EASA
European Union Aviation Safety Agency

EASA 2025 BRIEFING NOTE

2024 Aviation Fuels Reference Prices for ReFuelEU Aviation

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Photocredits

1. Introduction

The ReFuelEU Aviation Regulation (Regulation (EU) 2023/2405, "RFEUA") establishes under Article 13 that EASA is required to annually prepare and publish a technical report, starting in 2025. The technical report shall contain various elements, including information on the prices of sustainable aviation fuels (SAF) and other RFEUA eligible aviation fuels in the European Union (EU).

The "*2024 Aviation Fuels Reference Prices for ReFuelEU Aviation*" briefing note presents the 2024 average prices for the aviation fuels categories eligible under RFEUA as well as conventional aviation fuels (CAF). This briefing note serves as a pre-publication of the RFEUA aviation fuels reference prices that will be included in the first *EASA technical report,* which is due for publication in September 2025. Importantly, the reference prices included in this briefing note and in the technical report published later in 2025 will not differ.

The 2024 average prices including in this briefing note are intended to serve as reference for EU Member States in their determination of penalties under RFEUA as well as for the support mechanism for the use of eligible aviation fuels under the EU ETS Directive (FEETS)[1].

2. 2024 reference prices for RFEUA aviation fuels

This chapter provides the average prices for RFEUA aviation fuels for the year 2024 as follows:

- **Section 2.1** provides the 2024 average prices per RFEUA aviation fuels category.
- **Section 2.2** provides the 2024 RFEUA aviation fuels reference prices necessary to support the determination of penalties under RFEUA by EU Member States.

2.1 2024 average prices per RFEUA aviation fuels category

The 2024 average price for each RFEUA aviation fuels category is presented in **Table 1** below.

Where possible, reference prices have been determined using price indexes maintained by price reporting agencies (also referred to as "real index pricing" or "market prices"). For those RFEUA aviation fuels for which no market price was available in 2024, reference prices have been calculated using a bottom-up production cost estimation methodology (also referred to as "back-up pricing" or "production cost estimation").[2]

[1] Delegated Regulation supplementing Directive 2003/87/EC of the European Parliament and of the Council by laying down detailed rules for the yearly calculation of price differences between eligible aviation fuels and fossil kerosene and for the EU ETS allocation of allowances for the use of eligible aviation fuels

[2] Refer to the EASA Report "State of the EU SAF Market in 2023" for more details on both the "real index pricing" and "back-up pricing" methodology for determining reference prices.

Table 1: 2024 average prices per RFEUA aviation fuels category

RFEUA AVIATION FUELS CATEGORY[3]	MARKET PRICE (€/tonne)[4]	PRODUCTION COST ESTIMATION (€/tonne)[5]
Sustainable aviation fuels (SAF)		
Synthetic aviation fuels[6] (weighted average)	N/A	Average 7,695 [6,820 – 9,405]
Synthetic aviation fuels from industrial CO_2	N/A	Average 7,695 [6,820 – 8,590]
Synthetic aviation fuels from biogenic CO_2	N/A	Average 7,695 [6,820 – 8,590]
Synthetic aviation fuels from atmospheric CO_2	N/A	Average 8,470 [7,575 – 9,405]
Advanced aviation biofuels	N/A	Average 2,715 [1,915- 3,655]
Aviation biofuels	2,085	1,461[7]
Recycled carbon aviation fuels	N/A	Average 2,280 [1,940 – 2,595]
Other eligible renewable and low-carbon aviation fuels		
Renewable hydrogen for aviation	N/A	Average 7,520 [6,550 – 8,515]
Low-carbon hydrogen for aviation	N/A	4,655
Synthetic low-carbon aviation fuels	N/A	Average 5,525 [5,180 – 5,870]
Other aviation fuels		
Conventional aviation fuels	734	N/A

[3] See EASA Report "State of the EU SAF Market in 2023" for definitions of each RFEUA aviation fuels category. Note that 'aviation biofuels' in this briefing note includes the categories 'aviation biofuels' (Annex IX Part B) and 'other aviation biofuels' (non Annex IX) as included in Table 1 (page 1) of that report.
Also note that the aviation fuels categories under RFEUA generally align with the eligible aviation fuel subcategories outlined in the Annex of the Delegated Regulation on FEETS, with the following differences:
(1) recycled carbon aviation fuels are not eligible for support as FEETS, and
(2) FEETS additionally includes several co-processing-based aviation fuels subcategories. In this briefing note, co-processed fuels are included in their respective aviation fuels category.

