Sustainable Aviation Fuel (SAF)

The commercial aviation industry has committed to achieving net-zero carbon emissions by 2050. SAF offers the largest potential to reduce aviation's life-cycle emissions over the next 25 years. Boeing has been a pioneer in making SAF a reality and believes aviation should be a priority user of sustainable fuel.

ENVIRONMENTAL BENEFITS

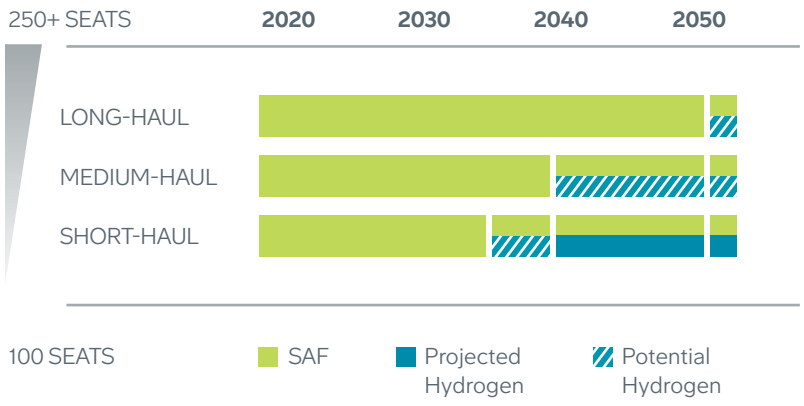
SAF lowers carbon emissions over the fuel's life cycle by up to 80%, depending on the feedstock, with the potential to reduce even more in the future. SAF can be made from a wide variety of sources: cover crops and other nonedible plants, agricultural and forestry waste, nonrecyclable municipal waste, industrial plant off-gassing and other feedstocks.

SAF: Plants and forestry trimmings absorb CO_2 through photosynthesis while they're growing, as shown in the graphic to the left. Other feedstocks transform CO_2 from a pollutant (e.g., household waste from landfills, off-gassing from industrial plants) into SAF.

FOSSIL: Fossil fuel production pulls carbon out of the earth where it has been buried for millions and millions of years and releases it into the air, further increasing atmospheric carbon emissions.

ADDITIONAL BENEFITS

- Compatible with existing infrastructure. SAF can be blended with conventional jet fuel at currently approved limits of up to 50%, which works with today's airplanes and does not require any changes to fueling infrastructure.
- Economic impact. SAF development and production deliver economic growth and create jobs across multiple industries.
- Near-, mid- and long-term solution. Decarbonizing commercial aviation will require require a multifaceted approach. SAF is the most immediate solution and the largest contributor to meeting net-zero goals. Other technologies such as electric aircraft and green hydrogen require further development, certification and infrastructure.



Source: ATAG Waypoint 2050 Report
An indicative overview of where low- and zero-carbon energy could be deployed in commercial aviation.

365
DAYS / YEAR

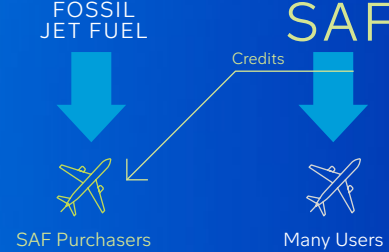
SAF is in regular use today
enviro.aero/saf

Boeing is committed to delivering commercial airplanes capable of flying on

100% SAF BY 2030

BOOK & CLAIM

This chain of custody mechanism allows for the separation of the environmental attributes of SAF from the physical flow of fuel, enabling GHG reductions within the sector and value chain, regardless of geography limitations.



Sustainable Aviation Fuel (SAF)

The aviation industry is committed to developing and using sustainable fuel. The key challenges to greater use of SAF are the limited supply and high cost. Given the lack of available energy alternatives, Boeing and the industry believe aviation should be a priority user of sustainable fuels.

WHAT IS BOEING DOING TO ACCELERATE SAF?

Today, Boeing is focused on helping catalyze SAF scaling through (1) our testing, technology investments and product compatibility work; (2) our own fuel use; and (3) industry partnerships and policy advocacy.

KEY

- Policy engagement
- Multistakeholder collaboration
- Research & development
- Boeing SAF procurement/use
- NGO collaboration

KEYS TO ACCELERATING SAF SUPPLY GROWTH

- Supportive government policies
- Market-based incentives to make SAF price competitive
- R&D to enable cost competitiveness & supply growth
- Feedstock diversity & robust sustainability criteria
- Access to capital for new production
- Offtake agreements to reduce perceived risks for investors

2008 — Boeing, Virgin Atlantic and GE Aviation conduct world's first SAF flight using a commercial aircraft

2012 — Boeing ecoDemonstrator program begins using SAF on every platform

2018 — Boeing ecoDemonstrator in partnership with FedEx conducts world's first 100% SAF flight

2021 — Boeing commits to deliver 100% SAF-capable airplanes by 2030

2021 — Boeing and SkyNRG partner to scale up the global supply of SAF

2022 — Boeing procures 2M gallons of SAF for company operations

2022 — Boeing partners with NASA to test the emissions of SAF

2022 — Boeing and Alder Fuels partner to expand SAF production

2022 — Boeing develops jet reference fluid to test for 100% SAF compatibility

2023 — Boeing procures 5.6M gallons of blended SAF

2024 — Boeing leads IAEG 100% SAF Compatibility Work Group

2024 — Boeing purchases 6.3M gallons of blended SAF

2024 — Boeing releases guidance that its military aircraft can operate on SAF up to approved 50% blend limit

2024 — Boeing adds SAF partners Wagner Sustainable Fuels, Firefly and ClearSky

2025 — Boeing invests in Norsk e-Fuel Power-to-Liquids facility

GLOSSARY

Pathways
Technical processes to produce different types of SAF

Feedstock
Inputs like wastes and energy crops that are used to make SAF (i.e., what "feeds" the process)

Offtake
When a company promises to purchase future fuel from a producer

Fossil fuel
Fuel formed in the Earth's crust (e.g., coal, oil, natural gas)

Scan to view our video on what makes SAF sustainable: