



Backgrounder

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Boeing and Sustainable Aviation Biofuel Development

Boeing is committed to take action to protect the environment and support long-term sustainable growth for commercial aviation. As part of this commitment, Boeing leads global industry efforts to develop and commercialize sustainable aviation biofuel. This helps reduce aviation's reliance on petroleum fuel and supports our industry and customers to achieve environmental goals.

In 2008 and again in 2012, the industry committed itself to ambitious environmental targets to combat CO₂ emissions. Sustainable aviation fuel is a pillar of the industry's strategy for meeting these targets¹.

Among transportation modes, aviation is unique for its dependency on liquid fuels for today and into the foreseeable future. Unlike ground transportation, electric or hybrid-electric power will not be available for short-range commercial aircraft until at least 2030 and even later for long-range models.

Therefore, a viable marketplace for biofuel produced from a wide variety of sources, or feedstocks, is of particular importance to Boeing and commercial aviation because it represents the single greatest potential means for reducing the industry's carbon footprint and achieving its environmental goals. Scientific studies have shown that these fuels produce 50 to 80 percent lower lifecycle greenhouse gas emissions than fossil fuel while supporting economic growth around the world, particularly in rural areas.

Since 2009, the industry has gained five sustainable biofuel production methods, or pathways, approved for use in commercial aviation. These fuels are "drop-in" substitutes for petroleum fuels, requiring no modification to airplanes, engines or fuel

delivery infrastructure. In 2011, Boeing led the approval of the first pathway and that fuel has been flown successfully on thousands of commercial flights. Boeing continues to work tirelessly within ASTM, the international standards body, to secure the approval of more pathways.

As part of its work, Boeing leads and partners on six continents to research, develop and commercialize new sources of aviation biofuel. To encourage production, Boeing is collaborating with airlines, governments, non-governmental organizations and private entities to create and execute regional biofuel roadmaps in the United States, Canada, China, Brazil, Mexico, Europe, the Middle East, South Africa and Australia. These roadmaps have led to biofuel projects utilizing sustainably produced regional feedstocks such as saltwater-tolerant plants in the United Arab Emirates, nicotine-free tobacco in South Africa and agriculture waste in China.

Boeing is now partnering with the U.S. Federal Aviation Administration and other stakeholders to gain approval for a biofuel called HF-HEFA (high freezepoint-hydrotreated esters and fatty acids), which is produced from fats, oils and greases. Known as “green diesel” when used in ground transport, global production capacity exceeds 1 billion gallons annually.

To verify this fuel’s performance and characteristics, Boeing tested two blends of HF-HEFA on its ecoDemonstrator program’s 787 and 757 flight test airplanes. Approval of this fuel would make a price-competitive sustainable biofuel available that could meet more than 1 percent of global aviation fuel supply needs.

The commercialization of biofuel is steadily growing. Los Angeles International Airport and Oslo Airport Gardermoen in Norway began utilizing biofuel on a regular basis in 2016 — a historic first for commercial aviation — and Stockholm, Sweden, followed suit in 2017. Seattle-Tacoma International Airport recently announced the results of its study on how to integrate biofuel into their infrastructure. Other airports are conducting similar studies to prepare for future biofuel use. And a growing number of airlines have committed to buy commercial-scale quantities of biofuel over the next several years.

Such near-term success and efforts will stimulate the market to continue to grow and develop additional biofuel technologies and sources.

¹ Air Transport Action Group industry position statement:
<http://www.atag.org/component/downloads/downloads/203.html>

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