

# EVALUATING THE ECONOMIC IMPACT OF THE F-35

## An AeroDynamic Advisory White Paper

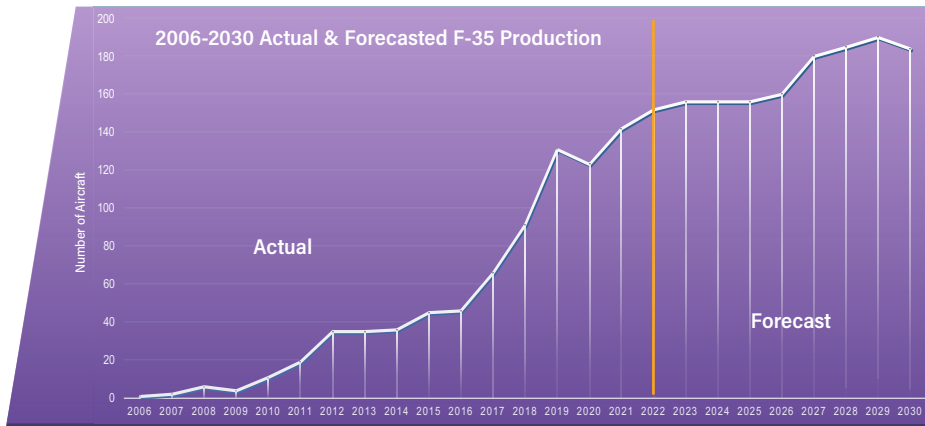


### OVERVIEW

The Lockheed Martin F-35 Joint Strike Fighter is a significant contributor to the US economy. It represents the largest procurement program in the history of the Department of Defense, with suppliers in nearly every US state and over 1,700 suppliers worldwide. The program has delivered over 840 fighters to date and is currently slated for over 2,400 aircraft deliveries to US forces as well as hundreds more to foreign countries.

As the F-35 prime contractor, Lockheed Martin manages an intricate and complex global supply chain comprising both large and small suppliers. These suppliers are grouped into tiers based on their position in the supply chain. For the F-35, Tier 1 suppliers supply directly to Lockheed Martin, while Tier 2 suppliers sell to Tier 1s. AeroDynamic Advisory's analysis includes four supplier tiers; the smallest companies are generally Tier 3 and 4 suppliers. All of these suppliers, no matter their size, contribute, directly and indirectly, to the U.S. economy due to their work on the F-35 program.

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Source: AeroDynamic Advisory

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Sustainment Activity	Description
Airframe Depot Maintenance	Maintenance of aircraft structure
Engine Maintenance	Repair and overhaul of aeroengines
Component Maintenance	Maintenance of aircraft systems and components including avionics, hydraulic, electrical, pneumatic and landing gear
Field Maintenance	Maintenance performed in the field or at intermediate maintenance depots
Supply Chain Management	Inventory management and logistics, including warehousing, transportation, planning and administration
Engineering & Technical Services	Management and engineering staff costs for aircraft technical management (planning, reliability, technical support maintenance technicians, manufacturer service bulletin reviews)
Training	Aircraft maintainer and pilot training (basic and recurring)
Major Modifications	Significant modification programs such as major avionics upgrades, re-engining, and life extension programs

### LOCKHEED MARTIN ESTIMATE OF F-35 ECONOMIC IMPACT

Lockheed Martin has recently estimated the total positive US economic impact of the F-35 at \$65 billion annually. This includes approximately \$30 billion in Lockheed Martin manufacturing and final assembly activities as well as direct spending with its suppliers. This activity, in turn, fuels an additional \$35 billion in indirect economic activity, a measure of the impact of the F-35 on the broader non-aerospace economy.

AeroDynamic Advisory recently conducted an independent assessment of the F-35 program. It was briefed on Lockheed Martin's methodology and provided access to its Tier 1 supplier spend data.

