MARSHALL
SPACE FLIGHT CENTER
Economic Impact Report

Published 2017
In Huntsville, Alabama, NASA’s Marshall Space Flight Center (MSFC) is developing the essential launch vehicle and technologies to achieve NASA’s human journey to Mars. In doing so, Marshall provides valuable contributions to the community, the state, the region, and the nation. Each year, Marshall creates significant economic impact by supporting thousands of jobs and investing millions of dollars in research and development, driving an innovation-based economy in Alabama and throughout the United States. Marshall manages the Space Launch System (SLS), NASA’s rocket that can launch astronauts on their way to Mars or other destinations beyond Earth orbit.

### Marshall’s output in comparison to top industry sectors in Madison County*

<table>
<thead>
<tr>
<th>Industry</th>
<th>Marshall Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional, Scientific, and Tech. Services</td>
<td>$1,713,790</td>
</tr>
<tr>
<td>Federal Government (Civilian)</td>
<td></td>
</tr>
<tr>
<td>Manufacturing</td>
<td></td>
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<tr>
<td>Real Estate and Rental and Leasing</td>
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<tr>
<td>State and Local Government</td>
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<tr>
<td>Retail Trade</td>
<td></td>
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<tr>
<td>Health Care and Social Assistance</td>
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<tr>
<td>Wholesale Trade</td>
<td></td>
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<tr>
<td>Administrative Services</td>
<td></td>
</tr>
<tr>
<td>Federal Government (Military)</td>
<td></td>
</tr>
<tr>
<td>Accommodation and Food Services</td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td></td>
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<tr>
<td>Information</td>
<td></td>
</tr>
<tr>
<td>Other Services (except Public Administration)</td>
<td></td>
</tr>
<tr>
<td>Finance and Insurance</td>
<td></td>
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<tr>
<td>Transportation and Warehousing</td>
<td></td>
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<tr>
<td>Educational Services</td>
<td></td>
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<tr>
<td>Management of Companies and Enterprises</td>
<td></td>
</tr>
<tr>
<td>Arts, Entertainment, and Recreation</td>
<td></td>
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<tr>
<td>Agriculture, Forestry, Fishing and Hunting</td>
<td></td>
</tr>
<tr>
<td>Mining, Quarrying, and Oil and Gas Extraction</td>
<td></td>
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<tr>
<td>Utilities</td>
<td></td>
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</tbody>
</table>

*The economic impact analysis presented is based on research of 2015 economic data conducted by the University of Illinois-Chicago: The Nathalie P. Voorhees Center for Neighborhood and Community Improvement.*
While located in Alabama, Marshall Space Flight Center employs thousands of highly paid, skilled professionals and channels millions of dollars in federal spending in the form of contracts throughout the United States.

Marshall directly employs nearly 2,500 civil service workers across the nation. Moreover, for every civil servant employed, approximately 14.2 additional jobs are supported throughout the economy. These jobs come in the form of contractors and also the dentists, retail workers, school teachers, and others necessary to support the employment base. Additionally, those employees spend money in their community, thereby generating significant tax revenues for area economies. Throughout the United States, Marshall supports nearly 38,000 jobs and generates a total economic output of nearly $7 billion along with $830 million in federal, state and local tax revenues.

**Economic Impact**

- **$7 Billion**

  - **Alabama, (not including Madison County)**
    - $614 Million
  - **Madison County**
    - $3.15B
  - **Other States**
    - $3.23B

**Jobs**

- **~38,000+ jobs**

  - **Alabama, (not including Madison County)**
    - 6,000
  - **Madison County**
    - 16,000
  - **Other States**
    - 16,000
**Alabama**

Marshall Space Flight Center has an enormous impact in its home state of Alabama. Not only does Marshall generate $3.8 billion in economic impact while supporting 22,000 jobs, but it also contributes more than $96 million in state and local tax revenues. Additionally, more than half of all of Marshall’s contracts are sourced within the state of Alabama – totaling $1.4 billion in procurement dollars.

To put this in perspective, Marshall Space Flight Center’s contributions to the state of Alabama made up approximately 1% of the Gross State Product in 2015. This is larger than the contributions of Educational Services.

**Marshall Procurement**

$2.14 Billion*

- **Alabama**: $1.4B
- **Tennessee**: 702,000
- **Other States**: $751 Million
- **International**: $6.5 Million

*Procurement dollars include all contracts for goods/services originating from Marshall.

