

ADS-B Progress Report

Hill Briefing

November 2019

NEARING FINAL APPROACH

**LESS
THAN**  **2
MONTHS**

Until Equipage Deadline



AGENDA

- Meeting the ADS-B Mandate – Reauthorization 505 Progress Update
- Benefits and Future Applications of ADS-B
- Space-Based ADS-B

ADS-B EQUIP NOW!

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Meeting the ADS-B Mandate

November 2019

Reauthorization 505 Progress Report



Topics

- Background
- Completion of the Reauthorization Report 505
- Overview of Barriers, Resolved & Remaining Issues
 - External Equip 2020 Working Group Update, Barriers, Status and Remaining Issues
 - Equipage Levels, Risks, and 2019 Areas of Need for Targeted Outreach
 - Internal Operational Integration Implementation & Compliance
- Timelines

Background

- Section 505 of the FAA Reauthorization Act of 2018 (P.L. 115-254), required the FAA to identify any known and potential barriers to compliance with the 2020 Automatic Dependent Surveillance-Broadcast (ADS-B) Out mandate and develop a plan and schedule to address and resolve them
- The FAA, together with Equip 2020 aviation stakeholders, completed the initial report this spring and updated it to reflect the current status of barriers and solutions.
- As of November 2019 there were 98,154 aircraft equipped with avionics that comply with the rule.
- There are a few barriers of particular interest currently outstanding;
 1. Remaining aircraft equipage and compliance
 2. Non-equipped policy implementation
 3. Privacy
 4. Benefits
- The FAA continues extensive outreach to ensure that these barriers are being worked to resolution and other questions are answered from direct engagement with operators and general aviation. FAQ's are updated regularly on the FAA's webpage and can be found here: <https://www.faa.gov/nextgen/programs/adsb/faq/>

Reauthorization Report 505 Completion

- Section 505 of the FAA Reauthorization Act of 2018 (P.L. 115-254), required the FAA to identify any known and potential barriers to compliance with the 2020 Automatic Dependent Surveillance-Broadcast (ADS-B) Out mandate and develop a plan and schedule to address and resolve them
- Approach
 - Early Work with Equip 2020 to collaborate on Remaining Barriers
 - Brought in operational integration and implementation activities necessary to be prepared for the 1/1/2020 effective date
 - Identified all barriers and operational integration activities with a resolution and timeline
- FAA Coordination to Resolve Remaining Barriers
 - Implemented Bi-weekly Senior Policy Meetings
 - Hold Cross Agency Bi-Weekly Operational Integration Meetings
 - Continue regular and consistent Stakeholder Engagement
- The FAA, together with Equip 2020 aviation stakeholders, completed the initial report this spring and updated it to reflect the current status of barriers and solutions.

Overview of Barriers

Via Equip 2020 Stakeholders Report

Working Group (WG)	Remaining Barriers Currently Being Worked	Status / Timeline to Complete (Calendar Year)
WG-1 Air Carrier Equipage	<ul style="list-style-type: none"> ▪ Lagging Equipage ▪ ADS-B Positioning Sources ▪ Dispatch Requirements Including the Service Availability Prediction Tool (SAPT) 	<ul style="list-style-type: none"> ▪ Q1 2020 ▪ Complete ▪ Complete
WG-2 General Aviation	<ul style="list-style-type: none"> ▪ Policy Issues, i.e. <ul style="list-style-type: none"> ▪ GA Rebate ▪ Privacy ▪ Outreach ▪ Key Focus Areas for Community Education and Additional Guidance 	<ul style="list-style-type: none"> ▪ Complete ▪ Q1 2020 ▪ Ongoing ▪ Ongoing
WG-3 GPS Receiver and Performance-Based Rule Implications	<ul style="list-style-type: none"> ▪ No longer active 	<ul style="list-style-type: none"> ▪ Complete
WG-4 Education and Benefits	<ul style="list-style-type: none"> ▪ ADS-B In Applications 	<ul style="list-style-type: none"> ▪ Ongoing*
WG-5 Installation and Approvals	<ul style="list-style-type: none"> ▪ Tasks Complete, ad-hoc only 	<ul style="list-style-type: none"> ▪ Complete

Equipage Progress

ADS-B Compliance Snapshot

Fleet	Compliance Level	Change (from two weeks prior)
Mainline	95%	+51
Regional	92%	+31
Turbojet & Turboprop GA	73%	+885
Single & Multi-Engine Piston GA	48%	+2685
Rotorcraft	52%	+47
DOD	Various Levels	--
Government Fleet	70%	+102
International	69%	+377

- The number of aircraft equipped with compliant ADS-B Out avionics continues to increase. Current FAA-provided data projects further significant increases in equipage between now and January 1, 2020.
- The original and the reissuance of the FAA GA ADS-B Rebate Programs have resulted in 20,000 rebate reservations issued.
- In addition, many aircraft that need only occasional access to rule airspace will continue to equip after the rule mandated equipage date throughout 2020 and the following years.
- The single & multi-engine piston GA fleet represents a wide range of operators and are equipped at 47%.
- Some GA piston aircraft have low utilization and/or don't normally need access to rule airspace; these operators are not expected and do not need to equip.
- Of those needing regular access to rule airspace, projections indicate that around 90% of the GA population will be equipped by January.

As of November 2019, there are 98,154 aircraft equipped with avionics that comply with the rule.

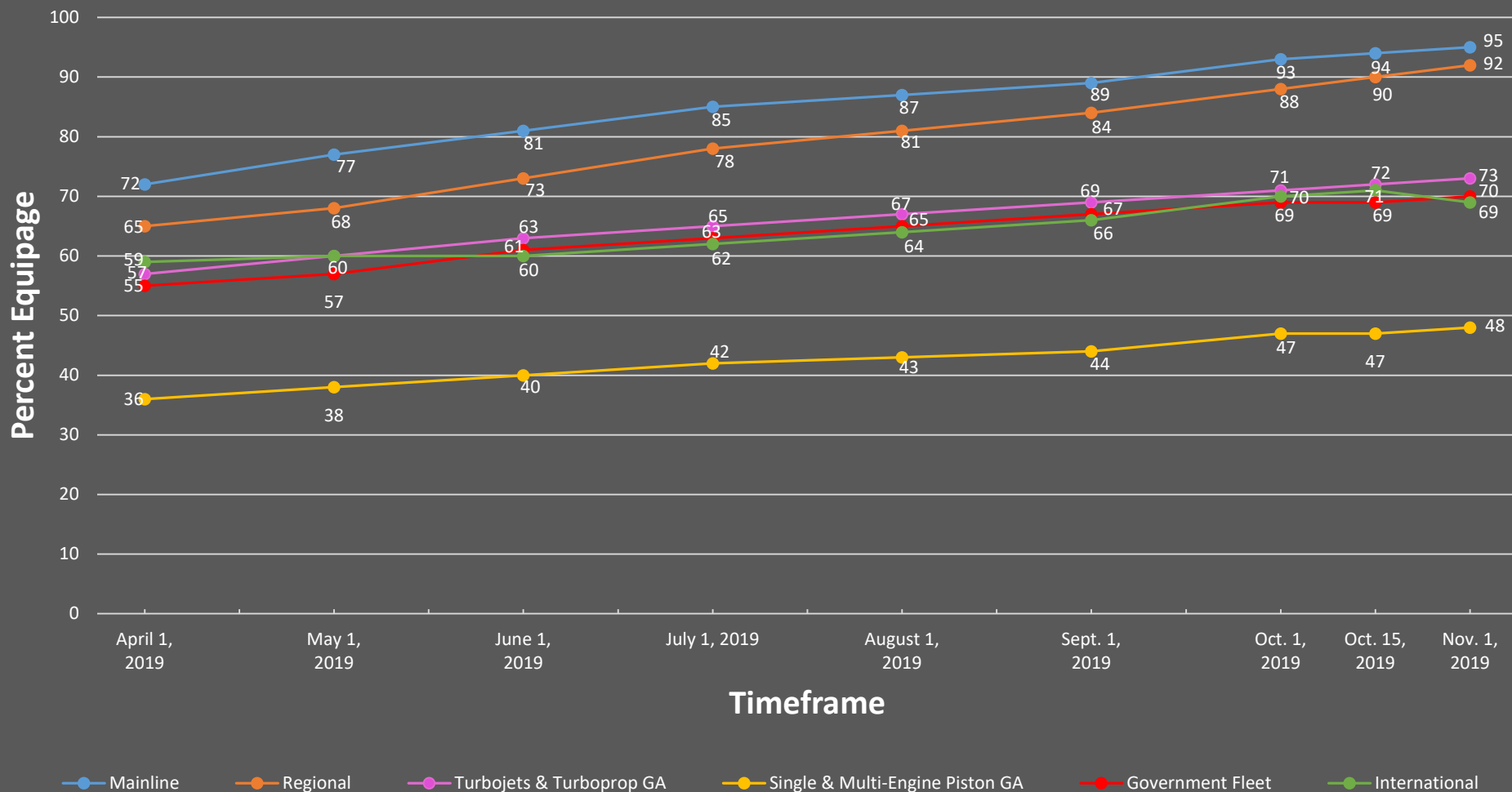
Air Carrier Equipage

ADS-B Compliance Snapshot

Month to Month Carrier Assessments

Mainline Operator	Aircraft Observed Compliant	% Fleet Observed Compliant	(from two weeks prior) Change
American	885 out of 968	91%	14
Delta	903 out of 930	97%	3
United	746 out of 777	96%	9
Southwest	705 out of 743	95%	7
FedEx	349 out of 363	96%	4
JetBlue	243 out of 254	96%	4
UPS	252 out of 253	100%	0
Alaska	220 out of 239	92%	7
Spirit	137 out of 137	100%	0
Frontier	71 out of 93	76%	1
Allegiant	81 out of 90	90%	2
Total (68% of 121 fleet)	4592 out of 4847	95%	+51

High-Level Operator Type Equipage Trends



Note: While fleet data showed an increase of 377 equipped International fleet aircraft since 2 weeks prior, the overall International fleet size meeting the equipage need assumptions on slide 61 increased by 726, resulting in a net decrease of overall % equipped.

ADS-B Meeting the Mandate

- **Starting January 1, 2020, aircraft entering certain U.S. airspace are required to be equipped with ADS-B avionics**
