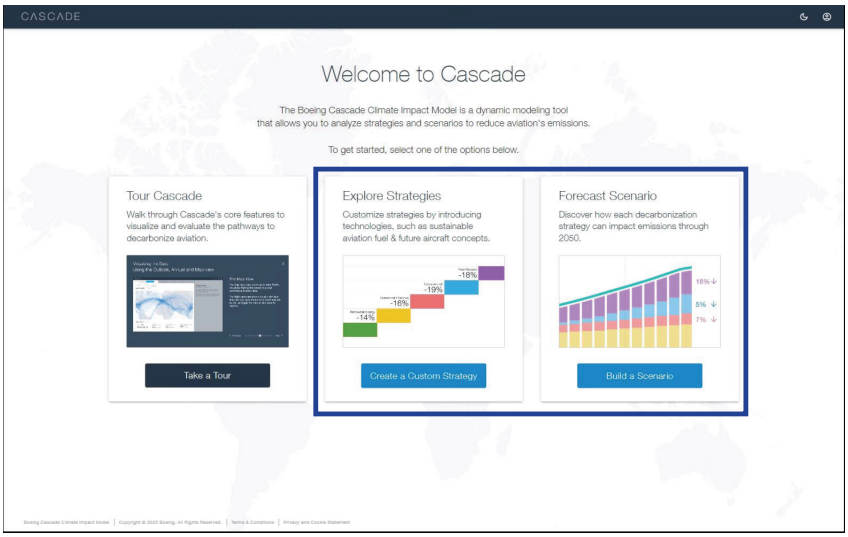
The Boeing Cascade Climate Impact Model

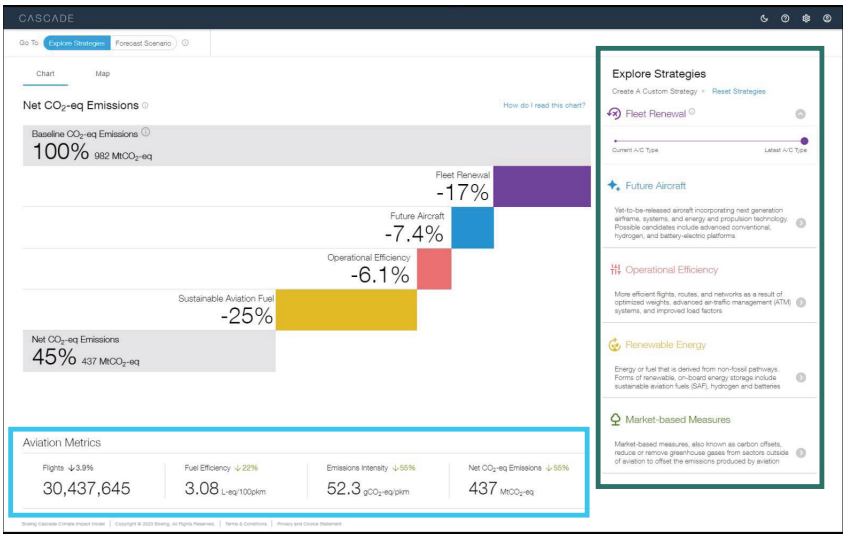
Cascade is a dynamic modeling tool that quantifies the power of aviation's major strategies to reduce emissions. By putting data first, the tool enables alignment across industry and sectors as both work together to achieve a sustainable aerospace future.

Cascade uses historic traffic data, aircraft performance models, operational efficiency improvements derived from public analyses, and energy/resource forecasting models. Combined with a comprehensive data dashboard, the user can review multiple potential scenarios and determine their preferred journey to decarbonizing aviation.

DATA-DRIVEN SUSTAINABILITY EDUCATION



View 1: Explore Strategies



Views

"Explore Strategies" view visualizes the impact that each strategy has on reducing emissions at a single point in time.

"Forecast Scenario" view enables detailed analysis of emissions reductions over time and out to 2050.

Aviation Metrics

In both views, aggregated metrics are displayed based on your selected year and include total flights, fuel efficiency, emissions intensity and net CO2 equivalent emissions information.

Strategies

Cascade allows the user to model various paths to decarbonization using user-selectable scenarios for the five core strategies:

- Airplane Fleet Renewal
- Future Aircraft/Advanced Technology
- Operational Efficiency Improvements
- Renewable Energy
- Market-Based Measures

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As Boeing is focused on minimizing environmental impact, which involves total lifecycle accounting of all climate effects. This includes direct emissions from the aircraft during flight and on the ground, as well as emissions incurred during extraction, production, distribution and storage of conventional and alternative fuel sources.

VIEW 2: FORECAST SCENARIO

Emissions Forecast

Discover how each decarbonization strategy can impact emissions through 2050.

Once a decarbonization strategy is activated by clicking, the user is provided with slider options to modify that strategy. In the renewable energy section, for example, users can run through scenarios where they identify portions of their fleet to be powered by hydrogen, electric or SAF in order to plan for future needs based on the total climate impact.