

Congress of the United States
U.S. House of Representatives
Committee on Small Business
2561 Rayburn House Office Building
Washington, DC 20515-6515

Memorandum

To: Members, House Committee on Small Business
From: Committee Staff
Date: June 9, 2014
Re: Hearing: "FAA's 2020 NextGen Mandate: Benefits and Challenges for General Aviation"

At 1:00 p.m. on Wednesday, June 11, 2014, the Committee on Small Business will meet for the purpose of receiving testimony from the Administrator of the Federal Aviation Administration (FAA) and small businesses in the general aviation industry regarding the FAA's 2020 NextGen mandate. This particular mandate was created as part of a larger effort to modernize the nation's aviation surveillance system, and requires that by January 1, 2020, all aircraft operating in controlled airspace be equipped with certain advanced technology systems (2020 Mandate). Small businesses in the general aviation industry have expressed concerns with the FAA's 2020 mandate, including: a lack of awareness of the mandate; high compliance costs as compared to aggregate operating costs; and a potential installation backlog.

I. The General Aviation Industry

A. Economic Impacts

General Aviation (GA) is made up of 360,000 aircraft in the United States that are responsible for carrying 166 million passengers¹ to around 5,000 communities in the United States, many of which have no scheduled commercial air service.² More than two-thirds of the 25 million flight hours made by general aviation flights are for business purposes.³

In 2012 alone, general aviation manufacturers generated \$4.8 billion in exports of domestically manufactured airplanes.⁴ The FAA reports that according to data from the United

¹ <http://www.gama.aero/what-ga>.

² GENERAL AVIATION MANUFACTURERS ASSOCIATION (GAMA), 2013 GENERAL AVIATION STATISTICAL DATABOOK & 2014 INDUSTRY OUTLOOK ii (2013), available at <http://www.gama.aero/files/GAMA%202013%20Databook-Updated-LowRes.pdf>.

³ *Id.*

⁴ *Id.* at 4.

States International Trade Commission, the civilian aviation manufacturing industry has supported a positive trade balance of over \$75 billion.⁵

The GA industry, both operations and manufacturing, employs about 1.2 million people and contributes approximately \$150 billion to the overall gross domestic product.⁶ Additionally, the GA industry has a significant impact on the tourism economy through the operation of air shows; these shows have a total direct and indirect economic impact of between \$1 and \$2 billion per year in 300 communities around the country.⁷

B. Firm Size in the GA Industry

The Small Business Administration (SBA) estimates that approximately 94 percent of the approximately 2,700 firms that provide air transportation services (cargo or passenger) have fewer than 500 employees and are considered small businesses under the SBA's size standard regulations.⁸ There are 3,000 firms that provide aviation support services, 92 percent of which are small businesses, and according to the SBA, 90 percent of the approximately 1,200 firms involved in the manufacturing of aircraft and parts are small businesses.⁹

II. FAA's NextGen 2020 Mandate

The FAA created the NextGen initiative in order to modernize aircraft surveillance through utilization of satellite-based systems and digital technologies.¹⁰ According to the agency, this initiative will increase safety, save fuel, and reduce delays at a time when many airports in the United States experience high levels of congestion. Ultimately, the FAA predicts this will result in making air travel more predictable, convenient, and reliable. To implement the NextGen initiative, the FAA published its final rule mandating that certain aircraft flying in United States controlled airspace be equipped with a certain type of positional broadcasting equipment by January 1, 2020.¹¹

Specifically, the 2020 Mandate requires that all aircraft flying in most United States' airspace be equipped with Automatic Dependence Surveillance Broadcast Out (ADS-B Out) technology. The FAA believes ADS-B Out will improve safety and reliability by enabling aircraft to provide continual, precise, real-time data about their position to both other aircraft as

⁵ UNITED STATES DEPARTMENT OF TRANSPORTATION, FEDERAL AVIATION ADMINISTRATION, THE ECONOMIC IMPACT OF CIVIL AVIATION ON THE U.S. ECONOMY 4 (2011), *available at* http://www.faa.gov/air_traffic/publications/media/faa_economic_impact_rpt_2011.pdf.

⁶ GAMA Statistics, *supra* note 2, at ii.

⁷ <http://www.airshows.aero/docs/Air%20Shows%20Fact%20Sheet%20April%2018.pdf>.

⁸ Letter from Sam Graves, House Committee on Small Business, to Erik Jensen, Chief, Policy, Plans & Stakeholder Affairs, Office of General Aviation, Transportation Security Administration, Department of Homeland Security 5 (Feb. 27, 2009) (on file with the Committee).