- **If an aircraft is operating in ADS-B Rule airspace without ADS-B, air traffic will still be able to work the aircraft safely and efficiently using ground surveillance radar**
- **However, FAA monitors the use of rule airspace and will take appropriate post-flight action against unauthorized aircraft operators**
- **What changes will air traffic controllers and pilots notice?**
 - ADS-B data is now fused with other available surveillance data to give controllers the most precise tracking possible
 - ADS-B provides controllers with precise locations of air and ground vehicles on airport maps
 - ADS-B provides increased surveillance coverage in many areas and at lower altitudes than currently provided by radar
 - Pilots are given access to graphical weather information and real-time traffic displays that increase their situational awareness



What happens after January 1, 2020?

- **Can operators without the required avionics access U.S. ADS-B mandate airspace?**
 - Operators can request authorization to deviate from the rule
 - Requests for unequipped aircraft must be made at least one hour and no more than 24 hours before the operation.
 - Requests for operation of an aircraft with an inoperative ADS-B system may be made at any time.
 - These authorizations will be provided as exceptions, and are not intended for routine access to U.S. ADS-B mandate airspace
- **What happens if an operator violates the ADS-B rule?**
 - When the FAA learns of an apparent violation, relevant information is sent to an investigating office to conduct an investigation
 - The investigating office takes appropriate actions to address apparent violations, including compliance, administrative, or legal enforcement actions, in accordance with established policy
 - Enforcement may include sanctions
 - Proposed ADS-B-related modifications to the published sanction tables have been drafted and are expected to be put into coordination soon



PRIVACY

General and Business Aviation

Background

- ADS-Out includes aircraft information linked to Civil Aircraft Registry (CAR)
- Commercially available receivers can be used to receive ADS-B signals
- Flight-tracking websites, such as Flightradar24, publicly disseminate aircraft movements
- General aviation operators have cited privacy concerns (e.g. corporate espionage, organized crime/extortion/terrorism, location tracking of government officials)
- NAC and Equip 2020 identified anonymity as a barrier to ADS-B equipage

