

# Trends in Decarbonization Policies for the Aviation and Airport Sectors in the United States

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## 1. Introduction

Addressing climate change has become an urgent issue across all industries worldwide, and the aviation sector is no exception; it is now regarded as a priority area that requires industry-wide efforts. Although aviation is said to account for a relatively small share of global carbon dioxide (CO<sub>2</sub>) emissions, it is considered one of the most difficult sectors to decarbonize, and thus swift action is required. According to the International Energy Agency (IEA), in 2023, emissions from the aviation sector accounted for 2.5% of global energy-related CO<sub>2</sub> emissions, increasing at a faster pace between 2000 and 2019 than other transport sectors, including rail, road, and maritime. During the COVID-19 pandemic, emissions declined due to reduced demand, but with the recovery of international travel, CO<sub>2</sub> emissions in the aviation sector reached approximately 950 million tons in 2023, over 90% of pre-pandemic levels.<sup>1)</sup>

In the United States, the government and private sector have also taken steps to address climate change. In 2021, the Biden Administration announced a national target to reduce U.S. greenhouse gas (GHG) emissions by 50–52% below 2005 levels by 2030,<sup>2)</sup> and presented a long-term commitment to achieving net-zero GHG emissions economy-wide by 2050.<sup>3)</sup>

In the aviation sector, the U.S. government released the U.S. Aviation Climate Action Plan in November 2021,<sup>4)</sup> which set a goal of achieving net-zero GHG emissions in the U.S. aviation sector by 2050 and outlined a whole-of-government framework to achieve that goal. The plan was also submitted to the International Civil Aviation Organization (ICAO) as the U.S. State Action Plan and is to be updated every three years; a revised version was

published in 2024. Furthermore, recognizing that Sustainable Aviation Fuel (SAF) presents the greatest potential impact toward aviation decarbonization by 2050, the U.S. Department of Energy (DOE), Department of Transportation (DOT), and Department of Agriculture (USDA) jointly announced the SAF Grand Challenge<sup>5)</sup> in September 2021, a comprehensive strategy aimed at scaling up commercial production of SAF.

However, since President Trump took office in January 2025, several policy shifts have occurred, reversing or altering initiatives launched under the Biden Administration. Regarding climate and energy, President Trump, on his first day in office, issued an order to withdraw the United States from the Paris Agreement,<sup>6)</sup> declared a national energy emergency,<sup>7)</sup> and signed an executive order to encourage the development of domestic energy resources such as oil and natural gas.<sup>8)</sup> In the aviation sector, changes to tax credits for SAF have emerged that may influence decarbonization efforts.

This report reviews U.S. policies and industry initiatives related to aviation and airport decarbonization, examines the effects of the recent administration change, and considers future prospects and implications.

## 2. Global Decarbonization Efforts in the Aviation and Airport Industries

Aviation is an industry that enables the movement of people and goods across borders and influences economies and societies globally. For this reason, decarbonization in the aviation sector has been advanced within the framework of international cooperation. In 2010, ICAO adopted aspirational goals, including improving global fuel

efficiency by an average of 2% per year and achieving carbon-neutral growth from 2020.<sup>9)</sup>

In 2016, ICAO established the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), a global market-based measure to address emissions from international aviation through 2035.<sup>10)</sup> In October 2022, ICAO member states adopted a Long-Term Global Aspirational Goal (LTAG) to achieve net-zero CO<sub>2</sub> emissions from international aviation by 2050.<sup>11)</sup> Additionally, in November 2023, ICAO set out a vision to reduce CO<sub>2</sub> emissions from international aviation by 5% by 2030 through the use of SAF, Low-Carbon Aviation Fuel (LCAF), and other clean aviation energy sources.<sup>12)</sup>

The International Air Transport Association (IATA) adopted a resolution at its 2021 Annual General Meeting whereby its member airlines committed to achieving net-zero carbon emissions from aviation operations by 2050.<sup>13)</sup> To support that goal, IATA has developed industry roadmaps covering five key domains (Aircraft technology, Energy infrastructure, Operations, Finance, and Policy).<sup>14)</sup>

In the airport sector, the Airports Council International (ACI) announced in June 2021 that its member airports will aim to achieve net-zero emissions from airport operations by 2050.<sup>15)</sup>

Under these global frameworks, countries are developing their own national policies, strategies, and implementation measures to advance decarbonization in their aviation and airport sectors.

### 3. Policies and Initiatives in the United States

In the United States, both the federal government and private companies have advanced decarbonization initiatives. This section provides an overview of the federal government's approach, followed by examples of actions taken by major U.S. airlines.

#### 3.1 Federal Policy Approaches

##### 3.1.1 U.S. Aviation Climate Action Plan

As noted earlier, the U.S. government released the U.S. Aviation Climate Action Plan in November 2021 under the

Biden Administration, led primarily by DOT. This was the first comprehensive national plan to set a goal of net-zero GHG emissions from the U.S. aviation sector by 2050. The outline of this plan is as follows:

#### 【Goal】

- Net-zero GHG emissions\* from the U.S. aviation sector\*\* by 2050

\*including lifecycle emissions of CO<sub>2</sub>, nitrous oxide, and methane

\*\* CO<sub>2</sub> emissions from (1) U.S. domestic aviation from U.S. and foreign operators, (2) international aviation from U.S. operators, and (3) airports located in the U.S.

