

Next GEN

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for General Aviation



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Federal Aviation
Administration

ADS-B REBATE

To be eligible for a **REBATE**, your **aircraft** must meet these requirements



Aircraft is U.S. registered

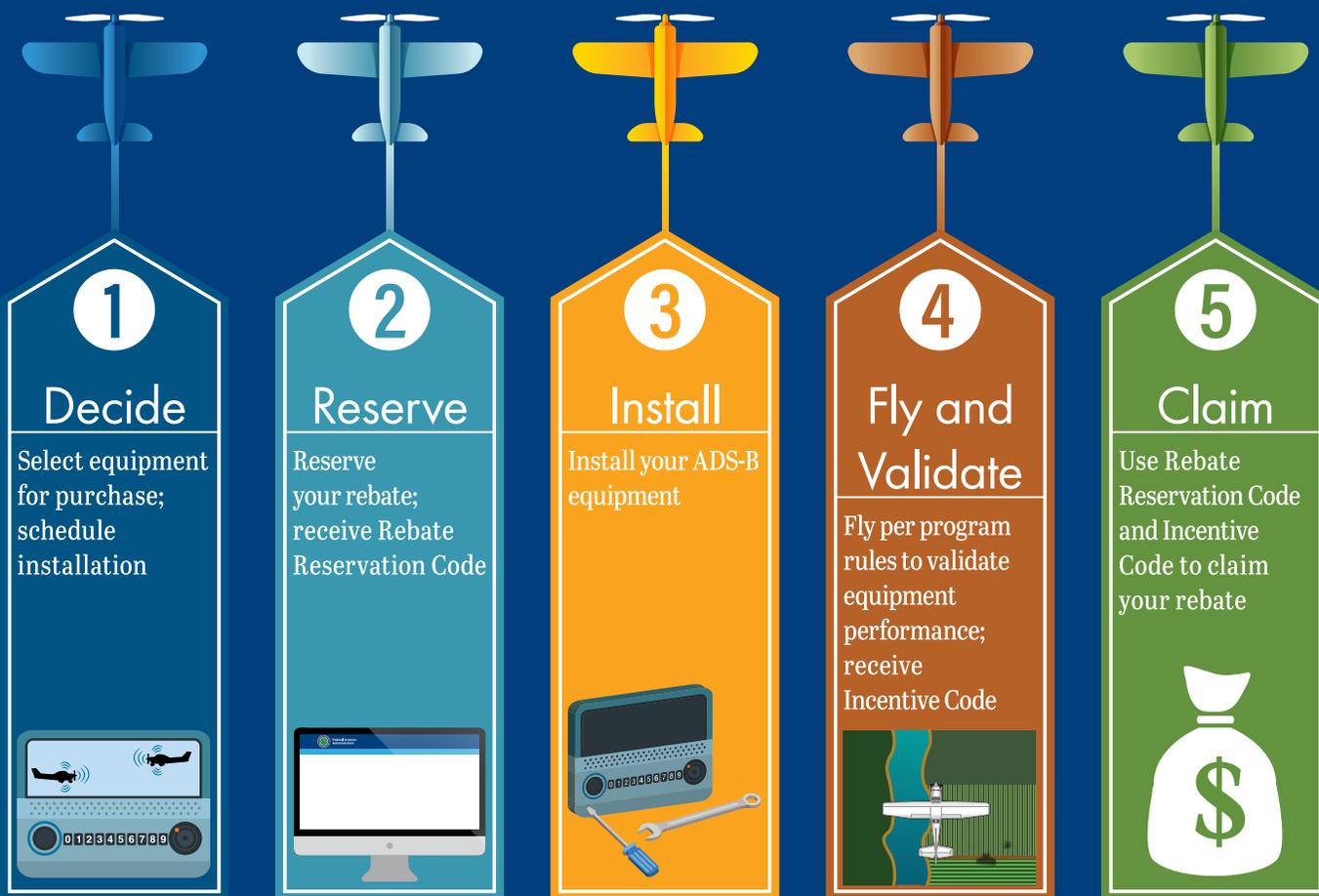


Fixed-wing single-engine piston-driven aircraft



Aircraft not currently equipped with Version 2 ADS-B Out

Preview the ADS-B Rebate Process coming this Fall



www.faa.gov/go/rebate

The FAA's \$500 ADS-B Rebate

FAA incentive will bring NextGen safety technology to general aviation aircraft earlier.