Status – Two-phase Solution in Progress

- Interim solution – Government hosted
 - Owned, operated and maintained by the FAA
 - Operational from Jan 1st, until long-term solution is ready
- Long-term solution – Industry hosted to meet Government requirements
 - Owned operated and maintained by one or more third party service providers
 - Expected to be operational next year

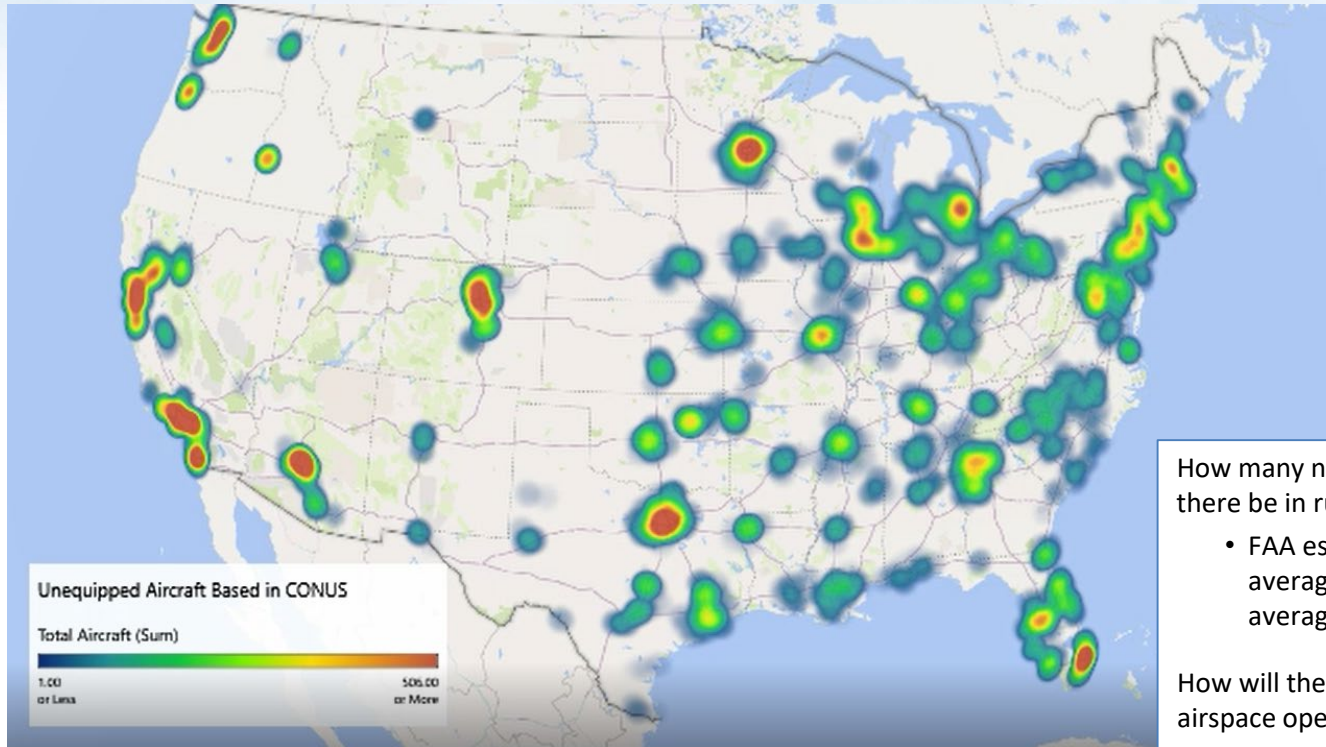
Non-Equipped Operations Policy Implementation

ADS-B Deviation Authorization Preflight Tool (ADAPT)

- The [FAA ADS-B Non-equipped Policy](#) established provisions for non-equipped A/C (Civil) on April 1, 2019. The policy describes how controllers will handle aircraft not equipped with ADS-B Out.
- For other than scheduled operations, if a non-equipped aircraft plans to operate in rule airspace the aircraft operator needs to request authorization via a web-based tool, ADS-B Deviation Authorization Preflight Tool (ADAPT) at least one hour in advance of its proposed operation in rule airspace.
- The FAA is implementing ADAPT as a system of record to track and approve authorizations for non-equipped aircraft and will monitor the use of rule airspace and take appropriate post-flight action against unauthorized aircraft operators.
- The FAA will utilize the ADAPT tool to manage aircraft operator requests for an ATC authorization. The ADAPT team is finalizing the development of this web-enabled tool and will be preparing for testing and availability in December 2019.

