



# Backgrounder

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Boeing Commercial Airplanes  
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## Boeing Commercial Airplanes and the Environment

Boeing believes that environmental leadership and innovation are crucial to the long-term sustainable growth of air travel.

Passenger traffic on airplanes is expected to continue to grow by about 5 percent annually, and to meet this passenger demand, the global fleet is forecast to double over the next 20 years. As our industry grows, Boeing understands that we have a responsibility to continue to reduce aviation's environmental impact. This benefits our customers, our company, our employees and the planet.

Today's Boeing airplanes are already 70 percent more fuel efficient, with a noise footprint that is 90 percent smaller, than the first jets, and we continue to seek ways to reduce greenhouse gas emissions and community noise. More than 75 percent of Boeing's commercial research and development funding supports greater efficiency and environmental performance in our products, services and facilities.

Boeing also has a comprehensive environmental strategy that includes:

- Designing and building more fuel-efficient airplanes
- Improving gate-to-gate operational efficiency for customers
- Advocating for modernized air traffic management systems
- Developing sustainable aviation biofuel
- Reducing the environmental footprint of Boeing facilities

Through this strategy, Boeing supports efforts to meet the aviation industry's aggressive goals for CO<sub>2</sub> reduction. Industry targets include improving fleet-wide efficiency by 1.5 percent annually; reaching carbon-neutral growth starting in 2020; and reducing net CO<sub>2</sub> emissions by 50 percent by 2050, compared to 2005 levels.

First and foremost, Boeing is investing to further improve the efficiency of our airplanes, which reduces customers' fuel costs and aviation's CO<sub>2</sub> emissions. The best-known example is the 787 Dreamliner family, which reduces fuel use and emissions by

20 to 25 percent compared to airplanes it replaces. The 737 MAX and 777X also will provide airlines with superior fuel efficiency, emissions reduction and economics.

Boeing also leads by researching, developing and testing new technologies that can improve the environmental performance of airplanes flying today, tomorrow and far into the future. Since 2012, the Boeing ecoDemonstrator Program has tested more than 50 new technologies that can reduce fuel use, emissions and noise. The company conducts research into hybrid-, solar- and electric-powered aircraft, as well as ways to recycle carbon fiber from airplanes when they are retired decades from now.

To improve airlines' operational efficiency, Boeing offers digital solutions that save fuel, emissions and time. One smart application, the Boeing Fuel Dashboard, provides customers with a comprehensive view of fleet and airplane fuel consumption and identifies opportunities to reduce fuel use across the fleet or down to individual routes.

Boeing also partners with stakeholders around the world to modernize air traffic management, as a key way to improve air travel's system-wide efficiency by as much as 12 percent for all airplanes flying. The aviation industry seeks 95 percent efficiency by 2025 and 98 percent efficiency by 2050.

Boeing also is the industry leader in efforts to develop "drop-in" sustainable aviation biofuel. We collaborate on six continents with airlines, governments, researchers and others to expand the global supply and reduce the price of sustainable jet fuel, which cuts lifecycle CO<sub>2</sub> emissions by an estimated 50 to 80 percent compared to fossil fuel. Since its approval in 2011, airlines have made more than 2,000 commercial flights using biofuel blended with petroleum fuel. Biofuel requires no changes to airplanes or engines and performs as well as or better than Jet A/A-1.

Boeing has also set aggressive goals for zero growth of companywide greenhouse gas emissions, water use and solid waste to landfills between 2012 and 2017, even as our business continues to grow. Two Boeing factories are powered by 100 percent renewable energy, and about half of Boeing's total electricity consumption comes from carbon-free hydroelectric and other renewable energy sources.

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