



MANUFACTURING IN PENNSYLVANIA

2009 INDUSTRY REPORT

> ready > set > innovate



pennsylvania
ADVANCED MANUFACTURING

MANUFACTURING MATTERS

- > Manufacturing remains the single largest sector of Pennsylvania's economy - 14% of the total gross state product
- > In 2009, over 570,000 Pennsylvanians were employed in manufacturing, 12% of all private employment
- > 92% of Pennsylvania exports came from manufacturers
- > 70% of all private research and development is attributed to manufacturers
- > Manufacturing is the most productive industry, almost double the productivity in all other industries (National Association of Manufacturers)
- > Rural communities are significantly more dependent on manufacturing, with the sector comprising up to 30% of rural economies
- > Advanced materials & diversified manufacturing careers pay 20% more than the state average, with an average annual salary over \$53,000.

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INTRODUCTION

Over the past year manufacturing has experienced epic challenges – an historic U.S. recession, a decline in global consumption, the lasting impact of the financial crisis resulting in a credit crunch, the near bankruptcy of the automakers and the continued increase in energy and health care costs. In Pennsylvania, manufacturing has shown its resilience and importance to the state's economy by remaining the largest economic sector, demonstrating continued growth in international exports, and investing in emerging industries such as clean energy.

The 2009 Manufacturing State of the Industry report provides an annual snapshot of where the industry stands in comparison to Pennsylvania's closest competitors. Benchmark states used for comparison are Illinois, Maryland, Massachusetts, Michigan, New Jersey, New York, North Carolina, Ohio and West Virginia. These states provided the best comparison as competitors given their close geography and similar history of manufacturing strength and business climate.

2009 Scorecard Results:

- > **Manufacturing Productivity:** The manufacturing value added metric used in prior reports was not available for the 2009 Report. As a result, output per employee was used. Overall, Pennsylvania is slightly behind the nation, but key industries in the commonwealth significantly exceed the nation in productivity.
- > **Manufacturing Gross State Product:** This measure continues to increase annually, demonstrating continued investment by firms in talent, capital and technology. Between 2007 and 2008 output increased 3%. National Ranking 6th – no change from 2007.
- > **Manufacturing Employment:** Pennsylvania manufacturing declined the least of all of its competitors in 2008. The full impact of employment changes were felt in the following year. National Ranking in total employment 5th – no change from 2007.
- > **Manufacturing Compensation:** Total Compensation for manufacturing increased 1% from the 2007 to 2008. National Ranking 6th – no change from 2007.
- > **Manufacturing Exports:** Pennsylvania continues to see success in exports, increasing 17% between 2007 and 2008. National Ranking 9th – increased from 10th in 2007
- > **Research and Development Expenditures:** Industry increased R&D 14% between 2005 and 2006. National Ranking 8th – increased from 9th in 2005



- > **Venture Capital Investments:** Despite the economy, the number of venture deals remained constant from 2007 to 2008. The 2009 report focused on the number of venture deals, rather than dollar amount invested due to wide fluctuations in dollars invested year to year. Competitor Ranking 2nd.

Why Pennsylvania?

A better question to ask is, why not Pennsylvania? The Keystone State has a strong economy, superior market access and a first-class transportation system. We are an undisputed leader in technology, our workforce is highly skilled and motivated, we provide access to some of the best colleges and universities in the world and have a very high quality of life. Considering all these factors, it's no wonder companies like Gamesa, Westinghouse, Shire Pharmaceuticals, Olympus America and Augusta have decided to locate or expand in Pennsylvania.

Quite simply, Pennsylvania makes it easy to do business. We are one of the fastest growing states in international business development, and we have the largest international investment and trade network in the U.S. We have also reduced business taxes by more than \$2 billion since 2004. Pennsylvania has been recognized by the Tax Foundation and Council on State Taxes for a business friendly tax code, and ranked as one of the lowest states in business taxes. We have the largest manufacturing extension program in the nation, our Industrial Resource Center Network, who help firms succeed through world class operational performance and technology acceleration. Our life sciences industry is another draw. Business Facilities magazine ranked Pennsylvania the number one state for biotechnology in 2008.

For more information on the programs highlighted in this report, visit newPA.com or call 866.GO.NEWPA.

What Makes Pennsylvania a Preferred Location?

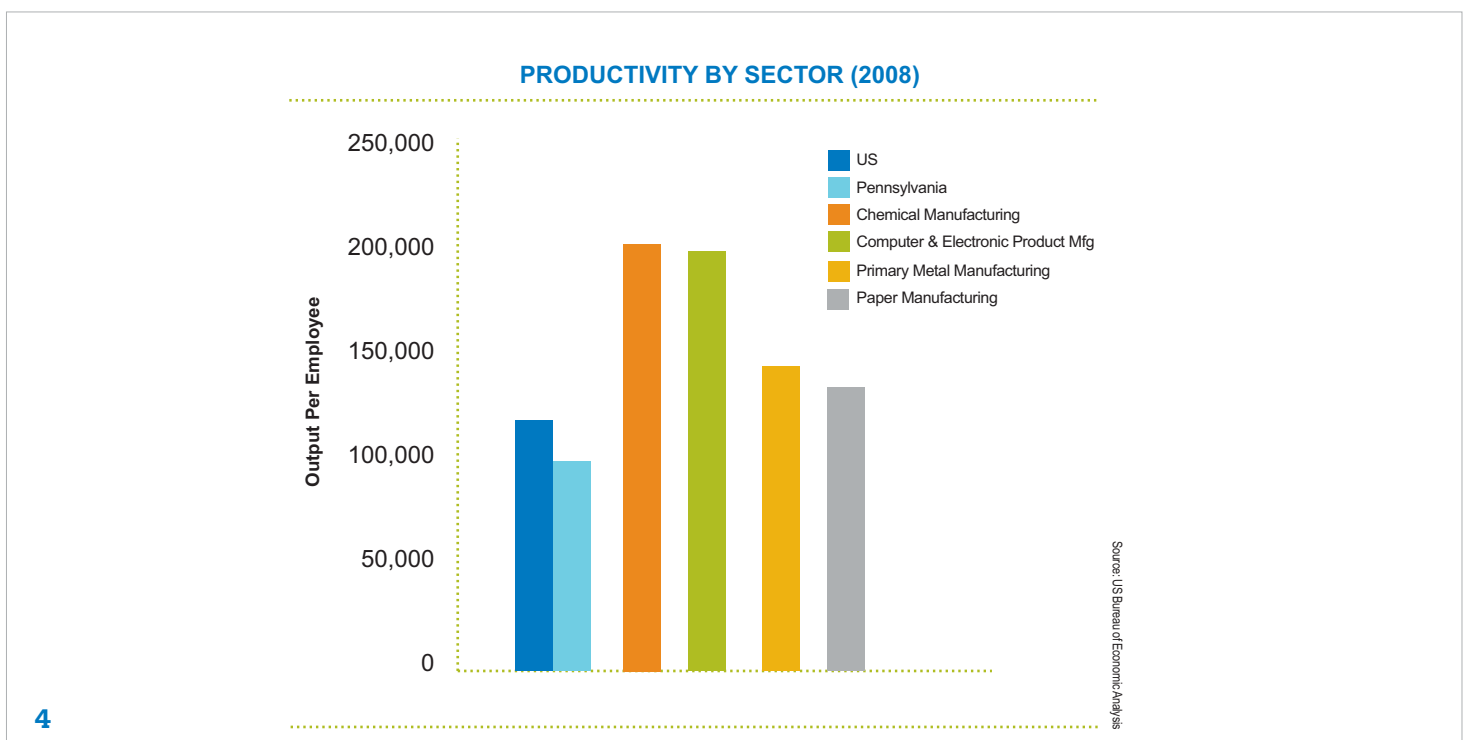
> > > **IT'S NOT JUST ONE THING, BUT MANY:**