Non-equipped Hot Spots Snapshot

as of June 1st, 2019



How many non-equipped ADS-B operations will there be in rule airspace on January 2, 2020?

- FAA estimates a range of **2,400 – 6,600** average daily operations out of 44,000 average daily operations

How will the number of non-equipped ADS-B rule airspace operations change over time?

- Predicting equipage behavior after 1-Jan-2020 is challenging; below is based on projecting current equipage rates forward in time
- FAA expects ~ **50% reduction** in non-equipped ADS-B operations possible by January 2021. Full equipage by Jan 2023 is possible.

National Security Authorities Update

ADS-B Out Off Authorization Status

- **FAA-Department of Homeland Security ADS-B Accommodation Memorandum of Agreement**
 - Signed by FAA and DHS on September 20, 2019
- **Federal Agencies: *On Track to Complete Before 1/1/2020***
 - DOI-Fish and Wildlife Service issued September 10
 - DoD issued September 16th
 - NASA: in process
 - DOJ, USDA and other DOI components require additional follow up
- **State and Local Law Enforcement (SLLE) Agencies**
 - 15 formal signed requests received to date
 - ADS-B Out Off Authorizations in process: on track to issue 30 State and Local Law Enforcement (SLLE) ADS-B Out Off Authorizations before 1/1/2020; remainder to be completed in 2020
 - SLLE outreach efforts are ongoing

ATC Training

- As of September 27th all Terminal Radar Approach Control Facilities (TRACON) and Air Route Traffic Control Centers (ARTCC) have ADS-B surveillance capability
- Air traffic controller training has been an ongoing process throughout deployment
- Mandatory briefing items (MBI) will be the notification to the ATC workforce of the ADAPT tool
- Joint Air Traffic Operations Command (JATOC) at the FAA Air Traffic Control System Command Center (ATCSCC) will assume the responsibility for the use of ADAPT

2019 ADS-B End of Year Messaging Communications, Messaging, and Outreach

Outreach Events

NBAA Business Aviation Convention & Exposition

- October 22-24, 2019
- ADS-B Exhibit and Panel Participation
- Hot Topic: Privacy

AOPA/FAA Live Video Chat

- December (TBD) 2019
- Live Video Q&A Chat Streamed on FAA and AOPA social media channels
- Hot Topic: ADAPT



Countdown to January 1, 2020

FAA.gov and Equip ADS-B Websites

Monthly Social Media Updates

Monthly FAAST Messages



Messages & Articles

Privacy (October 2019)

- Equip ADS-B Web Page
- Handout Card (in development)
- Discussion at NBAA and AOPA Video Chat

ADAPT (December 2019)

- Equip ADS-B Web Page (in development)
- Handout Card (in development)
- In-Depth Discussion during AOPA Video Chat
- Social Media Posts

Upcoming Articles

FAA Safety Briefing:

January 2020; ADAPT Article

ATCA Journal:

October 2019; ADS-B Vulnerabilities Article

January 2020; ADS-B Benefits Article



Social Media

- #iEquipped call to action campaign for pilots



- #WeEquipped video testimonials (October-December 2019)
 - Six commercial airlines highlighting why they equipped.
- How late can you wait? (November 2019)
- ADAPT (December 2019)

Summary

- Overall, aviation stakeholders together with the FAA are making final preparations to meet the mandate
- ADS-B Out equipage has increased since the last report with over 98,154 U.S. registered commercial, international, and general aviation aircraft equipped
- The FAA is pursuing a risk-based approach to remaining barriers and will focus remaining efforts to develop and implement an interim privacy solution to address business aviation as well as other's privacy concerns when the mandate takes effect
- The FAA will continue to make refinements to procedures, web-tools, and implementation activities as lessons learned throughout 2020 become known
- Together, with our aviation stakeholders, the FAA will begin to turn the surveillance focus to the new, modernized, NAS capability benefits with an ADS-B system in place