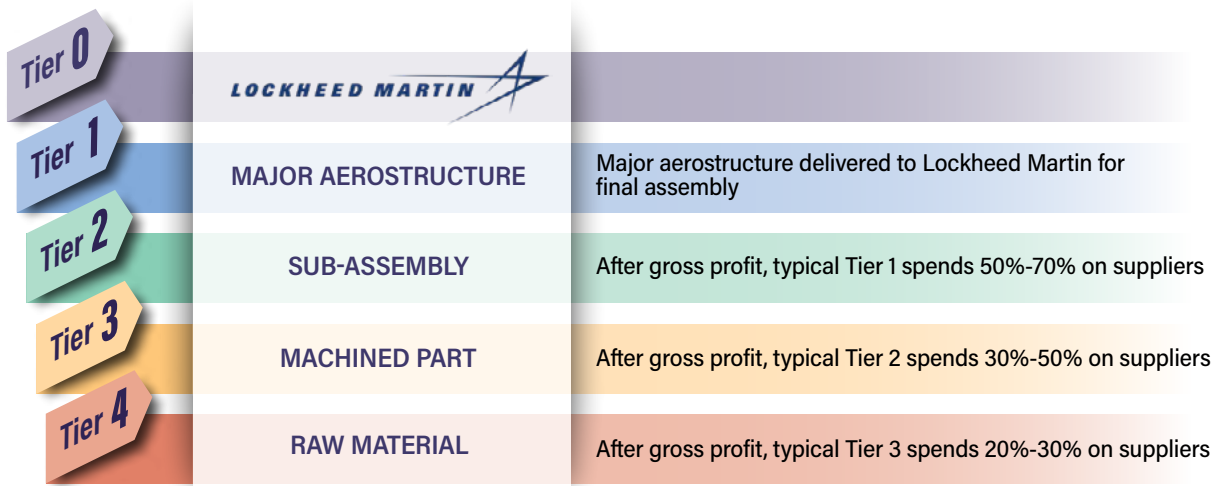
# AERODYNAMIC ADVISORY FINDINGS OF F-35 ECONOMIC IMPACT

Based on its decades of aerospace consulting experience and its proprietary databases, AeroDynamic Advisory concludes that Lockheed Martin's economic impact estimate impact of \$65 billion is conservative. AeroDynamic Advisory's estimate is \$72 billion year.

There are two reasons for this variance. First, Lockheed Martin does not fully capture all Tier 2 – 4 activities. Second, Lockheed Martin's analysis does not capture all F-35 sustainment activities.

As F-35 prime contractor, Lockheed Martin manages not only the manufacturing supply chain, but much of the sustainment as well. The scope of activities for supporting a complex and high-performance fighter aircraft is broad, and includes maintenance, training, engineering, and technical services. There is additional vital aircraft sustainment work not performed by Lockheed Martin employees such as engine maintenance, which is managed by engine OEM Pratt & Whitney, and field maintenance, which is conducted by the US and allied service men and women on the flight lines.

## Aerostructure Assembly Spending By Supplier Tiers



Source: AeroDynamic Advisory

## Direct Economic Impact

Accounting for dollars spent with all sub-tier suppliers, as well as all F-35 sustainment activities, yields an estimated \$4 billion per year in additional direct spending relative to the \$30 billion estimated by Lockheed Martin. Therefore, AeroDynamic Advisory estimates the total direct economic impact at approximately \$34 billion.

## Indirect Economic Impact

However, these direct dollars are slightly less than half the overall economic impact of the F-35 program. The remainder is comprised of indirect economic activity. This is the money that flows into the economy because of F-35 economic activity. Much of this is the impact of employee wages on local communities for spending on items such as housing, food, clothing, transportation, and entertainment. Lockheed Martin uses an industry-standard multiplier to convert direct to indirect economic activity. AeroDynamic believes this is a valid assumption based on its own research as well as estimates from the Bureau of Economic Analysis. When this multiplier is applied to the direct activity of \$34 billion, an estimated \$38 billion of indirect economic activity is generated.

## CONCLUSION

The F-35 program supports a large base of suppliers, skilled factory labor, maintainers, engineers, administrators, logisticians, and trainers. Its economic reach touches nearly every US state and provides countless jobs both directly and indirectly.

AeroDynamic Advisory estimates the F-35 program's positive economic footprint is larger than originally thought. Through a broader examination of the supply chain and repair capacity available on the program, and accounting for all work done in both the production and sustainment of these aircraft, AeroDynamic Advisory concludes that the actual annual economic impact of the F-35 program on the US economy is \$72 billion, some 10% higher than Lockheed Martin's original's estimate. As such, any additional investments, or cuts to the program will result in significant impacts to the national defense industrial base.