

**Regional Economic Development Council of the Southern Tier**  
***Advanced Industries: Nexus of Transportation Products, Components and Control Systems***

“Astonishing new technologies—ranging from advanced robotics and ‘3-D printing’ to the ‘digitization of everything’—are provoking genuine excitement even as they make it hard to see where things are going.” Brookings Institute. *America’s Advanced Industries: What They Are, Where They Are, and Why They Matter*. February 3, 2015.

In May 2015 The Brookings Institute issued a report entitled “America’s Advanced Industries,” in which the institute asserts that the “advanced industries” sector will be of special importance to America’s future. The report makes the case that “America’s advanced industries are a critical anchor of national prosperity. Business leaders, government, and the civil sector need to work together in new ways to augment their vitality.”

Advanced industries also provide extremely high-quality economic opportunities for workers with an annual compensation that is more than double the national average wage. Most importantly, the opportunity to earn such wages are not isolated to the engineers and those with professional degrees as more than half of the sector’s workforce possess an education level less than a bachelor’s degree, thus allowing the hard-to-place worker an entry into the American workforce.

Of the thirty-five Advanced Industries in the manufacturing sector identified by the Brookings Institute, the Southern Tier excels in eight, most of which are clustered in the Transportation Products, Components and Control Systems sector: Aerospace Products and Parts; Clay Products; Commercial and Service Industry Machinery; Computers and Peripheral Equipment; Engines, Turbines, and Power Transit Equipment; Navigation, Measurement, and Control Instruments; General Purpose Machinery; Transportation Equipment.

Key factors were evaluated to determine the strength and impact of manufacturing and advanced manufacturing in the Southern Tier including employment, wages, exports, supply chain and multipliers. According to the New York State Department of Labor, the Southern Tier’s manufacturing industry employs 13.3% of all workers in the region; which is above the statewide average of 5.1% and national average of 9.0%. More specifically, the Southern Tier’s “advanced manufacturing” industry employs over 27,000 laborers (80% of the region’s 34,000 manufacturing workers) with an average annual salary of \$60,862. This is 41% above the average of all other industries in the region (\$43,177). It also is high in comparison to the national average of \$44,888. In terms of exports, the Southern Tier’s advanced manufacturing industry leads all other clusters in the region with exports valued at nearly \$12 billion, or equivalent to 32% of the entire region’s exports.

Within the Southern Tier’s advanced manufacturing industry, the Transportation Products, Components and Control Systems sector offers the greatest potential for significant growth in terms of supply chain growth, technology infusion for business expansion, employee hiring, foreign investment and exports. This sector currently employs over 11,000 workers with an average annual wage of \$73,800. It is composed of 65 businesses that specialize in Advanced Transportation Products, Components and System Controls. The anchors are a strong base of multi-national firms such as Corning Incorporated, Hilliard, CAF Railway Solutions (Spain), Raymond Corporation (Japan [Toyota Industries Corp.]), BAE Systems (Britain), Alstom S.A. (France), Borg Warner, Dresser-Rand, GE, Lockheed Martin and more. In fact, seven out of the eight counties that comprise the Southern Tier region have a presence of at least one multi-national corporation or conglomerate involved in transportation equipment manufacturing.

Four billion dollars in exports are generated by this sector, representing an increase of 44% in export value growth between 2009 and 2012. The strength of this industry section also is demonstrated by its Multiplier Effect of 2.46 and Location Quotient (LQ) of 8.968 – exponentially higher than the LQs of any of the region’s other industry clusters.



American transportation policy has been steadily shifting towards reforms that help rebuild and strengthen the economy, promote energy independence, are environmentally friendly, and provide affordable and dependable options for citizens to move from one place to another. Hybrid buses and rail, especially light rail, transportation are a method that addresses all the stated criteria for the future. According to the U.S. Department of Transportation, use of rail transportation in the nation has steadily increased over the last ten years, with use of AMTRAK services jumping 44% alone. Former Secretary of Transportation Ray LaHood has even gone so far as to say that an influx in the demand for passenger railways “is coming . . . there’s simply no stopping it.”

Major national actions will be taken in the next decade that will cause a marked increase in demand for advanced manufacturing, especially that of transportation equipment manufacturing. According to AMTRAK and the International Union of Railways, there are numerous planned commuter rail system projects currently and they can be found throughout the entire nation such as Atlanta, Charlotte, Cleveland, Dallas/Fort Worth, Denver, Detroit, Houston, Indianapolis, Minneapolis, Pittsburgh, San Antonio, and St. Louis. It is without question, however, that the two most significant planned projects are AMTRAK’s proposed updating of the current Northeast Corridor to allow for next-generation high-speed rail, costing a 2010 estimate of \$117 billion, and AMTRAK’s planned high-speed rail line between Washington D.C. and Boston, which would cost a 2012 estimate of \$151 billion and take more than 25 years to design and build.

There are three critical factors facing the Southern Tier’s to grow its advanced manufacturing sector.