Overview of Internal Barriers

ADS-B Operational Integration Implementation & Compliance Activities

Action Item #	Grouping	Activity	Context/Description	Dependencies	Section 505 Mandate Plan Public Date	Status
1	Policy	Policy for the Non-equipped A/C (Civil)	Actions that FAA will take to authorize non-ADS-B equipped aircraft (91.225 (g)) in Rule airspace and at capacity constrained airports.	None	Complete	The FAA established the policy via a Federal Register Notice on April 1, 2019. Click this link to the FAA ADS-B Non-equipped Policy.
1a	Implementation	ADS-B Deviation Authorization Pre-Flight Tool (ADAPT)	ADAPT is a web-based tool to provide automated authorizations for non-equipped aircraft operators requesting a deviation.	Completing development and testing	4th QTR CY2019	ADAPT will provide automated approval and denials for operator requests for deviations in accordance with 91.225 "unless otherwise authorized by ATC." The ADAPT team is finalizing the development of the web-enabled tool for availability in December 2019.
2	Policy	Implementation of SAPT Policy for Exemption 12555	Establish Air Traffic implementation of SAPT policy, as a pre-flight requirement only.	N/A	Complete	FAA guidance was published in the Federal Register on July 3, 2019. Click this link for the Statement of Policy on Performance Requirements for Operators of Aircraft that are equipped with ADS-B Out.
3	Policy	"Call-sign Policy" as it Pertains to Local Call Signs Adaptations	Some new ADS-B equipment does not allow pilots to use local call signs, pilots must quit using local call signs to comply with new policy.	Local system adaptation may make the new policy difficult; mitigations include delaying implementation of the new policy for local adaptation planning.	On-going	The FAA completed guidance for pilots in the aeronautical information manual and aeronautical information publication. In addition, the FAA has done extensive outreach throughout 2019 to educate pilots of the importance through representative association partners such as AOPA. With these additional guidance materials, the FAA views this activity not as a barrier to meeting the mandate but an ongoing educational outreach activity.
4	Implementation	Privacy	Ability to address privacy concerns of civil flights using 3rd party provider (NBAA and AOPA concerns).	Completion of the Paperwork Reduction Act, implementation of the interim web-enabled tool.	1st QTR CY2020	The FAA is currently pursuing a contract vehicle for third-party service providers to use temporary ICAO aircraft addresses. This long-term solution is planned to be available by the third quarter of CY2020. Since this does not meet the needs in the near term, as an interim solution, the FAA will provide a temporary website portal for privacy requests. All requests will need to be made via the portal during the interim period. The FAA will manage these requests via a manual process to provide privacy ICAO address assignments and responses to operators with a temporary PIA.
5	Policy	Exemption 12555	Follow up with the operators who did not qualify for the exemption who may be seeking relief from the rule.	None	Complete	The resolution of this barrier is complete as of August 2019. The FAA granted relief for specific ADS-B Out position performance requirements for aircraft equipped with selective availability (SA)-On or SA-Aware GPS receivers for operators requesting Exemption 12555 by August 1, 2018. The FAA conducted additional outreach over the summer of 2019 to those operators impacted by this exemption.

Overview of Internal Barriers (Continued)