The FAA is launching a program to help general aviation aircraft owners meet the Automatic Dependent Surveillance–Broadcast (ADS-B) Out mandate to incentivise them to enjoy the safety benefits of the NextGen program ahead of the 2020 deadline, and to help defray equipment and installation costs. Owners of U.S.-registered, fixed-wing, single-engine piston aircraft whose operation requires an onboard pilot that are not currently equipped with Version 2 of ADS-B Out are eligible for the rebate.

Rebates will be issued on a first-come, first-served basis for about one year from the fall 2016 launch or until 20,000 are claimed, whichever comes first.

The FAA estimates that as many as 160,000 general aviation aircraft will require ADS-B Out, which transmits information about a plane's altitude, speed and location to air traffic controllers and nearby aircraft.

Owners can also claim a rebate for installing an integrated system that includes ADS-B In, which enables pilots to receive subscription-free traffic and weather information in the cockpit and see the location of their planes in relation to other nearby aircraft.

Many aircraft owners may be reluctant to equip until just before the deadline on January 1, 2020, which would create an enormous challenge for qualified repair stations to perform the installations. The rebates are designed to encourage cost-sensitive owners to equip in the coming year rather than wait until closer to the deadline and risk being grounded due to high demand for equipment and installation.

Eligibility is limited to the purchase of new, TSO-certified ADS-B equipment that is compliant with the ADS-B Out rule. Software upgrades of existing equipment and new

aircraft first registered after January 1, 2016, are not eligible. After the installation, an aircraft must be flown in the airspace defined in 14 CFR 91.225 for at least 30 minutes to claim a rebate. This flight is essential to validate that the new avionics were installed properly and will comply with the rule requirements. Refer to the full program rules at www.faa.gov/go/rebate for details about special rules in Alaska, Hawaii, Guam and Puerto Rico.

HOW DO I GET MY REBATE?

While the ADS-B rebate Program Reservation System is not yet available, you can start the rebate process now by doing the following:

Review and validate the aircraft owner and aircraft-specific information in the FAA's Civil Aircraft Registry (CAR). The FAA will determine rebate program eligibility using the information submitted in the CAR, and all rebates will be mailed to the aircraft owner recorded in the CAR.

Visit the Equip ADS-B website to research eligible equipment and learn more about the ADS-B Out rule at www.faa.gov/go/equipadsb.

Locate an authorized installer and determine the specific aircraft requirements to ensure that the installation will be performed in accordance with applicable FAA regulations and will meet the requirements in the General Aviation ADS-B Rebate Program Rules. The ADS-B equipment may be purchased now, but the ADS-B installation must occur after the FAA's program website is launched this fall to be eligible for the rebate. For more details about obtaining a rebate, visit the FAA's ADS-B rebate page at www.faa.gov/go/rebate. You can click the subscribe button in the upper right corner to receive future updates on the rebate program via email. ✈️



SAFETY

Flying with ADS-B Out and In

An experienced pilot and early adopter of ADS-B explains why the technology is so valuable.

John Ferrara, a retired electrical engineer and pilot since 1960, flying his aircraft outfitted with Automatic Dependent Surveillance–Broadcast (ADS-B) avionics on a Visual Flight Rules trip from West Virginia to Virginia when he spotted something unusual.

“There was an aircraft behind and 300 feet below us, probably headed to Leesburg, Virginia, as well,” said John Fisher, a friend who was flying with Ferrara on August 30, 2015.

“The aircraft had climbed to our altitude and was now in front of us. We fell in behind him to follow him to Leesburg. But then he abruptly made a left turn and climbed 300 feet. We only saw this on the ADS-B display. John did not have to take evasive action but he maneuvered the aircraft so that it was safely separated from the climbing aircraft.”

The weather was kind of “soupy,” with visibility of about 10 miles and more moisture accumulating as the day went on, according to Fisher. “We never got a visual affirmation after

we climbed — never saw him — but he was 1 to 3 miles away from us,” he said. “We eventually landed uneventfully at Leesburg.”