- > **Demographics** – Pennsylvania's diverse population is eager to support new development and innovative business ideas.
- > **Workforce** – Pennsylvania has several job training programs to ensure that its workforce maintains its skills.
- > **Education** – The Commonwealth boasts some of the world's finest colleges and universities.
- > **Quality of Life** – Affordable housing, excellent schools, a low crime rate and numerous natural, cultural and historic attractions contribute to Pennsylvania's exceptional quality of life.
- > **Strategic Location** – The Commonwealth affords vital access to many global markets, including Canada.
- > **Top Employers** – The large corporations headquartered in Pennsylvania bolster our local economies and helps us retain our educated, highly skilled workforce.

MANUFACTURING PRODUCTIVITY

To gain a measure of manufacturing productivity for this report, manufacturing gross state product and manufacturing employment are used. Productivity is a common measurement used to indicate the ability of a sector to generate economic growth and success. The ability of industry sectors to increase productivity benefits a state's economy by increasing profitability of individual firms, increasing wages for employees and lowering or maintaining prices for customers.

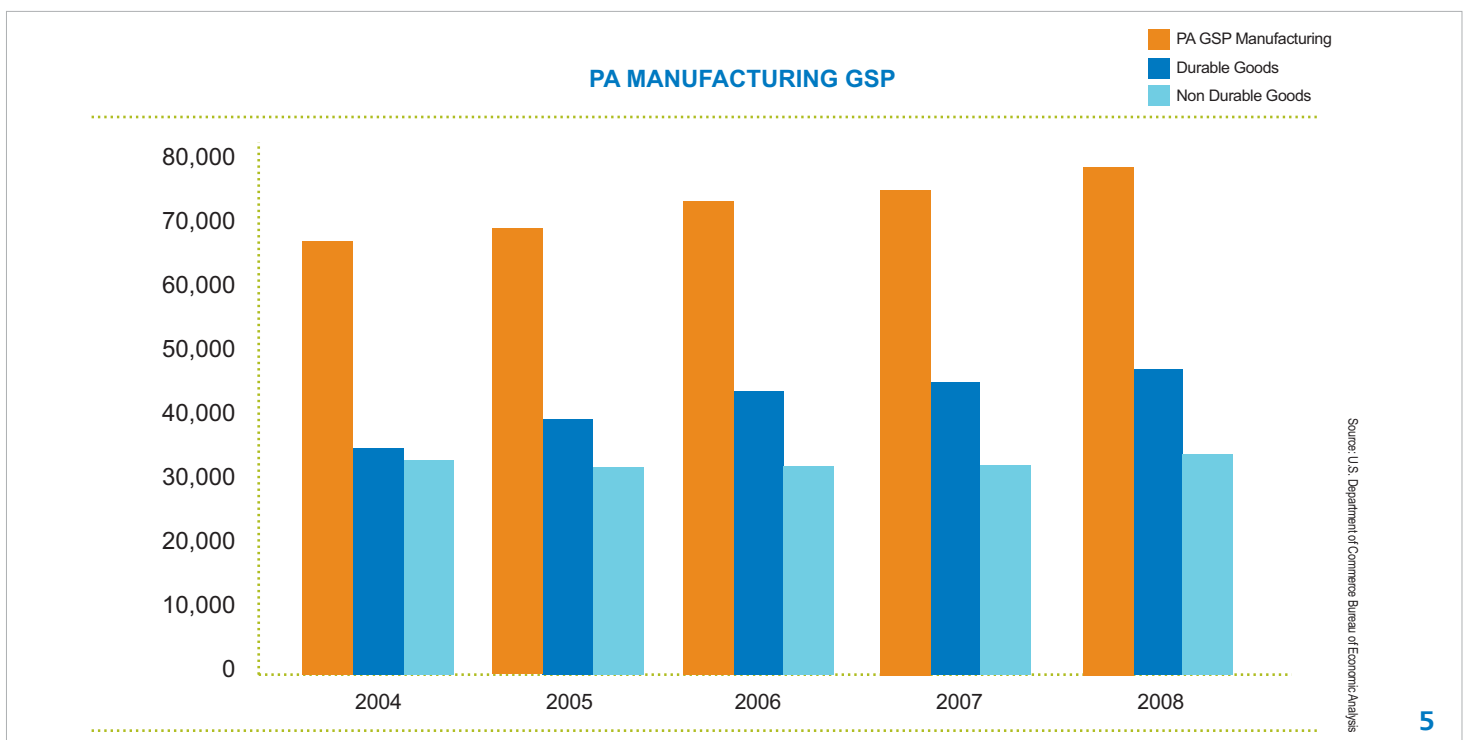
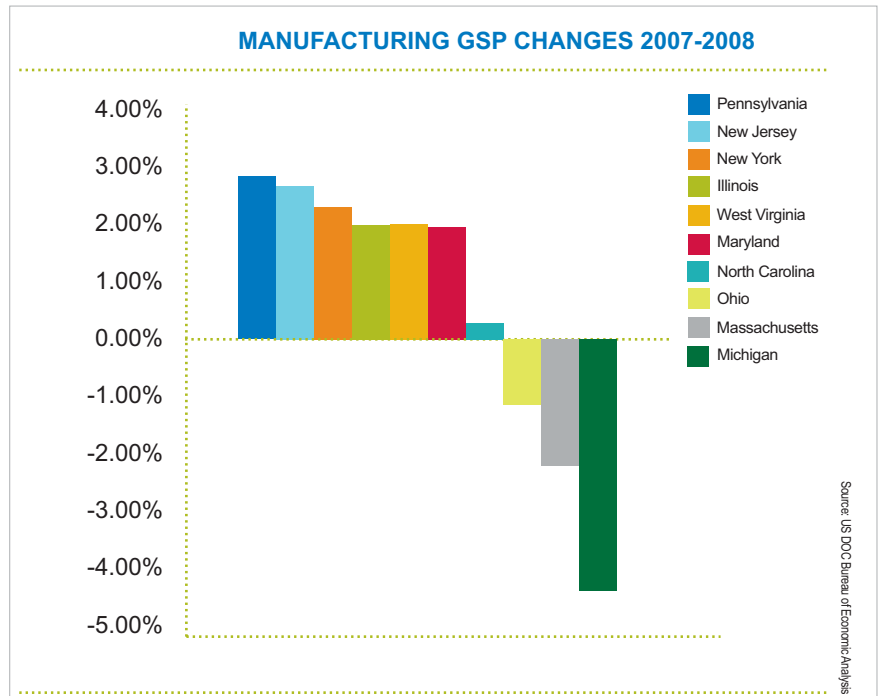
Pennsylvania's productivity in 2008 was clearly impacted by the effects of the recession, dropping slightly compared to prior year's increases, but overall has increased 17% since 2001. Last years slowing of productivity growth in Pennsylvania can be explained by several factors. One fortunate outcome is that employment in Pennsylvania did not drop as significantly (see employment section) as other comparison states and the nation, so output per employee was not as high. Another factor is the state's manufacturing sectors include a diverse mix of commodity manufacturers or contract manufacturers, which are typically more constrained on the output side since they are reliant on large customers (original equipment manufacturers) and subject to severe price pressures from these customers and off shore competitors. However, when productivity is viewed by individual manufacturing sectors, many key industries in the state reflect national leadership and higher productivity since these products include a high value add content resulting in a much higher output number. These sectors are included in the graph include:



