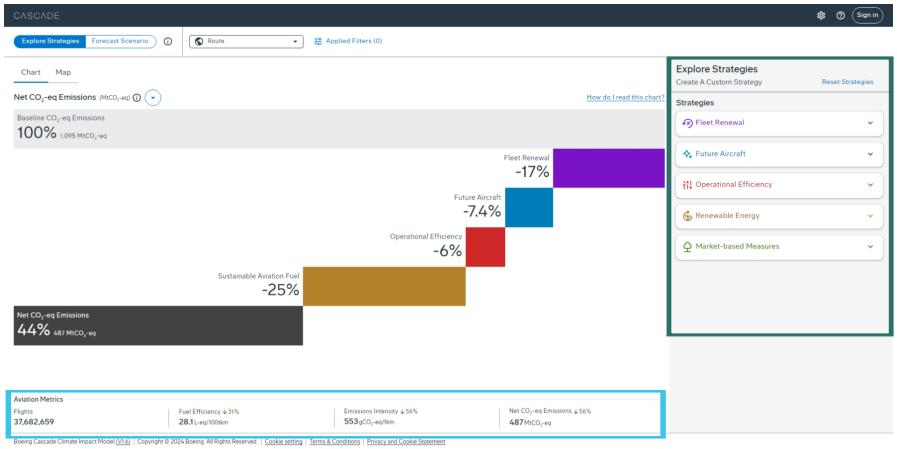
The Boeing Cascade Climate Impact Model

Cascade is a modeling tool that assesses aviation's major strategies to reduce emissions, built in response to aviation's commitment to reach net-zero carbon emissions by 2050. The tool uses historical data, aircraft performance models, operational efficiency improvements, and energy forecasting models to analyze different scenarios.

Cascade sets itself apart by accounting for the full life cycle emissions of the fuel selected. This includes direct emissions from the airplane during flight and on the ground, as well as emissions incurred during extraction, production, distribution and storage. With a user-friendly dashboard, users can review multiple potential scenarios and choose the best path to decarbonize aviation.

VIEW 1: EXPLORE STRATEGIES

Visualize the impact each strategy has on reducing emissions at a single point in time.



VIEW 2: FORECAST SCENARIO

Build scenarios and detailed analysis of emissions reductions over time and out to 2050.

Aviation Metrics

In both views, aggregated metrics are displayed based on the 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

Emissions Forecast

Once a decarbonization strategy is selected, 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.

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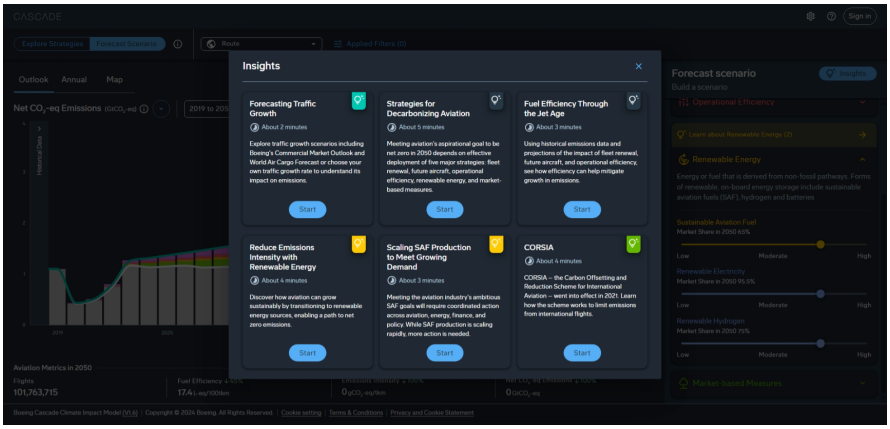
Since the launch of the Boeing Cascade Climate Impact Model, we've sought out feedback from our users to continue to evolve this industry tool and drive data-driven conversation on aviation decarbonization.

Check out some of our features below to learn how to use the models to build scenarios.

INSIGHTS



Guided Storytelling

To further educate and align stakeholders on the challenges of decarbonizing aviation, Insights have been added into Cascade.

Insights focus on important, but complex topics within aviation sustainability such as traffic growth, historical emissions data, renewable energy, and overall strategies to decarbonize.

VISUALIZATIONS

Analyze the Data Further

Explore how much energy will be required, how efficiency will change over time, and other metrics by selecting additional charts within Forecast Scenario view.

To access these, click the dropdown next to the chart title.