Ferrara, who holds commercial, multi-engine and instrument ratings in addition to having been a Certified Flight Instructor, flies out of the Trenton Mercer Airport (TTN) in New Jersey, about 35 miles northeast of Philadelphia.

He is a big believer in the safety benefits of ADS-B Out and In — part of the FAA’s major NextGen effort to modernize the National Airspace System — and he was an early adopter of the satellite-enabled surveillance technology.

In 2013, he had his aircraft outfitted with ADS-B avionics. The cockpit includes a Garmin GDL 88, which is a dual-link ADS-B Out/In Universal Access Transceiver (UAT) that meets the requirements of FAA TSO-C154c. UAT equipment enables a pilot to receive traffic and weather data transmitted

by the FAA ADS-B network at no charge — among the benefits of ADS-B In, which also lets pilots see their planes' location in relation to nearby aircraft.

By January 1, 2020, aircraft flying in most controlled airspace must be equipped — at a minimum — with ADS-B Out, which transmits information about a plane's altitude, speed and location to air traffic controllers and nearby aircraft.

"I've had a number of situations where an aircraft was not visible, but I saw it on the ADS-B display," Ferrara said. "I got ADS-B In installed because of the ability to see the traffic."

Ferrara mostly flies in the Philadelphia–Washington, D.C., corridor, where he says the ADS-B coverage is excellent — "sometimes better than radar coverage, especially at low altitudes."

ADS-B AS SELF DEFENSE

In 2011, Ferrara had his aircraft equipped with a Garmin GNS 430W, which combines the Wide Area Augmentation System (WAAS), GPS and navigation/communication functions into one unit.

The GNS 430W meets FAA standards for WAAS sole-source navigation, with vertical and lateral approach guidance into thousands of U.S. airports. This enables Ferrara to fly Localizer Performance with Vertical Guidance (LPV) approaches without reference to ground-based nav aids.

As of May 26, 2016, there were 3,678 WAAS LPV approach procedures serving 1,790 airports, many of which do not have an Instrument Landing System.

In addition to a 4-inch, high-contrast display, the GNS 430W has terrain and navigation databases, including airports, VORs, NDBs, Intersections, published approaches, Standard Instrument Departures/Standard Terminal Arrivals and some Special Use Airspace.

Ferrara also has an optional Garmin Flight Stream that enables ADS-B traffic and weather to be transmitted to iPads and other tablets via Bluetooth.

ADS-B In also gives pilots subscription-free NEXRAD graphical weather radar, along with:

- Meteorological Terminal Aviation Routine (METAR) weather reports
- Significant Meteorological Information (SIGMET) advisories
- Airmen's Meteorological Information (AIRMET) advisories
- Notices to Airmen (NOTAM)
- Temporary Flight Restrictions (TFR)

"It's really a good thing being able to see thunderstorms," Ferrara said.



I've had a number of situations where an aircraft was not visible, but I saw it on the ADS-B display. I got ADS-B In installed because of the ability to see the traffic. ”

— John Ferrara

"I view ADS-B as self-defense," he said. "The real advantage of ADS-B is that other pilots with ADS-B In — who may have their heads down in the cockpit — see you. It makes you more visible to the rest of the world."

"The ADS-B display will highlight aircraft that the pilot is not always able to spot visually," Fisher added. "Seeing another aircraft on the ADS-B In display but not being able to acquire it visually was an eye-opening experience for me. When I mentioned this to John, he noted it as an unusual occurrence but something he had seen before."

MAKING SURE IT WORKS

Pilots may have questions after having ADS-B installed. Was the equipment installed correctly? Is it working? My aircraft has a new transponder box. Will it work with the existing GPS? You can check if your ADS-B Out equipment is performing correctly by visiting the Equip ADS-B website at www.faa.gov/go/equipadsb.

Finally, Fisher offers pilots this advice: "There is someone at your airport who has installed ADS-B Out and In. Go fly with it and see for yourself what the value is."

"I think it's great," added Ferrara. "I'm glad I put it in." ✈️

Frequently Asked Questions



What is the rebate program and why is it being implemented now?

The FAA is launching a rebate program to emphasize the urgent need for pilots to comply with the Automatic Dependent Surveillance–Broadcast (ADS-B) Out rule ahead of the 2020 deadline. This will encourage installations and help defray the costs associated with equipping eligible general aviation aircraft. The FAA estimates as many as 160,000 general aviation aircraft will require ADS-B Out.