**Tennessee**

The state of Tennessee also benefits from its proximity to Marshall Space Flight Center. Combined with contracting activity, Marshall supports approximately 120 jobs and generates close to $500,000 in state and local tax revenues annually. This results in a total economic impact of more than $30 million in Tennessee.
Local/Regional Impact

**Madison County**

Marshall Space Flight Center is the 2nd largest employer in the Huntsville/Madison County area supporting nearly 6,000 civil servant and on-site contract workers. In Madison County alone, Marshall supports more than 16,000 jobs that generate $1.2 billion in income. In addition, nearly $1.4 billion in contracts are sourced within Madison County for a total economic impact of $3.2 billion.

**Alabama’s 5th Congressional District**

Marshall is responsible for more than 17,000 jobs and contributes $73 million in state and local taxes within the 5th congressional district of Alabama.

**Alabama’s 4th Congressional District**

Marshall accounts for 238 jobs and $1.2 million in state and local tax revenues each year in Alabama’s 4th congressional district for a total economic impact of $64 million.

**Employment by Location**

- **Alabama 5th District**: 17,229
- **Alabama 4th District**: 238
- **Alabama (outside 4th & 5th)**: 4,365
- **Tennessee**: 120
- **Other States**: 15,839
The Space Launch System (SLS) is American’s new rocket for deep space exploration. It is the only launch vehicle capable of sending humans, and the large systems they will need to live and work, into deep space. As the largest program managed at Marshall Space Flight Center, the SLS program yields a significant economic impact on its own. In fact, SLS accounts for nearly 65% of all Marshall’s economic impacts at the national level.

**National Impact (SLS)**

SLS activities support more than 25,000 jobs nationwide and yields a total economic output of $4.75 billion. SLS contracts originating from Marshall Space Flight Center account for $1.6 billion and involve almost every major category of manufacturing or service production. SLS generates $563 million in federal, state, and local tax revenues throughout the United States each year.

In FY15, SLS development and production work was performed in 43 states by more than 800 companies.

**Alabama Impact (SLS)**

The economic impacts of SLS are heavily concentrated in Alabama. The SLS program supports 13,000 jobs and approximately $55 million in state and local taxes annually. Additionally, a large segment of SLS contracts, nearly $950 million worth, are sourced in Alabama. The total economic impact of SLS in the state of Alabama is $2.1 billion.
The Michoud Assembly Facility, located in New Orleans and managed by NASA’s Marshall Space Flight Center, is essential to NASA’s human space exploration mission. It is home to one of the world’s largest indoor manufacturing facilities, has 900,000 square feet of office space, a deep water port used for transportation, and its own dedicated rail head. Michoud’s importance to Louisiana and the nation goes beyond NASA, however. Michoud’s multi-tenant facility houses numerous government agencies and private companies.

**Jobs**

- ~5,000 jobs

**Economic Output**

- Louisiana/Mississippi: $342 Million
- Other States: $458 Million
- Total: $800 Million

**Procurement**

- NASA: $73 Million
- Other Government Agencies: $100 Million
- Total: $173 Million
Building the Space Launch System

Michoud has been manufacturing large vehicles and components for our nation’s space program for 50 years. Michoud is the main manufacturing and assembly site for the Space Launch System, which will take us to Mars and the furthest outreaches of our solar system.

Boeing is building the core state and upper stage of the SLS. Lockheed Martin will build the Orion crew vehicle and has completed the Orion test article, which is expected to launch as part of Exploration Mission 1 in 2018.

A Unique Multi-tenant Facility

Michoud is a multi-tenant facility with commercial and government partners that are paving the way for a more cost-effective way of operating government-owned facilities. Michoud has approximately 20 tenants, including the U.S. Coast Guard, U.S. Department of Agriculture, Textron, Big Easy Studios, and Blade Dynamics, which increased manufacturing space by 600% from March 2015 to July 2016.

• 50% reduction in operating cost in the Space Shuttle era
• Today over 17% of operating costs are funded by non-NASA tenants
• Increased commercial revenue by nearly 35% since 2010
• 982,000 sq. ft. available for new tenants
Redstone Arsenal

Marshall is based on Redstone Arsenal, a U.S. Army base that supports several major commands and is also home to a number of federal and international organizations.

Redstone Arsenal supports nearly 42,000 employees daily.