#### 【Major Approaches】

- (1) New Aircraft Technologies
  - Promoting development and deployment of more fuel-efficient, lower-emission aircraft and engines
- (2) Operational Improvements
  - Airspace modernization, including implementation of the Next Generation Air Transportation System (NextGen),<sup>16)</sup> to reduce fuel consumption, emissions, and noise
- (3) SAF Uptake
  - Rapidly expanding SAF production and utilization through various policy measures, including the SAF Grand Challenge
  - Reducing domestic production costs through economic incentives such as tax credits
- (4) International leadership
  - Promoting global agreements and providing technical leadership through ICAO and other bodies, as well as pursuing mutually beneficial climate protection measures bilaterally and multilaterally
- (5) Airport Initiatives and Climate Resilience
  - Supporting airport investments that reduce GHG emissions through grants and infrastructure programs

The plan is subject to review every three years, and an updated version was released in November 2024 (hereinafter referred to as the “2024 Action Plan”).<sup>17)</sup> The 2024 Action Plan reflects the progress made during the

three years since the 2021 Aviation Climate Action Plan (hereinafter the “2021 Action Plan”) and aims to identify opportunities for the U.S. to continue making steady progress toward its goals. In the 2024 Action Plan, the U.S. reports actual CO<sub>2</sub> emissions associated with the relevant measures implemented since 2021 and updates its outlook for CO<sub>2</sub> emissions through 2050 based on the latest forecasts, reflecting shifts in the policy environment.

Below is a summary of the key points and latest outlook for the 2024 Action Plan.

**[Contents of the 2024 Action Plan]**

(1) Analysis of data to date

a. Trends in CO<sub>2</sub> Emissions and Their Drivers

As mentioned above, the 2021 Action Plan used historical data up to 2019 and CO<sub>2</sub> emissions forecasts for 2020 to 2050. In the 2024 Action Plan, these data have been updated to incorporate three additional years of actual performance. Specifically, the projected values for 2020 to 2022 have been replaced with observed data, and the differences between the projected and actual values have been analyzed to identify factors contributing to the variance. The purpose of this analysis is to provide insights that may inform future strategic decisions and policymaking.

Figure 1 compares the trend in CO<sub>2</sub> emissions from the U.S. aviation sector from 2019 to 2022 with the forecast in the 2021 Action Plan. It shows that the actual figures (right) are higher than the forecast figures (left). The reason for this increase is that the actual demand recovery after the pandemic was faster than the 2021 forecast.

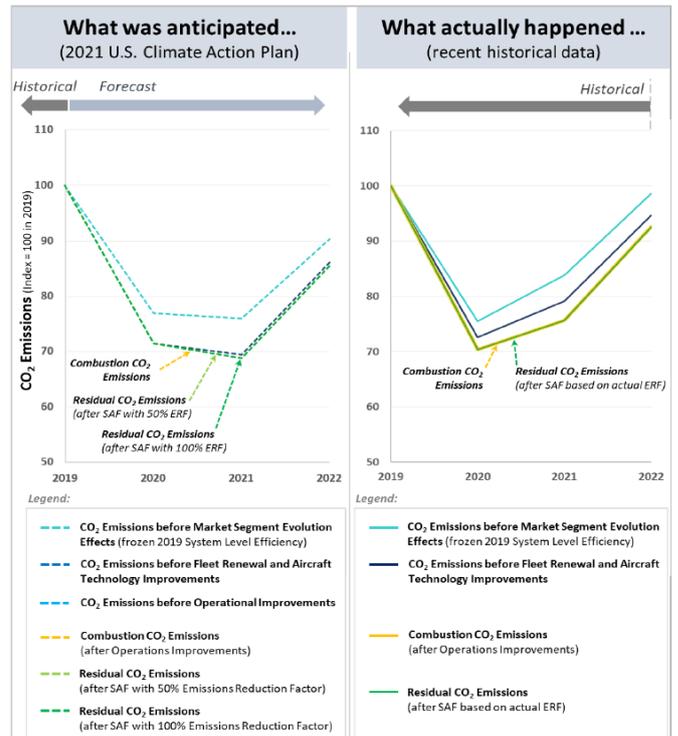


Figure 1: Trends in CO<sub>2</sub> emissions from the US aviation sector from 2019 to 2022 compared to the 2021 Action Plan projections (From the 2024 Action Plan document)

As shown in Figure 2, actual transportation volume (RTK: Revenue Tonne-Kilometers), supply volume (ATK: Available Tonne-Kilometers), and load factor (LF) for the period are higher than the values projected in the 2021 Action Plan. Additionally, the actual figures for aircraft technological innovation and SAF usage are lower than the values projected in the 2021 Action Plan. It is analyzed that the combined effects of these factors have led to an increase in actual overall CO<sub>2</sub> emissions. The 2024 Action Plan also notes that CO<sub>2</sub> emissions from the U.S. aviation sector in 2022 had recovered to 93 percent of their 2019 level.