To guarantee that general aviation aircraft operating in rule airspace are equipped by January 1, 2020, about 23,000 aircraft would need to equip each year from 2013 onward. This would ensure that there would be a balance between the expected demand for avionics installations and the capacity of avionics installers. Owners of general aviation aircraft who are particularly price sensitive are postponing their installations. This trend demonstrates that there is a near-term need to accelerate equiptage in order to ensure that pilots, manufacturers and retail facilities have adequate time and capacity to equip aircraft in a timely and efficient manner.

When does the rebate program begin and how do I apply?

The FAA is working diligently to implement the rebate program by September 2016. Aircraft owners of U.S.-registered, fixed-wing, single-engine piston aircraft whose operation requires an onboard pilot, first registered before January 1, 2016, will need to complete the following steps to receive a rebate:

1. **Decide:** Owner purchases avionics and then schedules the installation of the TSO-certified avionics for an eligible aircraft after the FAA begins offering the rebates.
2. **Reserve:** The owner reserves a rebate from the FAA's ADS-B Rebate website for each eligible aircraft before avionics installation occurs.

3. **Install:** The TSO-certified ADS-B avionics are installed on the eligible aircraft (Step two must have been completed).
4. **Fly and Validate:** Within 60 days of the installation, the aircraft must be flown in "rule airspace" as defined in 14 CFR 91.225 for a minimum of 30 minutes with at least 10 aggregate minutes of maneuvering (AC 20-165B contains flight maneuver recommendations). After the flight, the aircraft owner must validate the performance of the eligible aircraft's ADS-B installation by requesting a Public ADS-B Performance Report (PAPR) available on the FAA's ADS-B Rebate website. A validated installation will provide the owner with an incentive code.
5. **Claim:** Within 60 days of the scheduled installation date, aircraft owners who have a Rebate Reservation Code and an Incentive Code, visit the ADS-B rebate website to claim the rebate.

Limit of one rebate per aircraft owner. See program rules for details.

How will aircraft owners know when the rebates will be available in September?

The ADS-B Rebate website www.faa.gov/go/rebate offers the option for individuals interested in the program to subscribe to receive updates as new information becomes available.

Why September?

The statutory requirements for notification and public review must be satisfied before the FAA can gather rebate reservation information. The agency currently estimates completion of the process in late September. The plan is to use social media and other communication tools to share a specific date as we near the completion of the statutory review and comment period.

If an aircraft owner purchases avionics now, could they be eligible for the rebate?

Yes, however the installation will need to occur after the program is implemented in September.

Aircraft owners can purchase the required equipment now, but will still need to complete the rebate claim process to receive the \$500. Installation of any avionics purchased will need to occur after the rebate program is implemented in September. For more details on the steps required, visit www.faa.gov/go/rebate.

Are all general aviation aircraft eligible?

No, this program is for owners of U.S.-registered, fixed-wing, single-engine piston aircraft whose operation requires an onboard pilot, first registered before January 1, 2016. Industry has estimated that as many as 40,000 general aviation aircraft owners may be reluctant to equip until just before 2020 — creating resource challenges and impact on installation and certification shops.

The FAA collaborated with industry to identify which aircraft owners are most likely to delay their decision to equip with ADS-B due to cost concerns. Owners of fixed-wing, single-engine piston aircraft were identified as most likely to have cost concerns. The FAA's objective is to incentivize this large population of aircraft owners to equip as soon as possible.

Can aircraft owners that are already equipped with ADS-B version 2 avionics apply for the rebate?

No, If an aircraft is equipped with ADS-B version 2 avionics before the ADS-B rebate reservation system goes live this fall, it is not eligible.

Why offer \$500 per owner/entity?

A minimal rule-compliant system costs approximately \$2,000, plus installation costs. Equip 2020 performed a survey of aircraft owners and found that getting costs below \$2,000 would encourage many price-sensitive owners to equip. The FAA chose \$500 as an amount that would get the price down to that more-attractive range. This amount also maximized the total number of rebates the agency could distribute, based on total funding approved for the program.

Why offer a rebate instead of loan guarantees?