MANUFACTURING GROSS STATE PRODUCT (GSP)

Pennsylvania is ranked eighth nationally for GSP in 2008 and among competitor state's, it has **increased output the most from 2007 to 2008**. Pennsylvania's durable goods sector continues to lead the way in output for manufacturing – increasing 20 percent between 2004 and 2008. Durable goods can be classified as those products that are manufactured to last at least three years. Manufacturing Gross State Product (GSP) is the broadest measure of economic activity in a sector.

The Philadelphia Federal Reserve monthly manufacturing survey, which covers the eastern part of Pennsylvania, also reports the recovery of the state's manufacturing sector, citing the last 5 months of 2009 as increased in manufacturing output.



MANUFACTURING EMPLOYMENT

Most economic sectors in the state have reported declines in employment and the manufacturing sector has also experienced the impact of the recession. However, the Commonwealth still ranks 5th in the nation for manufacturing employment – with largest employment concentration in the nation in sectors such as powdered metals, manufactured housing, battery manufacturing, sugar and confectionary products, and miscellaneous biologic products.

While the durable manufactured goods sector employment, including machinery manufacturers, primary metals, fabricated metals, computers/electronics transportation equipment, electrical equipment, furniture and medical devices - had been steadier from 2003 to 2008, employment in non-durables manufacturing (food, plastics, paper, textiles, chemicals) declined twice as fast.

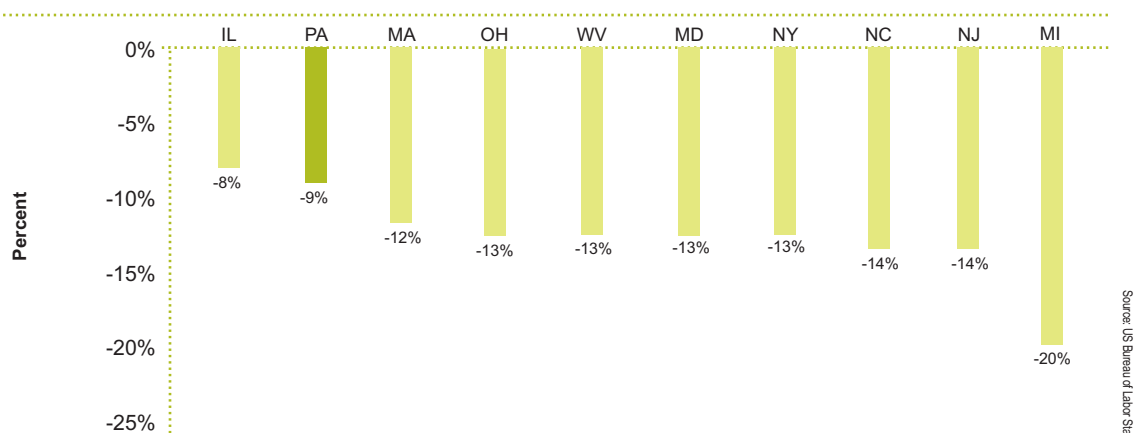
The perception of employment challenges have made it much more difficult to attract highly paid skilled workers to manufacturing. Opportunities for manufacturing employment remain for the following reasons:

- > The end of the recession will bring increased demand for manufactured goods.
- > The age of the manufacturing workforce is higher than other sectors, leading to an increased need to replace workers leaving the workforce.
- > Trends show from 2003-2008, as reported by PA Department of Labor and Industry, that the following sectors have had significant hiring activity: iron and steel mills, electrical equipment manufacturing, machine shops, metal tank manufacturing, construction machinery, food manufacturing, converted paper products, aerospace products and parts.
- > Key occupations that continue to see demand from manufacturing: skilled fabricators, machinists, CNC operators/programmers, maintenance/automation technologies and lab technicians.

It should also be recognized that the manufacturing sector contributes significantly to hiring in other sectors including: engineering/design firms, logistics, labs, and other related industries. Estimates from the PA Department of Labor show that 52,000 jobs in logistics are related to manufacturing as well as over 18,000 temporary jobs that are likely additional manufacturing employment. When included, manufacturing impacted nearly 700,000 Pennsylvanians in 2008.

Pennsylvania still ranks fifth in the nation for manufacturing employment and between competitor states has fared far better in employment losses – grouped at the top with Illinois.

MANUFACTURING EMPLOYMENT, 2003-2008



Source: US Bureau of Labor Statistics

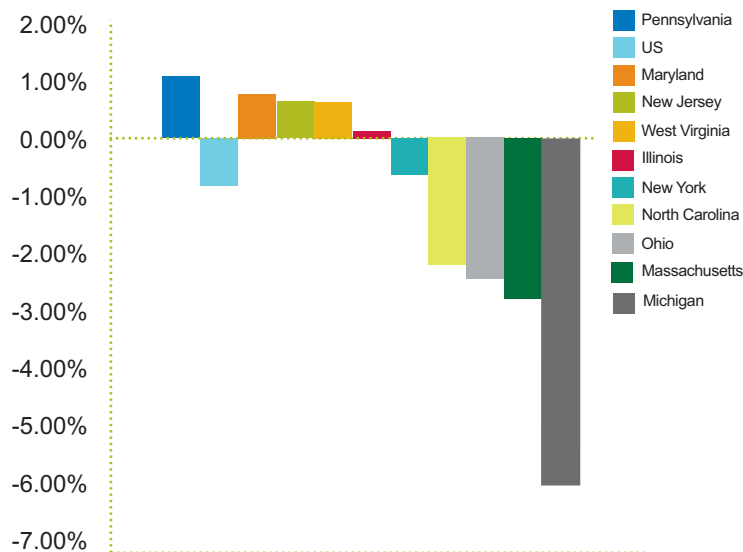
MANUFACTURING COMPENSATION

Pennsylvania's manufacturing industry is the second largest private sector, behind health care, in terms of compensation, and ranked number one among our competitors in the percentage increase over the prior year. Pennsylvania is one of the few states to show an increase in this measure from 2007.