⁹ *Id.*

¹⁰ http://www.faa.gov/nextgen/why_nextgen_matters/.

¹¹ Automatic Dependent Surveillance—Broadcast (ADS-B) Out Performance Requirements To Support Air Traffic Control (ATC) Service, Final Rule, 75 Fed. Reg. 30,160 (May 28, 2010) (ADS-B Out Final Rule). The 2020 Mandate applies to GA aircraft that operate in or near a wide variety of controlled airspace in the United States. *Id.*

well as air and ground controllers, using a network of 800 ground stations installed by FAA.¹² According to the Congressional Budget Office (CBO), up to 240,000 aircraft could be subject to the 2020 Mandate,¹³ and industry estimates that up to 160,000 GA aircraft will be forced to purchase new avionics and positional broadcasting equipment.¹⁴

While the 2020 Mandate only requires aircraft to equip with ADS-B Out, NextGen technology also enables aircraft to receive free in-cockpit display of traffic and information, referred to as ADS-B In.¹⁵ To receive certified ADS-B In data, aircraft owners must install additional (and costly¹⁶) equipment in their aircraft, but increasingly, GA pilots are using iPads and other personal tablets to receive uncertified ADS-B In data.¹⁷

Once equipped properly with ADS-B Out, the GA industry will obtain benefits associated with all aircraft providing real-time positional information. However, due to the diversity and generally small sizes of the businesses operating in the GA community, their implementation of the NextGen initiative poses some unusual challenges to which we now turn.

III. GA Adoption Challenges

A. Lack of Awareness and Potential Installation Backlog

The benefits of the NextGen initiative only redound to aircraft if such systems are installed. This requires that operators of GA aircraft understand the requirement and obtain appropriate installation of equipment by certified repair stations. However, the FAA estimates that as of April 1, 2014, only about 4,000 out of the over 150,000 GA aircraft¹⁸ that are required to contain ADS-B Out are so equipped.¹⁹ The relative paucity of updated aircraft may reveal the FAA's failure to inform the regulated community of the need to install NextGen compliant equipment in a timely and expeditious manner.

The ability of GA aircraft operators to install the ADS-B Output technology is further constrained by the installation infrastructure. Analysis from Nexa Capital Advisors shows that there are approximately 900 FAA certified repair stations in the United States, the majority of

¹² <http://www.aopa.org/Advocacy/Air-Traffic-Services,-a,-Technology/Air-Traffic-Services-Brief-Automatic-Dependent-Surveillance-Broadcast-ADS-B.aspx>.

¹³ CONGRESSIONAL BUDGET OFFICE, COST ESTIMATE, H.R. 658 FAA REAUTHORIZATION AND REFORM ACT OF 2011 at 9 (2011), available at <http://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/120xx/doc12094/hr658.pdf>.

¹⁴ http://www.aviationtoday.com/av/air-traffic-control/Report-Aviation-Industry-Reluctant-to-Invest-in-NextGen-Avionics_81509.html#.U4X4OvldVc8.

¹⁵ <http://www.faa.gov/nextgen/implementation/programs/adsb/faq/#13>.

¹⁶ Information provided to the Committee indicates that having to install new glass avionics displays for the purposes of displaying FAA-certified ADS-B In data in the cockpit could add an additional \$20-\$30k to the price of equipping with solely ADS-B Out equipment.

¹⁷ ForeFlight, a leading all-encompassing iPad application for pilots, utilizes the Stratus ADS-B In receiver which displays ADS-B In information concerning the positions of other aircraft and weather. While widely used, this method of receiving ADS-B In data is not certified by the FAA. <http://www.foreflight.com/stratus>.

¹⁸ *Supra* note 14.

¹⁹ This information was provided by FAA staff to the Committee.

which are considered small businesses.²⁰ These repair facilities have numerous other aircraft maintenance requirements in addition to performing installation of NextGen technology. Given the number of repair stations, industry estimates that with less than six years for the nation's repair stations to complete the work required by January 1, 2020, more than 30,000 installations annually, or over 100 per business day, will need to be performed.²¹ This is more than 25 times the current installation rate, and as a result, some estimate that only half of the needed GA aircraft may obtain installation by the 2020 deadline.²²