ADS-B Operational Integration Implementation & Compliance Activities

Action Item #	Grouping	Activity	Context/Description	Dependencies	Section 505 Mandate Plan Public Date	Status
6	Equipage	Monitor equipage plans	Monitoring equipage plans and risks.	Outreach and communication required.	Monthly	Equipage rates increased 17% since June 2019 as of last report. Part 129 Foreign Carriers rates are increasing. The foreign air carrier equipage levels show need for additional targeted outreach. The FAA is performing outreach with foreign carriers using a risk-based approach to engage those airlines showing low equipage levels and larger fleets that operate in U.S. domestic airspace.
7	Infrastructure	ATC Facility Equipment and Infrastructure	ADS-B at STARS Elite sites and fusion implemented at appropriate sites.	Facility Coordination & Training	Complete	All 155 terminal air traffic facilities have successfully declared ADS-B Initial Operating Capability (IOC).
8	Policy and Procedures	Advisory Circular 90-114b	The AC provides users of the NAS guidance on a means of conducting flight operations in accordance with 91.225 and 91.227.	AGC Review and External Comment Review	1st QTR CY2020	Policy and procedures guidance has been provided to users. Publications of AC 90-114b is a priority for the FAA.
9	Policy and Procedures	Document Change Proposals (DCP)	Facility Operation and Administration - JO 7210.3; Air Traffic Control - JO 71190 .65; Airport Improvement Program; Aeronautical Information Manual	None	1st QTR CY2020	All directives being updated to accommodate changes resulting from ADS-B mandate are in the publication cycle.
10	ATC Training	Controller and TMU Training	Mandatory Briefing Items (MBI)	Publications/ ADAPT Resourcing	1st QTR CY2020	As of September 27th all TRACONs and ARTCCs have ADS-B surveillance capability. Air traffic controller training completed. Additional MBI's will be provided for additional information as needed.

Overview of Internal Barriers (Other Government)

ADS-B Operational Integration Implementation & Compliance Activities

OTHER GOVERNMENT						
Action Item #	Grouping	Activity	Context/Description	Dependencies	Section 505 Mandate Plan Public Date	Status
11	Policy	Sensitive Missions Rule Change	Allows pilots to turn off their ADS-B to accommodate sensitive missions: 91.225(f) Rule Change through FAA and delayed at OST	None	Complete	The policy was signed and an interim Final Rule was published in the Federal Register on July 3th. This Rulemaking is to allow the change to meet national security, defense and State and local law enforcement requirements for sensitive operations. Click this link to the Interim Final Rule
12	Implementation	ADS-Out Turn-Off authorization (AJR-2) §91.225(f)	Allows Federal and SLLE aircraft that are equipped with ADS-B Out a means of effectively turning off ADS-B Out while on sensitive missions.	Requires agency to request authorization from FAA.	4th QTR CY2019	Implementation of the policy is ongoing to allow national security, defense and State and local law enforcement authorizations for sensitive operations operating under the sensitive mission rule policy.
13	Implementation	Non-Equipped Authorization (AJV-113) §91.225(g)	Provides non-equipped Federal and State and Local Law Enforcement aircraft authorization to operate in ADS-B Out rule airspace and fulfills the requirements under §91.225(g).	Requires agency to request authorization from FAA.	4th QTR CY2019	As Federal agencies requests are received SLLE agencies that operate sensitive missions will receive FAA authorizations to operate specified non-equipped aircraft, provided they provide an equipage plan, biannually.
14	Implementation	DoD and DOT agreement for long term plan for DoD aircraft	Need a plan and timeline to implement Section 1046 with DoD regarding 2019 NDAA and specific to paragraph (b) and Termination Requirements.	Development of National Procedures, Sec F and G published.	2nd QTR CY2020	Before DoD moves forward with Section 1046 they believe they need updates to make section 1046 more enduring; i.e. possibly a new agreement.

Benefits and Future Applications

ADS-B

Delivering on the promise.

January 1, 2020 isn't the end of ADS-B;
it's just the beginning.

The ADS-B program's strategy has always been to deploy an infrastructure that can be leveraged for **future operational benefits**. The ADS-B mandate set the FAA on a path to be able to achieve future success in the initiatives below:

Reduce ATC Separation

Enable 3nm separation standards in en route airspace where it was not available before, resulting in increased NAS efficiency for commercial operators.

Fast Fact: The first phase to expand availability of 3nm separation is fast approaching - it is planned for 2020!

Radar Divestiture

Overlapping ADS-B and legacy radar coverage provides the FAA with the opportunities to right-size our surveillance infrastructure across the NAS.

Fast Fact: FAA plans to divest 32 sites by 2025, with the first two planned in 2020.

Search and Rescue

ADS-B coverage is often available below legacy radar surveillance. The availability of high-accuracy, high-update rate surveillance information makes it easier to find an accident site. Faster rescue = lives saved.

Fast Fact: FAA estimates that ADS-B aircraft can be located 2.5 hours faster than aircraft without ADS-B in remote mountainous locations.