In 2008, PA retained its national ranking of sixth in private compensation for manufacturing. This measure includes both salary and benefits in determining compensation, which highlights manufacturers high wages and higher percentage of jobs with benefits, as compared to the service sector. Due to the competitive compensation for the industry, the state is able to retain a highly skilled workforce which is attractive to expanding and relocating firms.

The average wage is \$53,000, which has increased by 24 percent since 2001.

MANUFACTURING COMPENSATION CHANGES 2007-2008



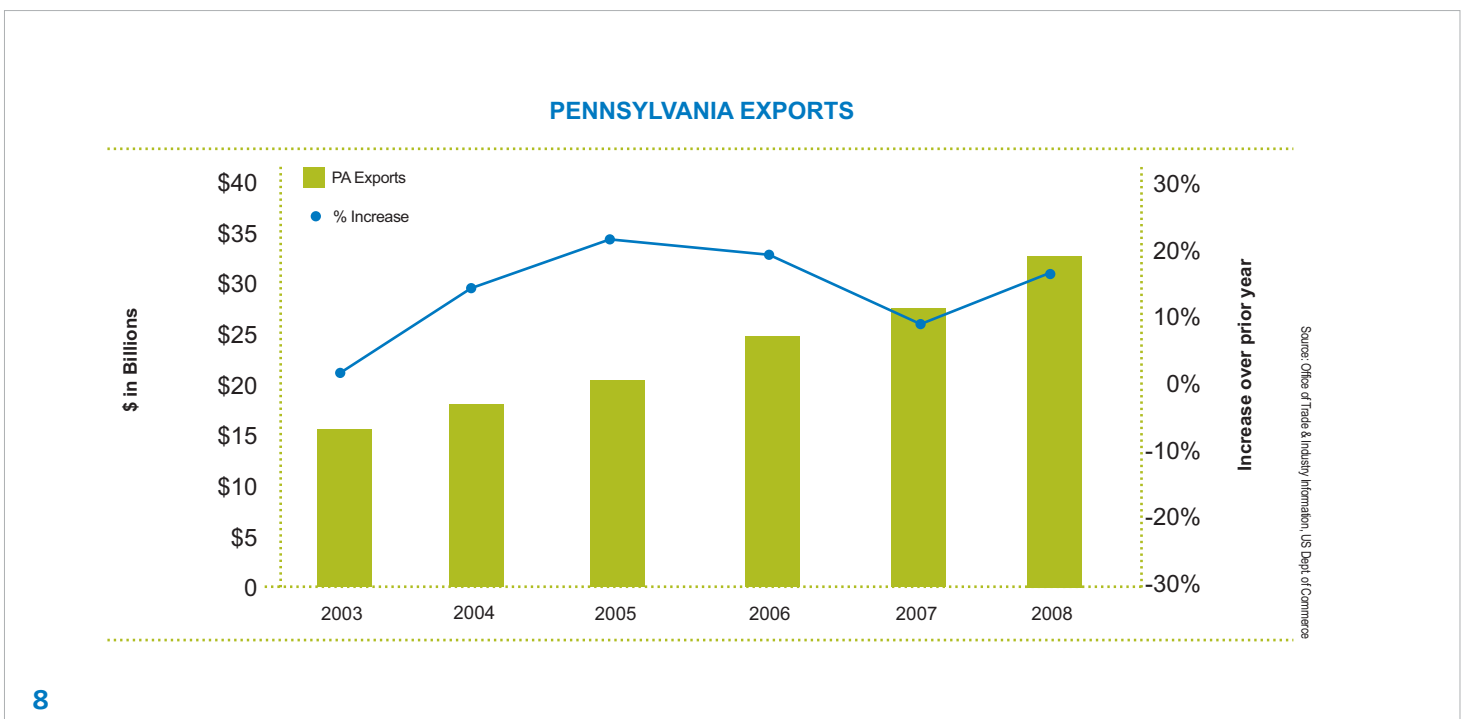
Source: US DDC Bureau of Economic Analysis

EXPORTS

Since 2003 Pennsylvania has more than doubled its manufactured exports, increasing 108%, faster than all but one of the comparison states in this report. Of the top ten markets for Pennsylvania goods, those countries with substantial increases include two of the world's largest developing economies – Brazil and China. The industries with leading exports continue to be chemicals and machinery, making up a third of all state exports. The industries with the fastest growth from 2007 include: coal/petroleum – 129%, transportation – 28%, and fabricated metals – 43%.

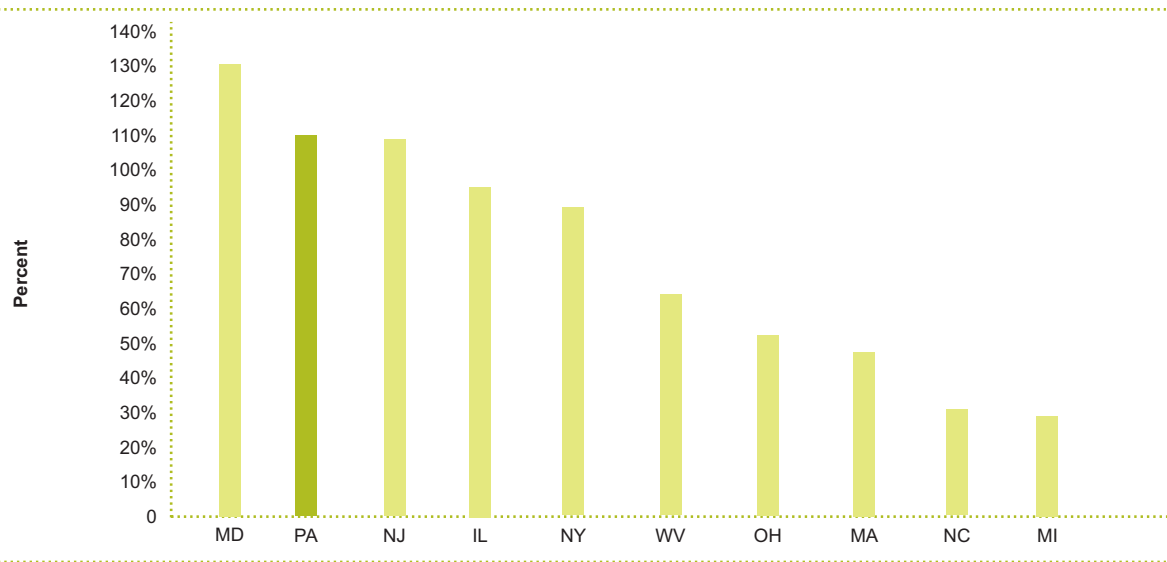
Growth in manufacturing exports can be contributed to the following factors: the declining value of the U.S. dollar which makes Pennsylvania goods cheaper overseas; the urgency of firms to find new markets during the recent recession, the state's diverse presence of many significant manufacturing industries (compared to one or two key industries in some states); and comprehensive support from the state's Office of International Business Development. Pennsylvania's International Office offers extensive overseas expertise, assistance in accessing with trade shows and other marketing opportunities, plus an extensive in-state network of technical assistance providers across the state.