Industry representatives in the Equip 2020 general aviation working group told the agency that a direct subsidy or rebate would be preferable to a loan program. In addition, current loan programs that the agency is aware of are geared toward aircraft owners who are planning more high-end installations

and not just minimal systems to ensure rule compliance. One loan program, for instance, offers a minimum loan of \$10,000.

Why are new aircraft excluded from this program?

This program is focused on aircraft owners who likely have not equipped because they are sensitive to the retrofit cost. The rebate program is designed to encourage the most cost-sensitive owners to equip now rather than wait until closer to the deadline. Since new aircraft typically cost \$100,000 or more, it is doubtful that people who can afford to buy new would be dissuaded by avionics that cost \$2,000 or less.

Why does equipment have to be TSO-certified to be eligible for this program?

Since the rebate program is aimed at this segment of the GA community, only TSO-certified Version 2 equipment is eligible. The cost of TSO-certified equipment is typically higher than similar equipment that isn't certified, making it less affordable for cost-sensitive customers. This program is geared to ensure full aircraft compliance to the rule which will ensure continuous access to the rule airspace in 2020. The FAA maintains a list of the eligible equipment at www.faa.gov/go/adsb_ready. This list is updated about every month. However, avionics manufacturers will have the latest status of TSO certification for their ADS-B Version 2 systems.



ADS-B Out employs avionics to broadcast aircraft position, altitude and ground speed to controllers through a network of ground stations and to nearby aircraft equipped to receive it via ADS-B In.

Why aren't software upgrades eligible for this program?

Software upgrades are typically much less expensive than new equipment. Since the rebate program is aimed at cost-sensitive owners who need to equip to meet the deadline, eligibility is limited to the purchase of new ADS-B equipment.

Why is the FAA offering only 20,000 rebates?

The FAA tried to offer as many rebates as possible within the funding total approved for this program while keeping the individual savings significant enough to be real incentives. The agency also believes that having 20,000 aircraft equipped on top of the existing and planned installs would be optimal.

How long will the program run?

The program will run for about one year or until the funds for all 20,000 rebates are exhausted, whichever comes first.

If I wait to equip my aircraft, will the FAA offer more money the closer we get to the 2020 deadline?

No. The program will run for about one year or until the funds for all 20,000 rebates are exhausted, whichever comes first. There are no plans to extend the program or increase the rebate.

Why is the FAA requiring that aircraft be flown in the airspace defined in 14 CFR 91.225(d)(1) through (3) for a minimum of 30 minutes?

This type of flight is essential to validate the new avionics were installed properly and are rule compliant. Since the target audience is people who generally fly in the designated airspace, they won't find it a hardship to perform the required validation flights.

How does the FAA justify having a program like this now, after many GA aircraft have already equipped?

These factors are driving the agency's decision to offer this program now:

- A large number of aircraft still need to be equipped.
- The time left before the deadline is dwindling.
- Installations take time.
- The number of installation shops is limited.

If equipage rates stay as low as they have been, the math shows there will be a bottleneck when the last-minute rush begins in 2018. It is necessary to take advantage of scheduling availability now to avoid long waits that could result in some aircraft being unable to receive their upgrades ahead of the deadline, which will, in turn, lead to denial of access to ADS-B airspace once the equipage mandate is in effect. Aircraft that are not equipped by the January 1, 2020, deadline will not be able to fly in certain airspace.

How will the FAA determine if this program has been successful?

This program will be successful once the agency has 20,000 participating aircraft or there are more aircraft equipped than projected the year after the rebates are offered. (To date, the rate of equipage has been less than 10,000 aircraft per year).

Where did the money come from? Did Congress appropriate specific funds for this purpose?

The program is funded by money used to support the ADS-B program.

Has the FAA ever done anything like this previously?

While the FAA has not used a mechanism exactly like this in the past, we have entered into multiple agreements to fund or encourage ADS-B Out equipage.

Any plans for other incentive programs such as commercial aviation in advance of the 2020 deadline?

Currently, there are not any plans to expand this program or to include commercial aviation.

How can people receive updates?

The FAA's rebate site — faa.gov/go/rebate — has a subscribe button in the top right corner that will allow those interested to provide an email address to receive updates about the project. The agency will also use social media and other communication tools to share information as it becomes available. ✈️

Equip ADS-B

Do I Need to Equip?



