



NBAA SUSTAINABLE FLIGHT DEPARTMENT ACCREDITATION PROGRAM

Flight Accreditation Calculation Guide

To earn accreditation, business aviation entities are required to provide emissions data via the Emissions Data Form. The Calculation Guide can be used in conjunction with the [Emissions Data Form Guide](#) to prepare for form submission. The calculations below can also be used to determine if your business aviation entity meets a given accreditation's requirements. To achieve any initial accreditation, a business aviation entity must document a minimum of 10% (without rounding) CO₂ emissions reduction or offsetting of their accreditation-related emissions during the evaluated time period as compared to the baseline year. If a business aviation entity is lacking any data, or acquiring this data presents a significant challenge, the business aviation entity is encouraged to get in touch with NBAA to discuss any alternative solutions that still allow the entity to meet accreditation requirements.

Note: All numbers should be rounded to two decimal places unless otherwise specified.

The steps below outline how to calculate the baseline year and comparison year flight (Scope 1) CO₂ emissions. For both years, complete the following:

1. Calculate annual total metric tonnes CO₂ emissions: This includes all fuel uploaded to all owned, fractionally owned, or leased aircraft from the first day of the year to the last. This includes any sustainable aviation fuel (SAF) and book & claim purchases, but does not consider any reductions from those purchases, or offsets (this is accounted for in a later step). NBAA Sustainable Flight Department Accreditation relies on a 3.16 conversion factor, which is the factor commonly used by ICAO for calculating the CO₂ emissions associated with conventional jet fuel. The formula below uses this conversion factor along with weight conversions (1 Gal = 6.75lbs or 3.06kg) for jet fuel to provide the user with metric tonnes CO₂ emissions.

Annual Total Gallons Jet-A	x	0.0096696	=	Annual Total Metric Tonnes CO ₂ Emissions
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Note: Individual Evidence is required for annual fuel purchase tracking, including SAF and book & claim purchases. All fuel purchases can be tracked in the same document, so long as conventional jet fuel, SAF, and book & claim are identified respectively.

2. (As applicable) Calculate metric tonnes of CO₂ emissions reduced through the purchase of sustainable aviation fuel (SAF) that year: The lifecycle emissions associated with one gallon of SAF vary depending on the blend and carbon index reduction. Important information to receive at the time of purchase includes gallon quantity, percentage of Neat SAF in fuel blend and the Neat SAF lifecycle CO₂ emissions reduction index. In some cases the blend lifecycle CO₂ emissions reduction index is also provided. If that is not the case, it can be calculated using the applicable formula below as long as the previously mentioned values are provided. This does not include book & claim or offsetting.

Because each purchase is different, the individual emissions savings will need to be calculated per individual purchase of SAF. To simplify this process, we recommend formatting a tracking sheet to calculate emissions savings automatically, or use the optional NBAA tracking sheet.

To calculate (or verify) the percentage of carbon index reduction for a given SAF Blend upload:

% of Neat SAF in fuel blend	x	% Lifecycle CO ₂ Reduction	=	SAF Blend % Carbon Index Reduction
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To calculate the emissions savings of a single upload:

SAF Blend % Carbon Index Reduction	x	Individual Upload Metric Tonnes CO ₂ Emissions	=	Individual Upload Metric Tonnes CO ₂ Emissions Reduction
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Then, using a tracking sheet as Individual Evidence, the total annual SAF CO₂ emissions reduction can be calculated by adding all individual upload reductions together.

Note: Individual Evidence of SAF purchases will need to demonstrate the carbon emissions reductions of each individual purchase.

Example: A business aviation entity purchases a single SAF upload of 2,000 gallons SAF/conventional jet fuel blend. It contains a 30/70 blend of Neat SAF with an 80% lifecycle CO₂ emissions reduction. The total emissions from 2,000 gallons of conventional jet fuel are 19.34 metric tonnes CO₂. Considering the SAF, 30% x 80% results in a 24% carbon index reduction. 24% of 19.34 is 4.64 metric tonnes CO₂ emissions reduction.

3. (As applicable) Calculate metric tonnes of CO₂ emissions reduced through the purchase of SAF via book & claim that year: Book & claim emissions reduction are calculated the same way as direct SAF uploads– each purchase varies depending on the blend and carbon index reduction. Important information to receive at the time of purchase includes gallon quantity, percentage of Neat SAF in fuel blend and the Neat SAF lifecycle CO₂ emissions reduction index. In some cases the blend lifecycle CO₂ emissions reduction index is also provided. If that is not the case, it can be calculated using the applicable formula above as long as the previously mentioned values are provided.

Similarly, using a tracking sheet as Individual Evidence, the total annual book & claim CO₂ emissions reduction can be calculated by adding all individual book & claim transaction reductions together.

Note: Individual Evidence of book & claim purchases will need to demonstrate the carbon emissions reductions of each individual purchase.

4. (As applicable) Consider any reductions in net metric tonnes of CO₂ emissions as a result of purchasing carbon offsets to be applied that year: This includes any offsets purchased to specifically offset flight-related emissions only. The offsets may have been purchased at any time and count toward a given year, so long as they have not yet been retired. A carbon offset must be retired after a single use.

Note: Individual Evidence is required for annual carbon offset purchase tracking if more than one offset purchase has been made that year. Using a tracking sheet, the total annual carbon offsets CO₂ emissions reductions (attributed to offsets as provided by the seller) can be calculated by adding all carbon offsets reductions together.

5. Calculate final annual CO₂ emissions: To calculate the final emissions number, subtract any emissions reductions from SAF, SAF book & claim, and carbon offsets.

Total Annual Metric Tonnes CO ₂ Emissions
- Metric tonnes CO ₂ reduced from SAF
- Metric tonnes CO ₂ reduced from Book and Claim
- Metric tonnes CO ₂ reduced from carbon offsets
Final Annual Metric Tonnes CO ₂ Emissions

6. Calculate the total number of aircraft owned that calendar year: This number will be prorated if the number of aircraft has fluctuated. For fractional ownership, the percentage of aircraft ownership will be used in the total aircraft owned. **Utilize a decimal to properly represent the number of months. One month = 0.083.**

Example: A business aviation entity owns three aircraft for the entire year. This does not include any fleet size changes throughout that year. The entity purchased a fourth aircraft in early April of that year. That aircraft would need to be accounted for the latter nine months of the year (April to December): $0.0803 \times 9 = 0.75$. In total, the business aviation entity should account for 3.75 aircraft that year ($3 + 0.75 = 3.75$).

Note: Individual Evidence required to verify number of aircraft owned or operated.

7. Calculate your annual metric tonnes of CO₂ emissions per aircraft: For the purposes of this accreditation, the annual emissions are calculated by dividing the sum of the final annual CO₂ emissions by the number of aircraft owned.

Final Annual Metric Tonnes CO ₂ Emissions	=	Metric Tonnes CO ₂ Emissions per Aircraft
Total Annual Aircraft		

Compare the metric tonnes of CO₂ emissions per aircraft from the baseline year to comparison year to determine if your business aviation entity qualifies for initial Flight Accreditation (meeting a minimum of 10% CO₂ emissions reduction or offsetting of their flight-related emissions).