Pennsylvania ranks 9th nationally in manufactured exports, surpassing the state of New Jersey in 2008. Pennsylvania manufactured goods represent most of the state's exports – 92 percent in 2008.





MANUFACTURING EXPORTS 2003-2008



Source: US Dept. of Commerce

MANUFACTURING SECTORS

Major Sectors by Output

Pennsylvania's manufacturing industry is highly diverse, with no one sector dominating. This is both a benefit to the state's economy during recessions and also a limit with how quickly the state reflects a boom. States with a dominant industry experience dramatic increases in output during recovery periods – like automotives, aerospace and defense contracting – but these states also see steep declines during downturns as a result of the reliance on one sector.

Pennsylvania's share of these industries is larger than the nations share for output:

- > Primary metals - 15%
- > Paper - 7%
- > Printing - 6%
- > Electrical and appliance - 6%
- > Plastics - 5%
- > Wood products - 5%
- > Nonmetallic mineral manufacturing - 5%
- > Furniture and related products - 4%

Within the state, almost 60% of the output comes from these sectors:

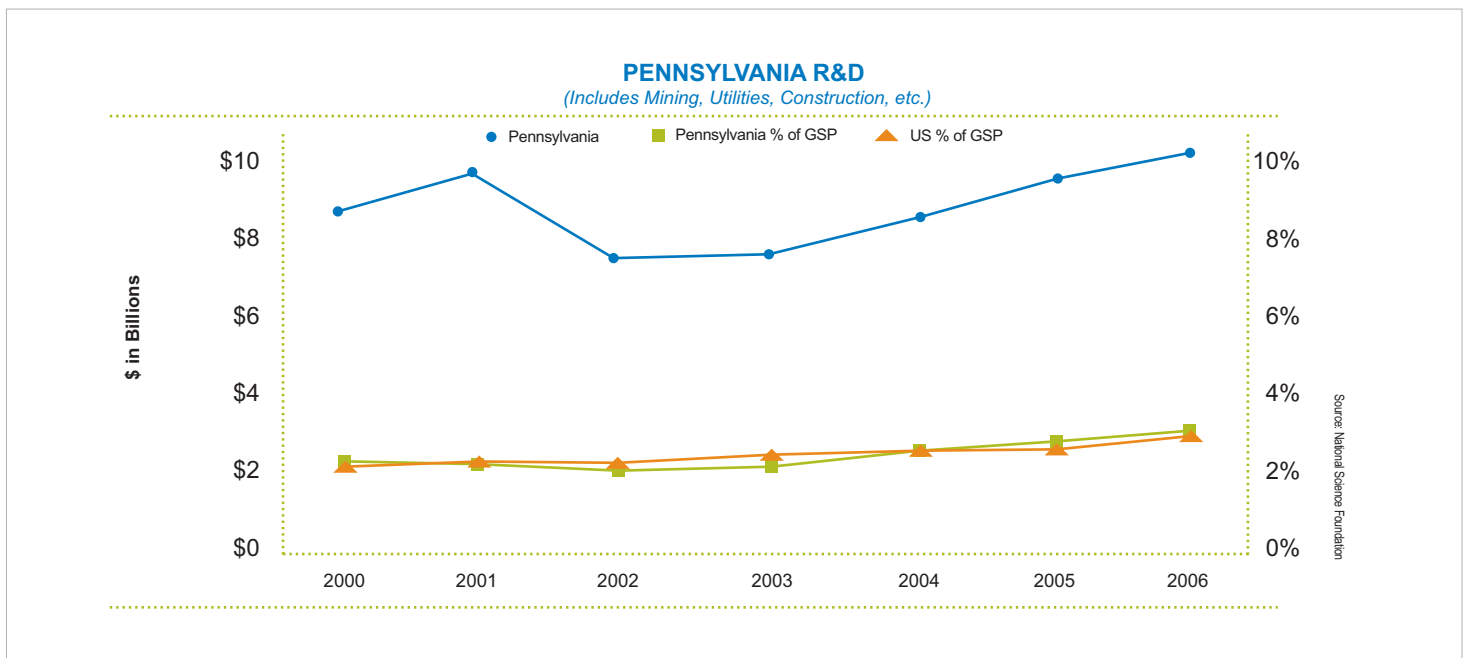
- > Primary metals
- > Fabricated metals
- > Computers and electronics
- > Food products
- > Chemical and pharmaceuticals

The fastest growing sectors from 2006 to 2007 prior to the recession included:

- > Wood products
- > Computers and electronics
- > Other transportation equipment
- > Food products
- > Plastics and rubber

R&D EXPENDITURES

A key to industrial competitiveness and an economy's ability to innovate is the continued investment in research, development and testing. Pennsylvania manufacturing has continued to do so at an increasing rate – moving Manufacturing R&D ranking from 9th to 8th in 2006*, surpassing our competitor state New York. (*most recent data available)



