

EXECUTIVE SUMMARY

This study explores major trends affecting the aircraft engines industry for the purpose of aiding the Indianapolis Private Industry Council and other regional agencies with their economic development efforts in Central Indiana*. Regions are increasingly forced to think globally in order to address immediate economic challenges affecting the competitiveness of their respective industries at home. Aircraft engines manufacturing and services presents an opportunity for Central Indiana to develop this critical dialogue, given the global reach of the industry's various markets and supply chains. Analysis and findings are structured around four main components: First, an exploration of Central Indiana's economic base using an industry cluster framework; second, a summary of global trends affecting aircraft engines, with a focus on manufacturing and aftermarket services; third, a breakdown of the industry's structure using a Global Value Chains (GVC) framework - this provides a method of discovering and monitoring Central Indiana's competitive advantage in aircraft engines; fourth, a set of specific actions that the region should consider if it seeks to strengthen its place as a recognized center for aerospace.

Highlighted findings with respect to the industry and Central Indiana include the following:

- Aircraft engines and parts manufacturing is a high value industry for Central Indiana, showing steady employment growth, strong sales, and high average wages. Data from the Cluster Mapping project at Harvard's Institute for Strategy and Competitiveness put Indianapolis as the fourth largest MSA employer in the national aerospace engines cluster (2004). The state of Indiana also ranks 8th in manufacturing activity for aerospace products and parts, with a 20 percent increase in value added from 2003 to 2006 (US Census Bureau Survey of Manufacturers).
- International competition is fiercest between smaller, less flexible firms working to original equipment manufacturers' (OEMs) exact specifications. These firms typically manufacture relatively simple engine parts and offer little in design or other added-value activities. Overall, OEMs are moving to reduce direct dealings with these firms. As a result, the higher-tiered manufacturers of sub-systems and complex components have become major players in aero engines manufacturing. More and more, OEMs are redirecting production capacity to these bigger firms, while focusing on product design, marketing, and optimizing the supply chain for final product assembly. Two of these globally recognized aerospace suppliers have recently moved operations to Central Indiana - Northstar Aerospace and TMX Aerospace. Also, there are a handful of firms native to Central Indiana that show potential for developing more sophisticated manufacturing capabilities - Major Tool and Machine Inc., and Aerodyn Engineering.

* Central Indiana refers to a nine county region identified by the Private Industry Council as being socially and economically linked. These include Boone, Hamilton, Hendricks, Johnson, Madison, Marion, Morgan and Shelby county. The terms Indianapolis and Central Indiana are both used when discussing this region.

- Aerospace products manufacturing in Central Indiana is led by Rolls Royce Corporation and around twenty five other firms directly serving the market (see firm list in appendix). These firms employed approximately 6,500 people in 2006, of which more than 4,000 worked for Rolls Royce. However, employment across Central Indiana's aero engines global value chain (GVC) could reach up to 75,000 jobs. These include firms and supporting institutions directly serving the aerospace engines and parts industry, those that have been classified with the capacity to serve the industry, and those that purchase products directly from the industry.
- The region was benchmarked at the national, regional, and MSA level. Out of the four MSAs benchmarked – Cincinnati, Ohio; Columbus, Ohio; Grand Rapids, Michigan; and Hartford, Connecticut - Cincinnati is the most similar with respect to overall economic base and aerospace products profile. This region has a strong base in aerospace with GE Aviation as the principle employer. Development initiatives in support of aerospace in this region should be closely monitored.
- The lack of workforce preparedness is a major threat to aerospace products, both in the United States and abroad. In short, more people are leaving and retiring from the industry than there are filling needed positions. The problem extends through to research and development, manufacturing, and aftermarket services. Labor shortages at a time of record growth has prompted U.S. Congress and regions to promote workforce development targeted at this high technology industry.
- Aircraft engines OEMs are positioning themselves to capture an increasing share of the maintenance, repair, and overhaul (MRO) market. Engine repair is the largest MRO segment. Other services include asset management, information systems, and customer training. Traditionally these functions were handled by fleet operators but now major airlines have moved to outsourcing these roles to other parties. Spend on MRO services in the global military market is even larger than in the civil market.
- Analysis of the aero engines GVC confirms logistics and warehousing as Central Indiana's main source of competitive advantage in the aircraft engines industry. Sophisticated logistics and supply chain capabilities have become ever critical for OEMs, Tier I suppliers, and MRO service providers. The manufacture of major components and sub-systems has been redirected to key suppliers around the globe, with up to 80 percent of a modern aero engine consisting of parts produced by the external supply network. Likewise for the MRO market, third party logistics suppliers are working more closely with service providers to reduce delivery time of crucial replacement parts to grounded aircraft.



Based on these findings as well as others, policy recommendations in support of the aerospace industry in Central Indiana fall under five main categories:

- Targeted workforce development – A shortage of skilled workers is a major threat to the aerospace industry. Existing partnerships with IPIC and the Rolls Royce training facility should be strengthened and publicized to grow Central Indiana’s technical workforce, and to promote the region’s preparedness to compete in the industry.
- Targeted firm attraction – Efforts should focus on sophisticated Tier I manufacturing and integrated MRO service providers, emphasizing Central Indiana’s strengths in logistics, warehousing, and relatively low labor costs. Focus should fall on MRO service providers capable of servicing A320 and B737 model aircraft which will account for 48 percent of the air transport fleet by 2017 (Aerostrategy).
- Stronger marketing efforts to promote the Indianapolis International Airport - The Indianapolis Maintenance Center is a strong asset to the region if it seeks to engage the MRO services market. Targeted marketing focused on integrated MRO service providers should emphasize the Indianapolis International Airport as the most suitable location for “pit-stop” servicing for the airlines industry.
- Global market intelligence - Continued efforts to maintain up-to-date industry intelligence on global trends and development initiatives in other regions and nations will enhance Central Indiana’s ability to stay competitive.
- Increased statewide collaboration with firms and agencies in support of the aerospace industry in Indiana. The state has a diverse presence of agencies and consortiums working to organize and stimulate the aerospace industry. Central Indiana should take a more central role in coordinating these efforts.