[4] Note that the average prices are provided in €/tonne of product, without adjusting for energy content.

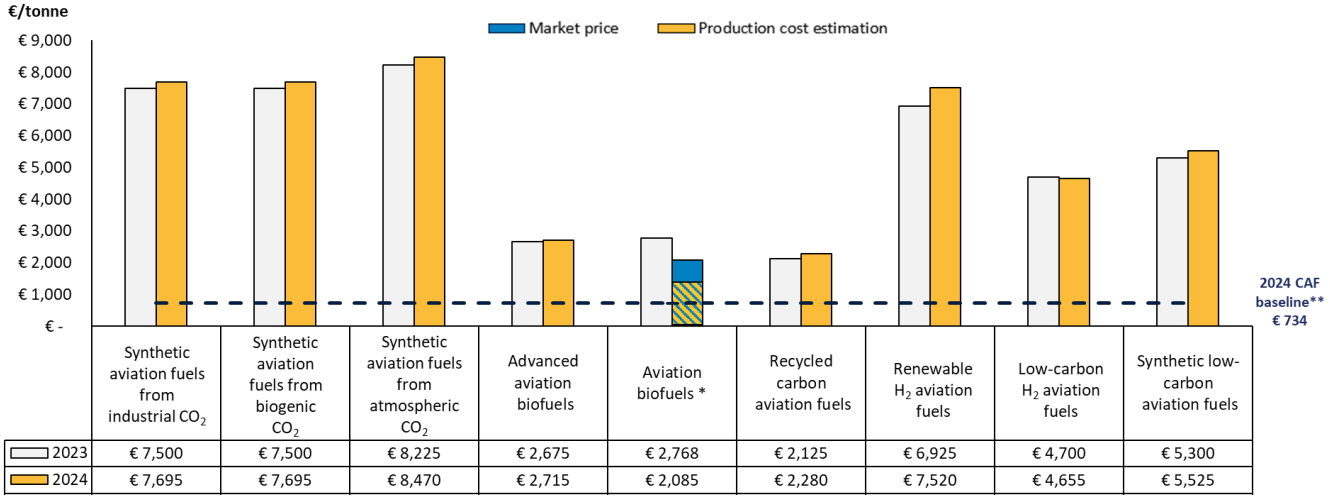
[5] Note that the average prices are provided in €/tonne of product, without adjusting for energy content.

[6] The weighted average is calculated factoring in the currently announced production capacity per subcategory in the EU.

[7] Note that the production cost estimation for 'aviation biofuels' is included only for informational purposes and to allow for comparison with the production cost estimations for other RFEUA aviation fuels categories.

Figure 1 below provides a visual overview of the 2024 average prices for the different RFEUA aviation fuels categories. Note that only CAF and aviation biofuels reference prices could be established via real index pricing using market prices. The reference prices for the other RFEUA aviation fuels were determined using production cost estimations, factoring in feedstock, energy and technology deployment costs, as well as hypothetical production capacity estimations for 2024. For these production cost estimations, facilities were assumed to be "first-of-a-kind" (FOAK) facilities, with smaller capacities, to better represent a hypothetical 2024 production scenario. Figure 1 also includes the 2023 average price for each RFEUA aviation fuels category for informational purposes.