B. Cost

Costs associated with installing new avionics equipment as part of the 2020 Mandate varies by aircraft; the cost variation often depends on whether a particular aircraft is already equipped with certain types of positional equipment or GPS capabilities. Regardless of the type of aircraft, there is a consensus among both industry and the FAA that to equip a GA aircraft with the minimum necessary equipment to meet the requirements of the 2020 Mandate, one would have to invest between \$6,000 to \$8,000.²³ CBO estimated somewhat higher costs of at least \$10,000 per aircraft.²⁴ The FAA estimated that 89 percent of small GA operators would have to pay compliance costs equal to at least 1 to 2 percent of total annual revenues.²⁵ Recent data from manufacturers of NextGen equipment, such as Free Flight Systems, Inc., suggest that the estimates of the cost of equipment plus labor totaling between an average of \$7,000 and \$8,000 seem accurate.²⁶

Given the cost estimate for the bare-minimum equipment that could be purchased and installed in order to meet the 2020 Mandate, it is no surprise that owners and operators of GA aircraft that can sometimes be worth as little as \$20,000, or \$60,000 on the newer end would be concerned about their ability to finance such an upgrade. Banks are unlikely to make loans for these equipment upgrades given the underlying value of the collateral – the plane. This then would force GA aircraft operators (including many small businesses) to consider using either their personal assets or other business assets as collateral and, such assets already may be higher encumbered with other loans. Thus, even if GA operators do not face a significant potential backlog for their installation, their ability to finance needed updates is problematic.

C. Potential Widespread Lack of Certified ADS-B In Data

²⁰ Michael J. Dyment, *Train Wreck Coming for GA on NextGen*, AVIATION WEEK & SPACE TECHNOLOGY, May 19, 2014, at 66.

²¹ *Id.*

²² *Id.*

²³ Information provided to the Committee from multiple industry representatives. Please note that these estimates include labor costs.

²⁴ CBO Cost Estimate, *supra* note 13, at 9.

²⁵ ADS-B Rule, 75 Fed. Reg. at 30,191.

²⁶ Industry estimates aircraft repair station labor costs at approximately \$100 per hour, and in conversations with Free Flight Systems, Inc., the committee staff learned that aviation repair stations will spend approximately 20-40 hours installing the required ADS-B Out equipment. <http://www.freeflightsystems.com/products/ads-b>.

Since the 2020 Mandate only requires aircraft to equip with ADS-B Out, likely due in part to the significant additional expense that must currently be undertaken to install glass avionics displays and receive certified traffic and flight ADS-B In data, a large number of GA aircraft will likely transmit positional data out from their aircraft, but forgo certified in-cockpit information. Further complicating matters is the fact that the FAA failed to examine less expensive potential alternatives to certified ADS-B In equipment in the Regulatory Flexibility Analysis of its ADS-B Out rulemaking,²⁷ such as receiving data on a mounted personal tablet.

IV. Solution Designed to Accelerate Adoption and Agency Inaction

To address industry concerned about the cost to upgrade to ADS-B Out, Congress enacted Section 221 of the FAA Modernization and Reform Act of 2012.²⁸ This section grants authority to the FAA to create and implement a public-private equipment incentive program concerning the installation of equipment required to comply with the 2020 Mandate.²⁹ Specifically, the Secretary may provide loan guarantees of up to 90 percent of the principal amount of a loan designed to assist operators of commercial and general aviation aircraft seeking to purchase and install the necessary equipment.³⁰ In fact, the FAA could enter into a Memorandum of Understanding (MOU) with the Small Business Administration to help the agency learn best practices associated with establishing and operating such a loan guarantee program. However, no MOU is currently being considered. Given industry support for the concept, the creation of the loan guarantee program should be a high priority for the FAA.³¹

V. Conclusion

While the widespread adoption of the NextGen mandate will improve the safety and efficiency of operations in the United States' airspace, it is imperative to ensure that all general aviation operators subject to the mandate will have the means with which to comply by the nearing deadline. If obstacles such as a lack of understanding about the mandate's requirements, high cost to equip relative to operating costs, or a backlog of aircraft attempting to comply in close proximity to the deadline prevent industry-wide implementation, the value of its tangible benefits could be compromised.

²⁷ ADS-B Rule, 75 Fed. Reg. at 30,191-2.

²⁸ Pub. L. No. 112-95, Tit. II, § 221, 126 Stat. 11, 54 (2012) (codified at 49 U.S.C. § 40101 note).

²⁹ *Id.*

³⁰ *Id.*

³¹ <https://www.aea.net/aeatoday.asp?ID=315>. <http://www.aopa.org/News-and-Video/All-News/2014/January/16/avionics-financing.aspx>.