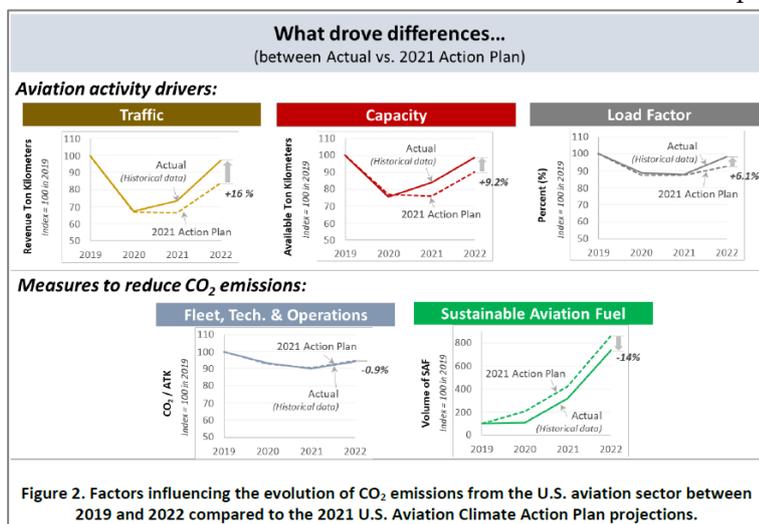


Figure 2: Factors Influencing CO<sub>2</sub> Emissions (Source: 2024 Action Plan)

b. Progress in the Deployment of SAF

With respect to the deployment of SAF, which plays a significant role in decarbonizing the aviation sector, Figure 3 (left) shows that production volumes have increased substantially compared to 2019. Similarly, as shown in the right side of the same figure, SAF usage has also grown since 2019. However, when comparing actual usage with the projections made in the 2021 Action Plan, actual SAF consumption has trailed below projected levels. This trend suggests that, due to factors such as technological constraints and cost challenges, the expansion of SAF usage has not progressed to the degree anticipated at the time of the 2021 Action Plan.

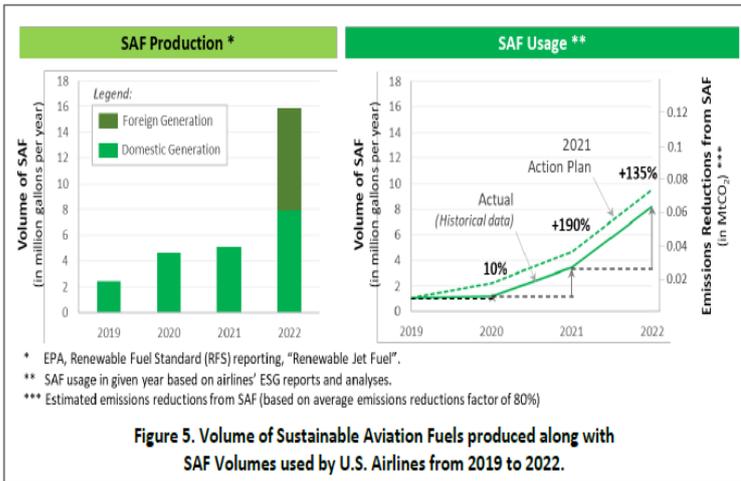


Figure 3: SAF production and consumption by US airlines

(2) Analysis and forecast of future CO<sub>2</sub> emissions

Figure 4 illustrates the projected future CO<sub>2</sub> emissions in the aviation sector as presented in the 2024 Action Plan. Using 2022 as the baseline year, the right side of the figure shows projected emissions trajectories through 2050 under different scenarios. The emissions level that would occur if no further measures were taken beyond the 2022 efficiency level ("Frozen 2022 Efficiency Trajectory") represents the upper bound, against which the estimated reductions from various measures are shown. According to this analysis, emissions reductions are expected to come from the diffusion and replacement of aircraft with newer models ("New Aircraft Diffusion Trajectory"), the development and deployment of next-generation aircraft ("New Aircraft Tech."), and operational improvements through enhanced Air Traffic Management (ATM) ("Operations Improvement"). However, the analysis indicates that the single largest contributor to total emissions reductions by 2050 is the uptake of Sustainable Aviation Fuel (SAF) ("SAF Uptake").

The 2024 Action Plan states that "more detailed modal plan for aviation will be developed next year (i.e., 2025) that covers the broad range of actions needed from aircraft to airports to fuels and new air mobility technology," but as of September 2025, no further information has been available.