Figure 1: 2024 average prices per RFEUA aviation fuels category



	Synthetic aviation fuels from industrial CO_2	Synthetic aviation fuels from biogenic CO_2	Synthetic aviation fuels from atmospheric CO_2	Advanced aviation biofuels	Aviation biofuels *	Recycled carbon aviation fuels	Renewable H_2 aviation fuels	Low-carbon H_2 aviation fuels	Synthetic low-carbon aviation fuels
2023	€ 7,500	€ 7,500	€ 8,225	€ 2,675	€ 2,768	€ 2,125	€ 6,925	€ 4,700	€ 5,300
2024	€ 7,695	€ 7,695	€ 8,470	€ 2,715	€ 2,085	€ 2,280	€ 7,520	€ 4,655	€ 5,525

**The bar with blue and yellow stripes represents the 2024 production cost estimation for aviation biofuels (provided for informational purposes).*

*** For reference: The 2023 CAF price was 816 €/tonne.*

2.2 2024 RFEUA aviation fuels reference prices

To support EU Member States in the determination of penalties under RFEUA, this section provides the 2024 reference prices for RFEUA aviation fuels, as detailed in **Table 2** and briefly explained below:

i. The **2024 price of CAF (P_{conv})** is the average market price of CAF as presented in section 2.1 of this briefing note.

ii. The **2024 price of SAF[8] (P_{SAF})** is the weighted average price between (1) aviation biofuels, (2) advanced aviation biofuels and (3) recycled carbon aviation biofuels, based on the availability of each fuel category in the market during 2024. For 2024, market prices through price reporting agencies were only available for (1) aviation biofuels.

iii. The **2024 price of synthetic aviation fuels (P_{syn})** is the weighted average price between (1) synthetic aviation fuels from industrial CO_2, (2) synthetic aviation fuels from biogenic CO_2 and (3) synthetic aviation fuels from atmospheric CO_2. For 2024, market prices for synthetic aviation fuels were not available, thus necessitating the use of a production cost estimation methodology ("back-up pricing").[9] This approach factors in the announced production capacity for each of the synthetic aviation fuel subcategories in the EU to determine the weighting of each subcategory for the weighted average price. Note that production cost estimations do not include any profit margin.

[8] Note that this excludes synthetic aviation fuels for the purpose of determining penalties under RFEUA.

[9] See EASA Report "State of the EU SAF Market in 2023" for more information.

iv. The **2024 price of aviation fuels[10] (P_{af})** is the weighted average price of CAF, SAF and synthetic aviation fuels corresponding to the minimum shares of SAF and synthetic aviation fuels outlined in Annex I of RFEUA. [11] The price of aviation fuels is calculated as follows:

$$P_{af} = \frac{(P_{conv} \times V_{conv}) + (P_{SAF} \times V_{SAF}) + (P_{syn} \times V_{syn})}{V_{conv} + V_{SAF} + V_{syn}}$$

where V_{conv} is the fraction of the aviation fuels supplied which is neither SAF (V_{SAF}, the minimum share of SAF from Annex I, in %) nor synthetic aviation fuels (V_{syn}, the minimum share of synthetic aviation fuels from Annex I, in %).

For 2024, this amount V_{conv} would be 100% which is equivalent to the total (100%) minus the share of SAF (0%) and the share of synthetic aviation fuels (0%):

$$P_{af\_2024} = P_{conv\_2024} \times 100\%$$

Table 2: 2024 reference prices

RFEUA AVIATION FUELS CATEGORY		2024 REFERENCE PRICE (€/tonne)
(i)	CAF	734
(ii)	SAF	2,085
(iii)	Synthetic aviation fuels	7,695
(iv)	Aviation fuels	734

[10] "Aviation fuel" means drop-in fuel manufactured for direct use by aircraft (definition as per RFEUA Article 3(6)).

[11] Given that RFEUA does not determine minimum shares of SAF and synthetic aviation fuels for the year 2024, their share is to be considered 0% for the purpose of determining the 2024 reference price of "aviation fuels" (definition as per RFEUA Article 3(6)). For 2024, the aviation fuels price is therefore equivalent to the price of CAF. For the 2025 reference prices (to be published in the EASA 2026 briefing note due in February 2026), the minimum shares of SAF will be progressively integrated in the calculation of the aviation fuels price.

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