Parts. Boeing aims to reduce carbon emissions and waste from parts, components and systems procured from suppliers. We reduce carbon emissions from the movement of millions of airplane spare parts by consolidating shipments, eliminating single-use packaging and redesigning warehousing networks to regional hubs. In addition, we use additive manufacturing to 3D print some of our own parts. Doing so allows us to change the designs of some parts in a way that can lessen their environmental impact by creating lighter consolidated parts that use less raw material, fewer machining processes and leave less waste. See Page 64 for more information.

Supplier Collaboration: In 2021, Boeing co-founded an industry effort through the International Aerospace Environmental Group to establish a voluntary sectoral framework for ESG engagement, including assessment and awareness, throughout the aerospace manufacturing industry.

Used Serviceable Material Offerings: Boeing Service business provides access to recertified used parts from retired aircraft called used serviceable material.

Build/Test. Reducing waste from operations while boosting the use of renewable energy and digital technologies can help our manufacturing and other work sites reduce their environmental impact while building and testing a product. Boeing cuts waste to landfill, water, energy and hazardous chemicals. Read more about how we do so on Page 52. For example, when testing aircraft, Boeing uses blended sustainable aviation fuels.

Sustainable Operations: Since 2020, Boeing has maintained workplace net-zero GHG emissions at manufacturing sites and other facilities (Scope 1 and Scope 2) and in its business travel (Scope 3, Category 6) by expanding conservation and renewable energy use while securing carefully selected, third-party-verified offsets for the remaining GHG emissions.

ecoDemonstrator: To accelerate innovation for current and future airplane sustainability, our 10-year-old ecoDemonstrator flying test bed program takes promising technologies out of a lab and tests them in an operational environment.

Use. Boeing provides solutions for customers to lower their carbon footprints while they are using our aircraft. For example, armed with real-time data, flight crews can make adjustments to optimize fuel use, and thus minimize the carbon footprint of each flight. Digital tools empower our airline customers to conserve fuel, track emissions and enhance their operations' overall efficiency, while defense customers can conserve fuel and lower emissions with platform-agnostic digital systems with maintenance, supply chain and flight planning recommendations based on analytics.

Government Services: As our tools ingest flight, maintenance and supply data, our analytics produce results that drive efficiency across the system. Read more on Page 37.

End of Service. Up to 90 percent of the parts and materials in Boeing aircraft can be reused and recycled across aerospace and other industries. We manage and recertify used parts for aircraft, and engine platforms for our customers.

Remanufactured: Boeing remanufactures aircraft, such as the 115 AH-64D Apache for government customers, which includes upgrading configurations with the latest technology and keeping valuable materials in a closed loop.

Boeing Converted Freighter Fleet Renewal: Boeing's passenger-to-freighter programs provide airlines an economical way to replace less efficient, older-generation freighters with more efficient freighters created from repurposed passenger aircraft.