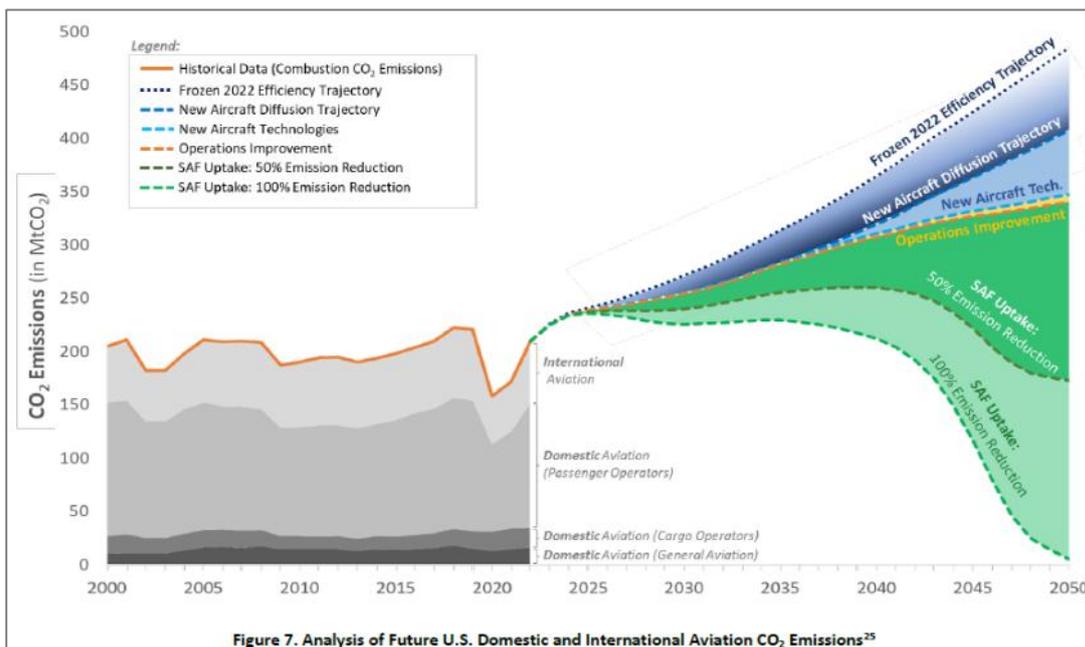


Figure 4: Future CO<sub>2</sub> emissions analysis for US domestic and international aviation

### 3.1.2 SAF Grand Challenge

The SAF Grand Challenge is a national strategy developed in September 2021 in collaboration with the U.S. government and related agencies, led by DOE, DOT, and USDA, with the aim of converting aviation fuel to SAF and significantly reducing GHG emissions in the aviation sector.

#### 【Goals】

- A minimum of a 50% reduction in life cycle emissions compared to conventional fuel.
- 3 billion gallons per year of domestic SAF by 2030.
- 35 billion gallons of SAF to satisfy 100% of domestic demand by 2050.

#### 【Roadmap】

In September 2022, the SAF Grand Challenge Roadmap<sup>18</sup> was released to outline a whole-of-government approach to support achievement of the goals described above. The Roadmap identifies six key action areas spanning the entire value chain—from feedstock supply to end use—which encompass activities with the potential to expand SAF supply and consumption and reduce costs. For each action area, the Roadmap seeks to define priority topics for coordinated effort and advancement.

- Feedstock Innovation
- Conversion Technology Innovation
- Building Supply Chains
- Policy and Valuation Analysis
- Enabling End Use
- Communicating Progress and Building Support

#### 【Progress Report】

In January 2025, a Progress Report<sup>19</sup> was released, highlighting key achievements of the SAF Grand Challenge between October 2021 and September 2024. According to the report, domestic SAF production in the United States reached 30 million gallons during the first through third quarters of 2024, up from 5 million gallons in 2021 (Figure 5). Domestic projects announced at the time of the progress report's release are expected to constitute more than 3 billion gallons of annual SAF production capacity by 2030 (equivalent to \$44 billion in announced funding). If 100% of these projects are operational as

planned, annual domestic production capacity is expected to exceed the 3 billion gallon target by 2030 (Figure 6).

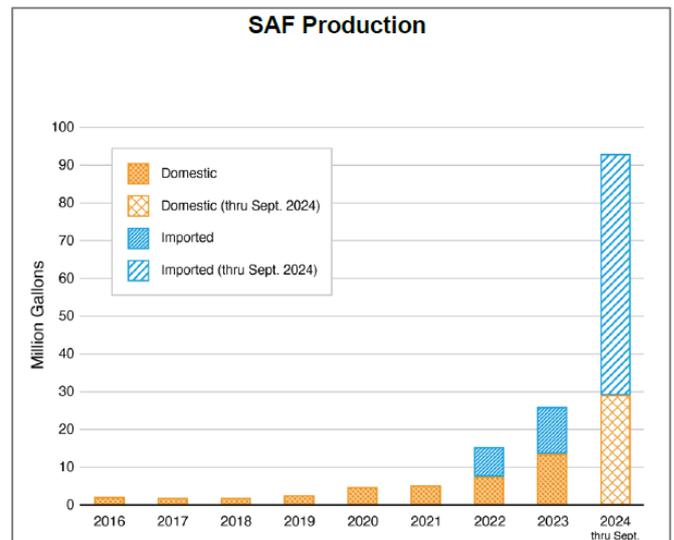


Figure 5: Trends in domestic and imported SAF in the United States (Source: the SAF Grand Challenge: October 2021 – September 2024 Progress Report)