1. **Workforce.** The workforce of the manufacturing industry of the region is aging, with older workers outnumbering younger workers. About a quarter of all jobs across the region are held by workers 55 and older and the University at Buffalo Regional Institute reports that “without strong career pipelines, employers in certain industries (manufacturing, etc.) may struggle to fill vacancies, as younger workers are typically finding work in other sectors.” There are opportunities for rewarding and high-paying careers in advanced manufacturing. Steps need to be taken to expose young people to career opportunities and engage the existing workforce in technical skills training.

2. **Commitment to Innovation and Infusion of Technology.** In order to sustain the industry's competitive edge, there needs to be the continued commitment for internal corporate R&D as well as relationships with universities and institutions of higher learning. The Advanced Manufacturing Center being proposed by Binghamton University is a prime example of the steps needed in order to push the advanced manufacturing industry that extra step forward.
3. **Supportive Ecosystem.** This third factor includes the infrastructure for industry expansion, as well as the revitalization of the communities that is critically important to attracting and retaining the young talent. Quality of life will be a major driver in attracting scientists, engineers, and the skilled worker; particularly housing and vibrant downtowns.

With the region already being recognized worldwide for its manufacturing prowess in Transportation Products, Components and Control Systems. This large and prominent industry cluster has the potential to be one of the most influential economic drivers in creating the region's advanced economy. The sector is well poised to grow with the combination of market forces, innovative R&D, strategic private sector and academic collaborations, and industry leadership. All indicators point to stability and growth among the anchor manufacturers and supply chain with a projected creation of at least 1,500 new jobs in the next five years.

### **Game Changing Investments**

*What will it take to power the growth and development of this industry sector in the Southern Tier?*

- ***High-levels of R&D and Commitment to Innovation***
- ***Continuously Recharging the Skills Pipeline and Attracting STEM Workers***
- ***Strengthening the Advanced Manufacturing Ecosystem***

#### **1. Recharge the Skills Pipeline**

More qualified workers with different and more technical skillsets are critical to the future competitiveness of the sector. However, the skills prerequisites of modern advanced industries have been changing faster than the region's ability to train the needed workers. Now that the economy is heating up and firms are beginning to expand again, it is important to improve the availability of skilled workers by developing smart, industry-led, sector-specific, and regional skills initiatives. Overall, firms need to get much more involved in developing the skills pipeline and the public sector must become much more responsive to their needs.

Sample Projects:

- ✓ Region-wide advanced manufacturing workforce awareness and recruitment program.
- ✓ Skills development programs established by the community colleges and BOCES in collaboration with the private sector and workforce development agencies.
- ✓ Development of specialized workforce development programs and facilities at key growth areas such as Raymond Corporation and the Manufacturing Hub for High Speed Rail in Hornell to facilitate the transfer of technology from Japan and France.

## **2. Commit to Innovation and Infusion of Technology**

Innovation will be the key to increasing the Southern Tier's competitive strength in the advanced manufacturing sector. Ground-breaking research and innovative strategies are being introduced by Binghamton and Cornell Universities, together with private sector R&D by international leaders in the region that will increase the competitiveness of this sector. An example of the regional synergism is the collaboration with Binghamton University's proposed EPIC 3D Printing Center and the Center for Manufacturing of Functional Materials and Electronics on Flexible Substrates on the Huron Campus in Endicott, NY. These centers will focus on advanced design, visualization, and manufacture and commercialization of new products for the Transportation Products, Components and Control Systems manufacturing industry.

### Sample Projects:

- ✓ The Center for Technology Infusion and High-Tech Engineering Design to advance technologies for the Transportation Products, Components and Control Systems manufacturing sector. A consortium of corporations would operate the center and share in the pre-competitive research, as well as undertake proprietary research projects. It is proposed the center have its own multi-disciplinary researchers recruited working in collaboration with Binghamton and Alfred Universities.
- ✓ Construction of a centenary test track for testing by local companies and multinational light rail companies in the Northeast.
- ✓ Establishment of an incubator to nurture and grow the supply chain, particularly WMBE businesses.

## **3. Enhance the Advanced Manufacturing Ecosystem**

Growth of the advanced manufacturing base requires investment in infrastructure, as well as cutting-edge equipment and manufacturing systems. In addition, the communities supporting the largest concentration of advanced manufacturing companies, skilled workers and supply chain networks require revitalization and enhancements of their urban cores and neighborhoods.

### Sample Projects:

- ✓ Revitalization projects in Corning, Elmira and Hornell including infill development to provide for new and diverse housing options and creative business opportunities, increased access to waterfronts and recreational trails, repurposing existing buildings to allow for a range of new uses, streetscape improvements to enhance the public realm, and brownfield revitalization.
- ✓ Expansion of inventory control and manufacturing systems of supply chain businesses.
- ✓ Creation of a Manufacturing Hub for High Speed Rail Development in Hornell, including site expansion and infrastructure improvements to the South Yard, replacement of rail, rehabilitation of industrial facilities, and construction of a linkage from the Norfolk Southern main line.
- ✓ Enhancement of multi modal facilities to assist with product distribution and supply chain growth.