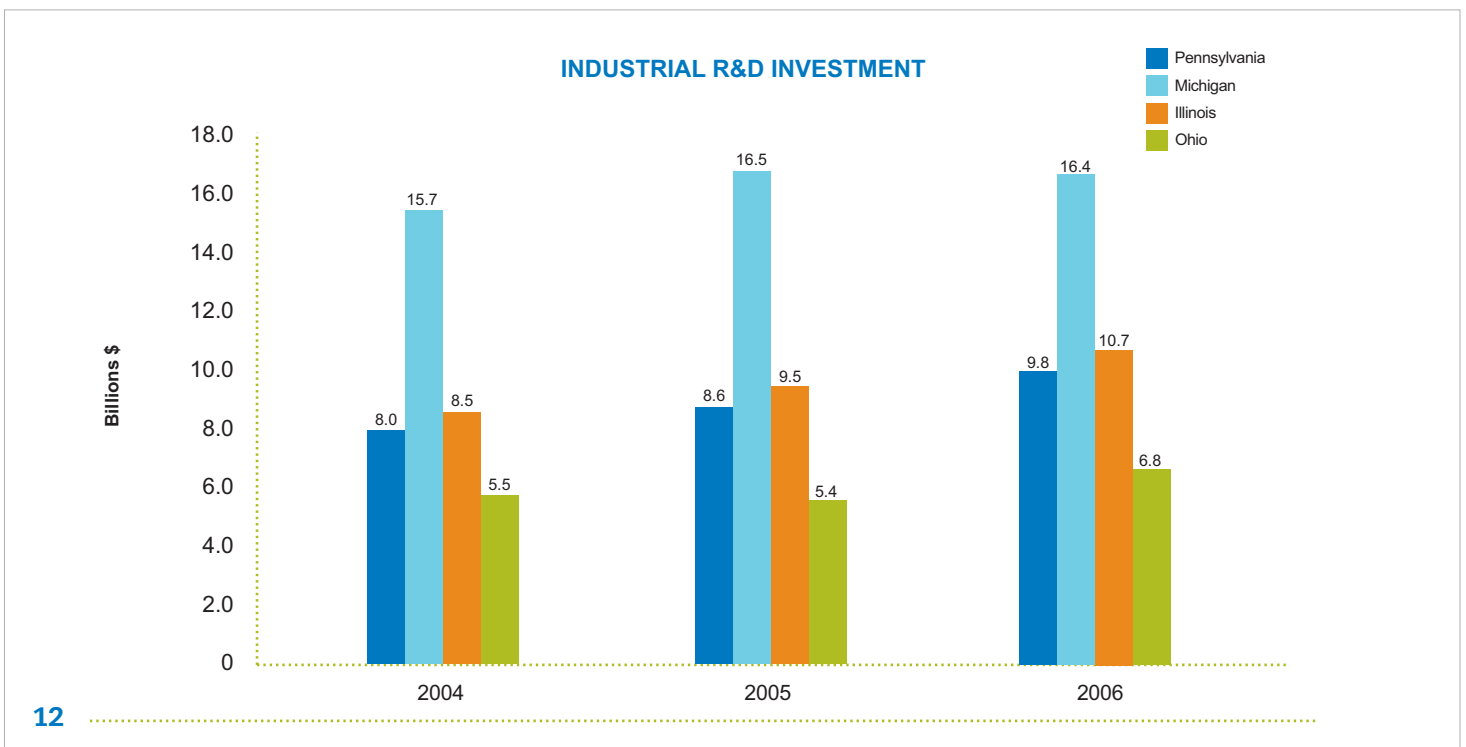
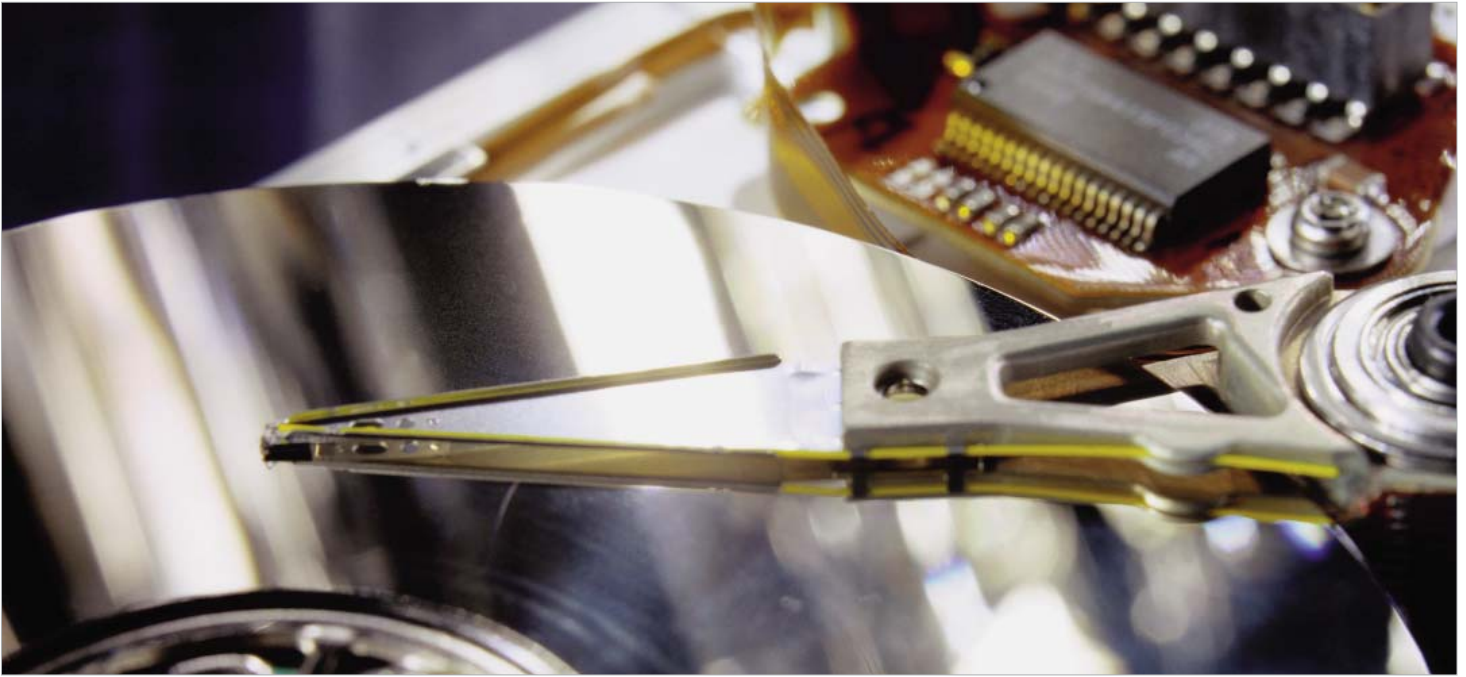
> > > PENNSYLVANIA'S RESEARCH & DEVELOPMENT TAX CREDIT PROGRAM

Pennsylvania's R&D tax credit program provides for a credit of 10% on the increased amount of investment over a base period. It's notable in Pennsylvania that 20% of the pool of eligible credits are set aside for small companies. In addition, if Pennsylvania companies do not owe state tax liability, their credits can be sold or assigned to another taxpayer who may use up to 75% of the credit on their own state tax liabilities. This selling of credits allows companies to generate additional capital for continued investment into their operations. This is especially helpful for small companies that invest heavily into research and new product development. In 2009, 211 small firms were awarded \$4 million in State R&D Tax Credits.

For more information, visit newPA.com.