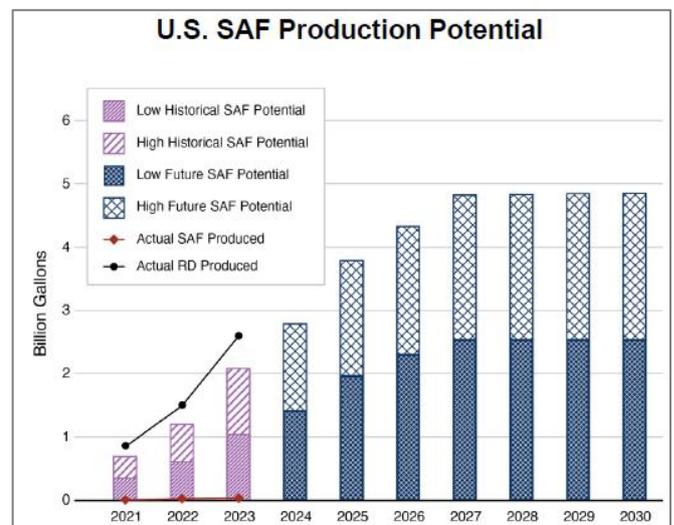


Figure 6: U.S. SAF production potential (Source: the SAF Grand Challenge: October 2021 – September 2024 Progress Report)

### 3.1.3 Airport Sector Policies

In this section, we will look at developments in the airport sector. As mentioned in Section 3.1.1, the U.S. Aviation Climate Action Plan<sup>20</sup> also includes airport initiatives as one of its approaches. The main government initiative is to support and promote the efforts of individual airports through the provision of grants for projects that contribute to GHG reduction and energy efficiency. These grant programs are administered by the Federal Aviation

Administration (FAA).

Following the 2021 Action Plan, which set a goal of achieving net-zero GHG emissions by 2050, the FAA announced the Airport Climate Challenge in April 2022. However, this initiative was more about promoting the use of existing subsidy and support systems than introducing a new system.

The main grant programs related to accelerating airport decarbonization, which are also referenced in the 2024 Action Plan, are as follows:

- Voluntary Airport Low Emissions (VALE) Program<sup>21)</sup> :  
Provides grants for projects at commercial service airports aimed at improving air quality.  
*Examples include: electrification of gate power systems, installation of charging stations for electric ground support equipment, and deployment of solar thermal water heating systems.*
- Zero Emission Vehicle (ZEV) Program<sup>22)</sup> :  
Provides funding for projects to replace on-road airport vehicles with zero-emission vehicles (such as battery-electric or hydrogen fuel cell vehicles). Charging and fueling infrastructure is also eligible for financial support.
- Airport Improvement Program (AIP)<sup>23)</sup> :  
The primary federal grant program supporting airport infrastructure development in the United States. Eligible projects include improvements related to airport safety, capacity expansion, and security, as well as projects addressing environmental concerns. The VALE and ZEV programs are administered as components of the AIP.

These grants existed before the 2021 Action Plan, but have been strengthened, including by expanding the scope of eligible projects.

#### 3.1.4 Incentives and Tax Credits under the Inflation Reduction Act

The Inflation Reduction Act of 2022 (IRA)<sup>24)</sup> enacted in August 2022 under the Biden Administration, is a comprehensive law centered on climate action, energy security, healthcare cost reduction, and tax reform. Among

these pillars, the climate-related provisions constitute the largest investment in addressing climate change in U.S. history. Within the IRA, several measures are particularly relevant to the aviation sector. These include a two-year tax credit for entities that blend SAF with conventional jet fuel, and an additional three-year tax credit for SAF producers, applicable after the blending credit period expires.

Furthermore, the IRA established a new grant program totaling approximately \$291 million over four years (the Alternative Fuel and Low-Emission Aviation Technology Program) to support projects involving the production, transport, blending, and storage of SAF, as well as the development, demonstration, and deployment of low-emission aviation technologies. This program represented the first major federal grant initiative dedicated specifically to expanding SAF production capacity in the U.S.

With respect to tax credits, SAF is eligible under the Clean Fuel Production Credit (Section 45Z<sup>25)</sup> ), which provides up to \$1.75 per gallon for SAF, compared to a maximum of \$1.00 per gallon for non-aviation fuels. In other words, SAF receives an additional credit of up to \$0.75 per gallon relative to other clean fuels. Section 45Z was set to remain in effect through the end of 2027.

It should be noted, however, that both the SAF- and low-emission aviation technology-related grant programs and the tax credit under Section 45Z were to undergo changes under the new Trump Administration, as discussed later.

#### 3.2 Initiatives by Airlines

This section provides an overview of the efforts of the top five U.S. carriers<sup>26)</sup> by available seat capacity (American Airlines, Delta Air Lines, Southwest Airlines, United Airlines, and Alaska Airlines). Figure 7 summarizes each airline's principal decarbonization targets and current initiatives.

