20%. The TCO model walks manufacturers through 29 factors that contribute to total product cost. Using real-time, user-inputted data, the TCO model allows companies to make accurate sourcing decisions.

Make the TCO analysis a key element of your company's sourcing decision-making process today.

To learn more about the Total Cost of Ownership analysis, and how your company can receive **NO-COST** assistance with the tool, contact:

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Printed in August, 2014

Sources: America Makes, Bloomberg Businessweek, Boston Consulting Group, Consumer Product Safety Commission, Datamyne.com, Hoovers, Ibisworld.com, The Manufacturing Institute, McGladrey Report, PA Department of Labor and Industry, Plastics News, PRNewswire, Reinforcedplastics.com, The Reshoring Initiative, ReshoringMFG, SPI: The Plastics Industry Trade Association and the U.S. Bureau of Labor Statistics, U.S. Department of Commerce: U.S. Census Bureau,

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