Pennsylvania's Industrial Research & Development (PA compared to competitor states)

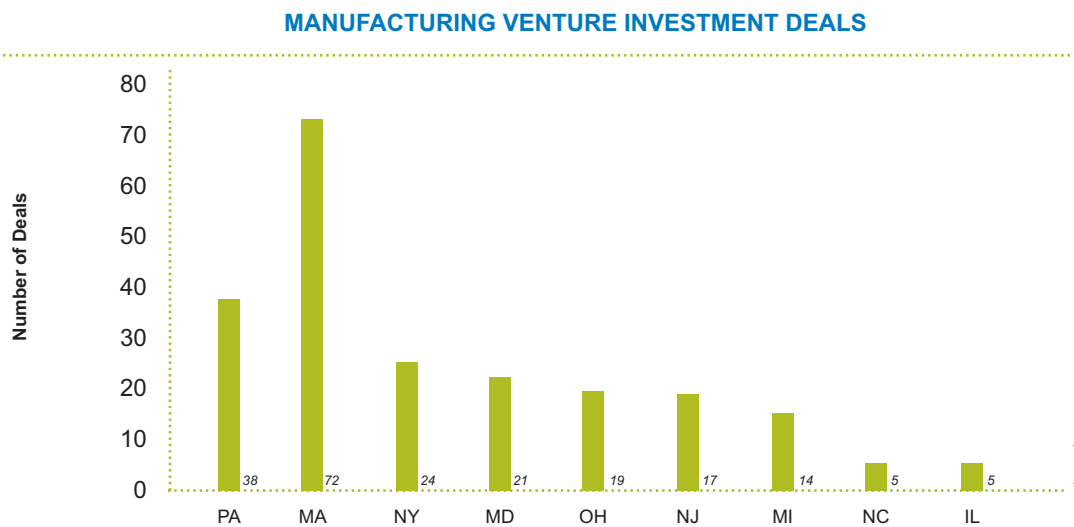
Pennsylvania, with an annual R&D investment of more than \$8 billion, consistently ranks in the top 10 for industrial R&D.



MANUFACTURING INVESTMENT

Venture capital is a good indicator of how innovative a state's business sector has become. Venture capital is a financing tool for companies that can provide much needed investment capital to drive growth and expansion. Typically, venture investors obtain controlling or part ownership of firms in exchange for their investments and will look for a high return on the investment that usually results in the company's sale, a public offering or another event to hopefully provide a high return on the funds invested.

The venture capital landscape has changed dramatically over the last several years as the U.S. economy slipped into recession. Investing strategies have become more conservative, resulting in reduced deals and a decline in dollars invested. Venture investment in Pennsylvania's manufacturing sector--defined in this report as medical devices, industrial/energy, electronics/instrumentation and networking/equipment--has remained steady in the number of deals with manufacturing related investments between 2007 and 2008. In 2008, Pennsylvania ranked second among competitor states in this measure. Since 2003, almost \$1.3 billion has been invested in these sectors in Pennsylvania, significantly more than any other competitor state, except for Massachusetts.



PENNSYLVANIA'S COMMITMENT OF RESOURCES

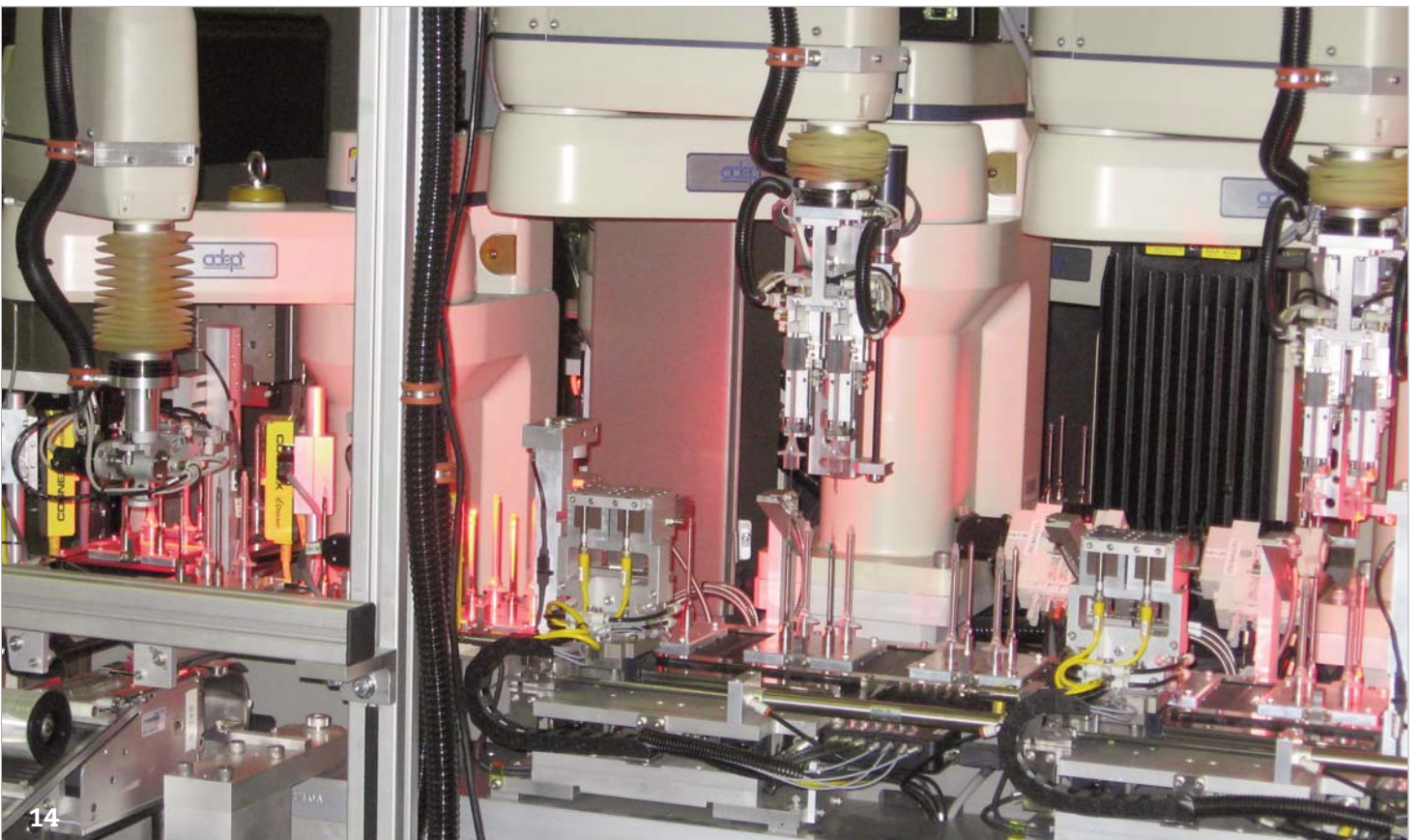
In order for manufacturing firms to be well positioned for the economic recovery, firms must prepare now. The Commonwealth's assistance programs and partnerships provide a broad range of services and resources to assist firms, including: new business models and strategies; market research and analysis; sales process development; new product processes; supply chain integration; technology adoption; operational performance improvements; adoption of green and sustainable business practices; international exports; and workforce training and development.