All five airlines have announced targets for net-zero GHG emissions, with Alaska Airlines aiming to achieve this by 2040 and the other four by 2050.

Regarding SAF, American Airlines, Delta Air Lines, and Southwest Airlines have announced their goals of replacing 10% of their fuel use with SAF by 2030, and each of them is also in the process of procuring SAF through contracts with SAF producers.

Airline	Net-Zero Target	Mid-Term Targets	SAF Targets / Status	Other Initiatives
American Airlines	2050	Reduce GHG emissions intensity by 45% by 2035	<u>Target:</u> Use 10% SAF by 2030 <u>Status:</u> 290 million gallons of SAF contracted for use in 2024	Investment in hydrogen-electric engines technology (ZeroAvia)
Delta Air Lines	2050 (Net-zero across the aviation system)	Improve operational efficiency to achieve a 3% reduction in fuel consumption, and replace over 20% of fleet by 2035	<u>Target:</u> 10% SAF usage by 2030, 35% by 2035, 95% by 2050 <u>Status:</u> Over 1.3 billion gallons of SAF contracted	Electrification of ground equipment; collaboration with JetZero; hydrogen utilization and feasibility studies
Southwest Airlines	2050 (Scopes 1, 2, and Scope 3 Category 3 only)	Reduce carbon emissions intensity by 50% by 2035; electrify 50% of ground support equipment (GSE)	<u>Target:</u> Use 10% SAF by 2030	Reduction of single-use plastics; reduction of corporate energy use intensity (EUI)
United Airlines	2050 (without relying on voluntary carbon offsets)	Reduce carbon intensity by 50% by 2035	<u>Target:</u> Not specified <u>Status:</u> Over 1.36 billion gallons of SAF contracted as of 2024	Establishment of investment fund; investments in JetZero and ZeroAvia
Alaska Airlines	2040	No formal mid-term target announced	<u>Target:</u> Not specified <u>Status:</u> Secured 5 million gallons of SAF in 2023 through a customer-supported SAF program	Route optimization using AI; investment in JetZero

Figure 7: Major decarbonization goals and initiatives of US airlines

In addition, the airlines are supporting the development and practical deployment of technologies such as hydrogen fuel cell engines and blended-wing body (BWB) aircraft designs through equity investments and technical collaboration with emerging companies such as ZeroAvia<sup>27)</sup> and JetZero.<sup>28)</sup> They are also working to electrify ground support equipment (GSE) and other airport ground systems.

#### 4. Movements and Impacts under the Trump Administration

Finally, we examine the impacts of the transition to the Trump Administration on January 20, 2025, on decarbonization policies in the aviation and airport sectors, focusing on the major developments observed as of December 2025.

##### 4.1 Impacts on Grant Programs and SAF Tax Credits Following the Enactment of the One Big Beautiful Bill Act

Among the policy changes that have a direct impact on

the aviation sector, the most clearly decided measures are the revisions to grant programs for SAF and low-emission aviation technologies, as well as changes to SAF tax credits. As noted earlier, IRA established grant programs to support projects related to SAF production and the development of low-emission aviation technologies, and in August 2024, the Biden Administration announced \$291 million in spending for such projects.<sup>29)</sup>

However, on July 4, 2025, the Trump Administration enacted the One Big Beautiful Bill Act of 2025 (OBBBA),<sup>30)</sup> a tax reduction and spending reform bill. Under OBBBA, the remaining unobligated balances of the grant programs supporting SAF and low-emission aviation technologies were rescinded. While the precise amount of unobligated funds has not been publicly disclosed, estimates released by the Congressional Budget Office (CBO)<sup>31)</sup> indicate that the provision eliminating these funds (Sec. 40010) is expected to result in approximately \$208 million in federal savings over the next ten years, suggesting that a substantial amount of unused program funding had remained.

Additionally, the applicable period for the SAF tax credit has been extended from the end of 2027 to the end of 2029, while the additional deduction for aviation fuel has been abolished and the cap has been set at \$1.00/gallon—the same as for non-aviation fuel. This change will apply to SAF produced from 2026 onwards. Therefore, although the applicable period for the SAF tax credit has been extended, the credit amount will be reduced.

As a result of the reductions in these grants and tax credits, the incentives for SAF production could be weakened, raising the possibility that future growth in SAF production volumes may be negatively affected.

##### 4.2 Reassessment of Engagement in International Organizations and Frameworks

As noted above, on his first day in office, President Trump signed an executive order initiating the process for the U.S. to withdraw from the Paris Agreement. The U.S. had previously withdrawn during the first Trump administration and rejoined under the Biden Administration; this marks a second withdrawal. The Paris Agreement, adopted at COP21 of the United Nations Framework Convention on Climate Change in 2015, is an

international framework that seeks to limit the global average temperature increase to well below 2°C above pre-industrial levels, while pursuing efforts to limit the increase to 1.5°C. Withdrawals are required to take effect one year after notification, meaning the U.S. withdrawal is expected to occur after January 2026. Nevertheless, the action clearly signals the administration's stance of promoting domestic energy development while placing less emphasis on climate change mitigation. In addition, the United States did not participate in COP30, which was held in November 2025.