3 Ways ADS-B In Can Help You

ADS-B In offers safety enhancements including a graphical weather display and traffic advisories.

Automatic Dependent Surveillance–Broadcast (ADS-B) offers general aviation pilots an unprecedented level of safety and situational awareness, assuming their aircraft are equipped with the proper avionics.

The traffic picture displayed in ADS-B In-equipped aircraft includes other planes' position information reported by ADS-B Out as well as radar. These data are sent to the cockpit via air-to-air reception or relayed from the ground. ADS-B Out's roughly once-per-second broadcast rate is not only automatic, but also depends on equipment on the aircraft for air traffic surveillance — thus ADS-B's cooperative and dependent nature.

General aviation aircraft owners who equip with ADS-B In enjoy more benefits than just having ADS-B Out. Aircraft equipped with Universal Access Transceivers (UAT) operating on a frequency of 978 megahertz (MHz) can receive and display weather and other aeronautical information from FAA broadcasts. This information enhances pilots' situational awareness of in-flight hazards and helps prevent accidents.

Pilots of ADS-B In-equipped aircraft benefit from three types of FAA broadcast services:

- **Traffic Information Service–Broadcast (TIS-B):** This air traffic advisory service provides the altitude, ground track, speed and distance of aircraft flying in radar contact with controllers and within a 15-nautical-mile (nm) radius, as far as 3,500 feet above or below the receiving aircraft's position. General aviation aircraft equipped with ADS-B In can also receive position data directly from other aircraft broadcasting on the same ADS-B Out frequency. In addition, TIS-B enables
- **Automatic Dependent Surveillance–Rebroadcast (ADS-R):** ADS-R takes position information received on the ground from UAT-equipped aircraft and rebroadcasts it on the 1090 MHz frequency. Likewise, ADS-R rebroadcasts 1090 MHz data to UAT users. In concert with TIS-B, ADS-R provides all ADS-B In-equipped aircraft with a comprehensive airspace and airport surface traffic picture. ADS-R delivers traffic data within a 15-nm radius 5,000 feet above or below the receiving aircraft's position.
- **Flight Information Service–Broadcast (FIS-B):** This service broadcasts graphical weather to the cockpit based on what ground-based weather radar is detecting. In addition, FIS-B broadcasts text-based advisories including Notice to Airmen messages and reports on everything from significant weather to thunderstorm activity. UAT-equipped general aviation aircraft can receive this information at altitudes up to 24,000 feet.

The FAA has installed more than 630 ADS-B ground stations, making TIS-B, ADS-R and FIS-B services available across the United States. That makes ADS-B In an attractive option for general aviation. Aircraft owners and operators have the opportunity to be early adopters of ADS-B technology and to be among the first to take advantage of its safety benefits even before the ADS-B Out mandate takes effect on January 1, 2020.

Various manufacturers offer numerous rule-compliant avionics solutions, and the FAA has completed advisory circular guidance to help the general aviation community install the required avionics. ✈️

YOUR ONE-STOP RESOURCE FOR ADS-B EQUIPAGE INFORMATION

The FAA's Equip ADS-B website has information to help you understand the 2020 ADS-B deadline and to make appropriate equipage decisions.

Think of www.faa.gov/go/equipadsb as a checklist that helps you research what you need for your aircraft depending on how and where you fly, make your installation appointment and understand the benefits of ADS-B.

The Equip ADS-B site includes:

- An equipage decision chart
- A list of FAA-certified equipment
- An interactive map of ADS-B airspace across the country, including your home airport
- A discussion of the benefits of ADS-B Out and ADS-B In
- Links to federal regulations and advisory circulars
- Frequently asked questions

The latest addition to the website is a searchable database that includes equipment designed to satisfy the ADS-B Out rule. You can search by make and model to find the right equipment for your aircraft. The database includes both FAA-certified equipment and equipment in the certification process. ✈️



Research
What you need based on where you fly

Installation
Things to consider before, during, and after

Capabilities
What you can do with ADS-B technology

www.faa.gov/go/equipadsb

More Ways NextGen is Improving General Aviation:

WAAS Procedures Increasing Airport Access and Safety



Moving Closer to a New Unleaded Fuel to Power Piston-Engine Aircraft



Learn more at:

faa.gov/nextgen/update/general_aviation

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