The Pennsylvania Department of Community & Economic Development and its many partners strongly support manufacturing industry innovation. The partners listed on the following pages are playing an active role in shaping the future of manufacturing in Pennsylvania.

Pennsylvania's Manufacturing Ombudsman

The Pennsylvania Manufacturing Ombudsman provides information and referrals to manufacturers requesting services in areas such as financing, education and training, technical assistance and regulatory issues. The Ombudsman also serves as the primary advocate for manufacturing businesses to help them navigate programs and regulations when dealing with state agencies. www.newPA.com, search Manufacturing Ombudsman.

The Commonwealth offers a wide range of resources to assist Pennsylvania manufacturers at all stages of the life cycle. **For a complete listing of resources, visit www.newPA.com**



Industrial Resource Centers

There are seven Industrial Resource Centers located strategically throughout the Commonwealth. These Centers were established to help small- and medium-sized manufacturing enterprises respond to changing markets, new technology and the competitive pressures of today's global economy. www.pairc.net



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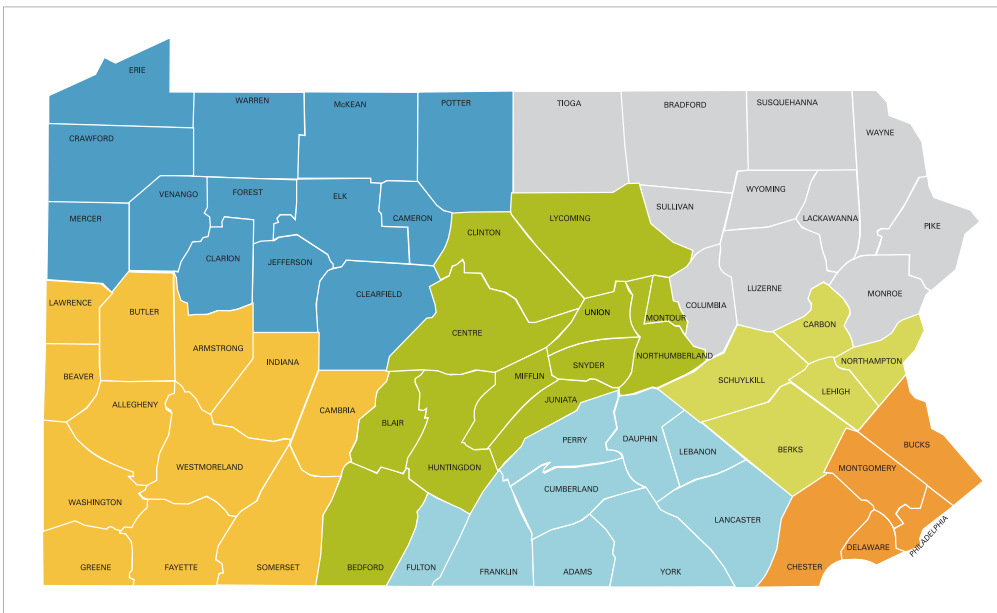
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Workforce

Department of Community & Economic Development (DCED) offers grants for training of new and incumbent employees at Pennsylvania based firms. The Department supports both basic skills training and customized job training for individual firms. newPA.com

Department of Labor & Industry (L&I) promotes economic development and an improved business climate through a variety of initiatives and programs to help Pennsylvania's workforce remain world-class and globally competitive. To access your local CareerLink, Industry Partnership or local Workforce Investment Board, visit paworkforce.state.pa.us

Pennsylvania Manufacturing Career Center is located in the Department of Labor and Industry and was created to work with industry, education and government to address the high skill shortages experienced by the manufacturing industry. The Center will work with industry to immediately address the key occupation skill shortages, develop a strong career pipeline and improve the image of manufacturing to attract talent. www.paworkforce.state.pa.us, click on PA Workforce Investment Board.

Exports

Office of International Business Development is the states lead office to support exports and drive foreign investors to PA. The office provides some funding, technical assistance and access to foreign representatives in many critical export markets. newPA.com

Regional Export Network provides manufacturing and service firms with export development services, including market research, market entry strategy development, technical support, and export finance and grant programs. They can also connect companies interested in participating in Pennsylvania-led trade events. newPA.com

Financial Assistance

Business Financing DCED offers low interest loans and some grants to support machinery, equipment, construction, site development and working capital. newPA.com

Ben Franklin Technology Partners is an international model for innovation in technology based economic development. Serving the entire state, BFTP invests risk capital in emerging technology based enterprises and established businesses; provides hands-on technical and business expertise to spur growth and accelerate commercialization activities; and provides entrepreneurs with access to its extensive network of public and private resources. benfranklin.org

Commonwealth Financing Authority was established as an independent agency of the Commonwealth to administer Pennsylvania's economic stimulus packages and \$335 million in energy programs. The CFA holds fiduciary responsibility over the funding of loans, loan guarantees and grants in support of Pennsylvania's economic growth. newPA.com, search Commonwealth Financing Authority.

The Innovation Partnership is a consortium of economic development and business assistance organizations located throughout Pennsylvania, dedicated to helping early stage technology companies secure federal funding opportunities. innovationpartnership.net

Technical Assistance

The Center for eBusiness and Advanced Information Technology eBizITPA assists companies in Northwestern Pennsylvania all along the business lifecycle. Specific services include education and training programs in e-business and advanced information technology; access to online supply-chain management solutions; and programs to attract and establish viable businesses. eBizITPA.org

Local Development Districts are funded through the federal Appalachian Regional Commission and the Commonwealth, seven regional centers serve as liaisons to the federal and state governments throughout the 52 Appalachia designated counties in Pennsylvania. The LDDs provide services in international trade development, government procurement, electronic commerce development, rural transportation and infrastructure, and workforce development. paldd.org

Pennsylvania Small Business Development Centers are the statewide network of sixteen university-based SBDCs assists high growth and technology firms with sophisticated business management issues, including alternative financing, human resources, intellectual property, and product commercialization. pasbdc.org

Pennsylvania Technical Assistance Program PENNTAP supports technology based economic development by helping Pennsylvania companies improve competitiveness by providing a limited amount of free technology assistance to help resolve specific technology needs. penntap.psu.edu

Strategic Early Warning Network works with at-risk manufacturing firms at no charge with support from the PA Department of Labor. The program provides professional and consulting services in financial restructuring, buyouts, succession planning and owner transition and labor management relations. steelvalley.org

Recycling Markets Center located at Penn State Harrisburg and funded in part by the PA Department of Environmental Protection helps companies become more profitable through the use of recycled materials, builds new markets and businesses with recycled materials, develop products with recycled materials and assist firms in buying and selling recyclable materials. parmc.org

Keystone Innovation Zones are community/university partnerships created to generate job growth through technology transfer and entrepreneurship. The Zones are focused around colleges and universities and nurture the creation of new technology based companies. Zones also offer technical assistance to start-ups, tax credits to firms located in the Zone and other financial and business expertise. newPA.com, search KIZ.

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