Moreover, the Trump Administration has also moved to reassess U.S. participation in international organizations more broadly. This includes an executive order directing the withdrawal of the United States from the World Health Organization (WHO),<sup>32)</sup> as well as a February 2025 executive order directing the cessation of U.S. participation and funding for certain UN agencies, including UNESCO, and calling for a broader review of U.S. support for all international organizations.<sup>33)</sup>

With respect to ICAO, the U.S. had not previously expressed direct criticism of ICAO's decarbonization goals. However, during the opening statements delivered by national delegations on the first day of the 42nd ICAO Assembly, held from September 23 to October 3, 2025, U.S. Secretary of Transportation Sean Duffy issued remarks critical of ICAO's climate-related initiatives. Secretary Duffy stated that, in the view of the United States, "Over the years, this body has extended itself far beyond its proper mandate - wasting critical resources on social programs or climate financing initiatives that have nothing to do with the safety, security and efficiency of the global air transportation system." He further suggested that, unless ICAO is reformed, the U.S. may reconsider its support for the organization.<sup>34)</sup>

Furthermore, prior to Secretary Duffy's remarks, President Trump reiterated his critical stance on climate action in his speech at the United Nations General Assembly on the same day, characterizing climate change as "the greatest con job ever perpetrated on the world." This reaffirmed the administration's fundamentally skeptical position toward climate change mitigation.<sup>35)</sup>

ICAO adopted statements on climate change and

CORSIA as resolutions on environmental issues at the 42nd Assembly (Resolutions A42-21 and A42-22).<sup>36), 37)</sup> These resolutions were adopted as updates to those with similar objectives adopted at the previous (41st) Assembly. They reaffirm the commitment of ICAO Member States to the LTAG and support the continued implementation of CORSIA. The resolutions also underscore ICAO's ongoing leading role in addressing environmental issues related to international civil aviation, and indicate that ICAO will continue to examine policy options to limit or reduce the environmental impacts of aircraft operations.

Although Secretary Duffy made critical remarks regarding ICAO's climate-related initiatives, as noted above, the United States has not taken further concrete action. In particular, it did not oppose the adoption of the above-mentioned environmental resolutions. Accordingly, the United States appears to remain within the existing ICAO framework.

However, the U.S. administration's overall stance toward climate change policy, characterized by a negative approach, may have increasing implications for decarbonization efforts in the aviation sector going forward.

## 5. Conclusion

In the United States, the decarbonization policies pursued under the Democratic Biden administration have been replaced by the Republican Trump administration, resulting in a series of policies that soften or scale back decarbonization efforts. The aviation industry is gradually beginning to see their impact. Regarding the introduction of SAF, which is seen as the most effective means of decarbonization, attention is focused on the extent to which the reduction in subsidies and tax credits will affect production volume. Furthermore, the U.S. stance toward international organizations and frameworks, including ICAO, is also changing, and future developments will require close monitoring. Meanwhile, the aviation and airport industries have made significant investments toward decarbonization, such as SAF and new aircraft and engine technologies. Adopting a policy that rejects these investments could lead to disruption within the industry and a decline in corporate competitiveness. Following the

formal U.S. withdrawal from the Paris Agreement scheduled to be completed after January 2026, there is a possibility that the national goal of achieving net-zero GHG emissions by 2050, as well as related targets in the aviation and airport sectors, may undergo further changes. Continuous monitoring of future developments will therefore be essential.