Cummings Research Park

4th largest in the world > 2nd largest in the nation > 300+ companies > 30,000+ People > 1.4% of Alabama’s total workforce

Average annual income at Marshall

Because of the very nature of jobs at Marshall Space Flight Center, the average annual income is higher than the national average. Marshall employs a workforce of highly skilled rocket scientists, engineers, physicists, chemists, and numerous others specializing in STEM-related fields, as well as professionals in accounting, communications, human resources, and more.

Jobs at Marshall provide an average annual income of $68,000, which is 20% greater than the national average of $57,000.
NASA and the Marshall Space Flight Center strive to help maintain a strong American education system, nurturing students’ interest in the fields of Science, Technology, Engineering, and Mathematics (STEM) from elementary school through college. NASA also forges strong ties with the nation’s academic centers of excellence and the educators who are shaping the minds of tomorrow’s workforce. The agency’s main goals are to inspire and motivate students to pursue careers in STEM related areas, and to engage the public in shaping and sharing the experience of exploration and discovery.

### MSFC Investments in Research Grants
Marshall, like all NASA field centers, maintains a highly educated workforce. This enhances the economic growth and development of the local community. To foster this growth, Marshall provides grants to both educational as well as nonprofit institutions for research that supports different aspects of the agency’s mission.
Partnerships

Space Act Agreements

Marshall offers the use of laboratories, test sites, and other cutting-edge facilities, along with the expertise of scientists, engineers, and propulsion experts to commercial industry, universities, and other government agencies through Space Act Agreements. The goal is to foster development of innovative commercial resources, capabilities, and spinoff technologies that benefit everyone.

In FY15, Marshall had 337 Space Act Agreements in place

Small Business

Nationally, Marshall supports a variety of small businesses including Small Disadvantaged Businesses, HUBZone Small Businesses, Women Owned Small Businesses, Service Disabled Veteran-Owned Small Businesses, and Veteran-Owned Small Businesses with business opportunities, marketing tools, and special programs such as the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs.

<table>
<thead>
<tr>
<th>Categories</th>
<th>MSFC % Goals</th>
<th>MSFC $ Achieved</th>
<th>MSFC % Achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC. $</td>
<td></td>
<td>$1,882.2M</td>
<td></td>
</tr>
<tr>
<td>SB</td>
<td>11.8%</td>
<td>$263.1M</td>
<td>14.0%</td>
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<tr>
<td>SDB</td>
<td>4.7%</td>
<td>$110.5M</td>
<td>5.9%</td>
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<tr>
<td>HUBZone</td>
<td>0.3%</td>
<td>$28.5M</td>
<td>1.5%</td>
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<tr>
<td>WOSB</td>
<td>1.7%</td>
<td>$60.8M</td>
<td>3.2%</td>
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<tr>
<td>SDVO SB</td>
<td>1.7%</td>
<td>$42.7M</td>
<td>2.3%</td>
</tr>
</tbody>
</table>
SBIR/STTR

The NASA Small Business Innovation Research (SBIR) and Small business Technology Transfer (STTR) programs fund the research, development, and demonstration of innovative technologies that fulfill NASA needs and have significant potential for successful commercialization.

Goals for the SBIR/STTR programs:

- Stimulate technological innovation
- Increase private sector commercialization of innovations derived from Federal Research and Development funding
- Foster and encourage participation in innovation and entrepreneurship by socially and economically disadvantaged small businesses
- Use small businesses to meet Federal research and development needs

National Impact of NASA Investments in SBIR/STTR

$181 Million Invested > 2,582 Jobs Supported > $474.5 Million Economic Output

Investing in Space Yields Benefits on Earth

Tiny Capsules Enable a World of Possibilities

Tiny capsules made of beeswax, dreamed up by engineers at Marshall Space Flight Center and perfected by Lenoire, North Carolina-based RMANNCO Inc., have revolutionized the way oil spills are cleaned. Joe Resnick, who worked with NASA to perfect the capsules in the 1980s, has made them even smaller and has developed a host of products, ranging from medical kits for dogs to synthetic pollen that could result in natural honey suitable for diabetics.

Space Blanket-Inspired Cases Protect Expensive Devices

Smartphones, laptops, and tablets are susceptible to damage if exposed to very high or low temperatures. Inspired by the space blankets he used as a Boy Scout, Nick Blanton, founder of Portland, Maine-based Salt Cases Company, developed fabric cases that incorporate thermal sheet technology created by Marshall Space Flight Center decades ago to protect 21st-century technology.