Unknown Opportunities

The 2020 ADS-B mandate creates an aperture to a future where the FAA can pursue new opportunities and increase the real value of its investment to date in this transformational technology. **We will discover opportunities to provide value in areas not yet considered.** January 1, 2020, is just the beginning.

Space-based ADS-B

Space-based ADS-B represents a technological innovation with the potential to deliver a data-driven approach to enhancing Air Traffic operations, exemplifying the FAA's commitment to being a global leader in safety and efficiency.

Fast Fact: Caribbean Operational Validation will occur in 2020, giving us a chance to prove out Space-based ADS-B technology.

ADS-B In Applications

ADS-B In brings the opportunity to implement various applications (EATS, ECAVS, CAVS, IM) that transform the ability of controllers and pilots to increase efficiency of spacing ops in the NAS.

Fast Fact: American Airlines is equipping over 300 A321 aircraft with ADS-B In equipment as part of AIRS Eval.

Conflict Probe

More accurate surveillance data from ADS-B Out in ERAM Conflict Probe will decrease the number and magnitude of conflict predictions, reducing vectoring and saving fuel.

Fast Fact: Faster update rates and greater accuracy of ADS-B reduces the workload of ATC for false conflicts.

ADS-B

EQUIP NOW!

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Space-Based ADS-B



Backup



General Aviation

GA Rebate

- The original one-year GA ADS-B Rebate Program went live on September 2016.
 - Over 10,000 rebates were issued by the end of the rebate period.
 - The Rebate program was re-started on October 2018 and is expected to end October 2019. On May 13, 2019, the last of these rebates was reserved, but opportunities still exist as some rebates are returned or expire.
 - The program targets U.S. registered, fixed-wing, single-engine piston aircraft, offering \$500 rebates, and requires a completed validation flight in ADS-B Mandated airspace to validate equipment installation.
 - The program continues to leverage stakeholder relationships.
 - Aircraft Owners and Pilots Association (AOPA) – Pilots
 - General Aviation Manufacturers Association (GAMA) – Equipment Manufacturers
 - Aircraft Electronics Association (AEA) – Installers/Equipment Manufacturers
- **30,000+: Website visits since relaunch**
 - Uninterrupted by the Gov't funding lapse
 - **30 to 40: Nominal 2018 daily applications**
 - ~60: Nominal 2019 daily applications
 - **200-400/week: GA Pilot inquiries to Help Desk**
 - **20,000: Rebate Reservations to date**
 - 9,792: Rebates are scheduled to be paid during the second program

Section 505

ADS-B Mandate Plan – January 3rd, 2019

SEC. 505. 2020 ADS-B MANDATE PLAN.

The Administrator, in collaboration with the NextGen Advisory Committee, shall—

- (1) not later than 90 days (January 3, 2019) after the date of enactment of this Act—
 - (A) identify any known and potential barriers to compliance with the 2020 ADS–B Out mandate under section 91.225 of title 14, Code of Federal Regulations;
 - (B) develop a plan to address the known barriers identified in paragraph (1), including a schedule for—
 - (i) periodically reevaluating the potential barriers identified in paragraph (1); and
 - (ii) developing solutions and implementing actions to address the known and potential barriers; and
 - (C) submit the plan to the appropriate committees of Congress; and
- (2) not later than 90 days after (July 2, 2019) the date the plan is submitted under paragraph (1), submit to the appropriate committees of Congress a report on the progress made toward meeting the 2020 ADS–B Out mandate.

ADS-B Out Rule

- The ADS-B Out Rule [14 CFR §91.225 and §91.227], issued in 2010, mandates the performance requirements of ADS-B Out avionics in aircraft that fly in rule-designated airspace.
- The FAA is mandating ADS-B Out so that it can transition the National Airspace System (NAS) to performance-based ADS-B as the preferred surveillance source for ATC services.
- In addition, ADS-B Out enhances safety and efficiency through more accurate and reliable aircraft tracking.
- ADS-B Out provides additional benefits such as aircraft surveillance where radar coverage is not possible, (e.g., the Gulf of Mexico, remote regions in Alaska, and other difficult terrains), as well as improved positioning for locating lost or missing aircraft.