## References

- 1) International Energy Agency (IEA)  
<https://www.iea.org/energy-system/transport/aviation>
- 2) The White House, FACT SHEET: President Biden Sets 2030 Greenhouse Gas Pollution Reduction Target Aimed at Creating Good-Paying Union Jobs and Securing US Leadership on Clean Energy Technologies  
<https://bidenwhitehouse.archives.gov/briefing-room/statements-releases/2021/04/22/fact-sheet-president-biden-sets-2030-greenhouse-gas-pollution-reduction-target-aimed-at-creating-good-paying-union-jobs-and-securing-us-leadership-on-clean-energy-technologies/>
- 3) The Long-Term Strategy of the United States: Pathways to Net-Zero Greenhouse Gas Emissions by 2050  
<https://bidenwhitehouse.archives.gov/wp-content/uploads/2021/10/US-Long-Term-Strategy.pdf>
- 4) U.S. Aviation Climate Action Plan (2021)  
[https://www.faa.gov/sites/faa.gov/files/2021-11/Aviation\\_Climate\\_Action\\_Plan.pdf](https://www.faa.gov/sites/faa.gov/files/2021-11/Aviation_Climate_Action_Plan.pdf)
- 5) SAF Grand Challenge  
<https://www.energy.gov/eere/bioenergy/sustainable-aviation-fuel-grand-challenge>
- 6) The White House, PUTTING AMERICA FIRST IN INTERNATIONAL ENVIRONMENTAL AGREEMENTS  
<https://www.whitehouse.gov/presidential-actions/2025/01/putting-america-first-in-international-environmental-agreements/>
- 7) The White House, DECLARING A NATIONAL ENERGY EMERGENCY  
<https://www.whitehouse.gov/presidential-actions/2025/01/declaring-a-national-energy-emergency/>
- 8) The White House, Unleashing American Energy  
<https://www.whitehouse.gov/presidential-actions/2025/01/unleashing-american-energy/>
- 9) ICAO, Overview of Climate Goals and ICAO's Work on a Long-Term Aspirational Goal for International Aviation (LTAG)  
[https://www.icao.int/sites/default/files/environmental-protection/Documents/EnvironmentalReports/2022/ENVReport2022\\_Art92.pdf](https://www.icao.int/sites/default/files/environmental-protection/Documents/EnvironmentalReports/2022/ENVReport2022_Art92.pdf)
- 10) ICAO, Carbon Offsetting and Reduction Scheme for International Aviation (CORSA)  
<https://www.icao.int/CORSA>
- 11) ICAO, Long term global aspirational goal (LTAG) for international aviation  
<https://www.icao.int/environmental-protection/long-term-global-aspirational-goal-ltag-international-aviation>
- 12) Third ICAO Conference on Aviation and Alternative Fuels (CAAF/3)  
<https://www.icao.int/events/third-icao-conference-aviation-and-alternative-fuels-caaf3>
- 13) ICAO, RESOLUTION ON THE INDUSTRY'S COMMITMENT TO REACH NET ZERO CARBON EMISSIONS BY 2050  
<https://www.iata.org/contentassets/d13875e9ed784f75bac90f000760e998/iata-agm-resolution-on-net-zero-carbon-emissions.pdf>
- 14) IATA, Net Zero Roadmaps  
<https://www.iata.org/en/programs/sustainability/flynetzero/roadmaps/>
- 15) ACI, Net zero by 2050: ACI sets global long term carbon goal for airports  
[https://aci.aero/2021/06/08/net-zero-by-2050-aci-sets-global-long-term-carbon-goal-for-airports/?utm\\_source=chatgpt.com](https://aci.aero/2021/06/08/net-zero-by-2050-aci-sets-global-long-term-carbon-goal-for-airports/?utm_source=chatgpt.com)
- 16) FAA, Next Generation Air Transportation System (NextGen)  
<https://www.faa.gov/nextgen>
- 17) U.S. Aviation Climate Action Plan (2024)  
<https://www.epa.gov/system/files/documents/2024-12/us-aviation-state-action-plan-2024-final.pdf>
- 18) SAF Grand Challenge Roadmap  
<https://www.energy.gov/eere/bioenergy/articles/saf-grand-challenge-roadmap-flight-plan-sustainable-aviation-fuel-report>
- 19) DOE, Federal Agencies Publish SAF Grand Challenge Progress Report Highlighting Historic Efforts to Grow America's SAF Industry  
<https://www.energy.gov/eere/bioenergy/articles/federal-agencies-publish-saf-grand-challenge-progress-report-highlighting>
- 20) FAA, Airport Climate Challenge  
<https://www.faa.gov/newsroom/faa-us-airports-team-meet-2050-net-zero-climate-challenge>

- 21) FAA, Voluntary Airport Low Emissions Program (VALE)  
<https://www.faa.gov/airports/environmental/vale>
- 22) FAA, Airport Zero Emissions Vehicle and Infrastructure Pilot Program  
[https://www.faa.gov/airports/environmental/zero\\_emissions\\_vehicles](https://www.faa.gov/airports/environmental/zero_emissions_vehicles)
- 23) Airport Improvement Program (AIP)  
<https://www.faa.gov/airports/aip>
- 24) Inflation Reduction Act of 2022  
<https://www.congress.gov/bill/117th-congress/house-bill/5376/text>
- 25) The Section 45Z Clean Fuel Production Credit  
<https://www.congress.gov/crs-product/IF12502>
- 26) OAG, US Aviation Market Data Insights , TOP 10 BUSIEST US AIRLINES BY SEATS  
<https://www.oag.com/us-aviation-market>
- 27) ZeroAvia: A US- and UK-based startup developing full hydrogen-electric engines for existing commercial aircraft.  
<https://zeroavia.com/about-us/>
- 28) JetZero: A California-based startup working on a Blended Wing Body (BWB) aircraft, which has a seamless wing-to-body design. The BWB configuration is projected to offer up to about 50% greater fuel efficiency (based on fuel burned per passenger mile) compared to conventional aircraft of the same class.  
<https://www.jetzero.aero/united-investment-announcement>
- 29) FAA, Biden-Harris Administration Announces Nearly \$300 Million in Awards for Sustainable Aviation Fuels and Technologies as part of Investing in America Agenda  
<https://www.faa.gov/newsroom/biden-harris-administration-announces-nearly-300-million-awards-sustainable-aviation-fuels>
- 30) One Big Beautiful Bill Act  
<https://www.congress.gov/bill/119th-congress/house-bill/1/text>
- 31) CBO, Estimated Budgetary Effects of Public Law 119-21, to Provide for Reconciliation Pursuant to Title II of H. Con. Res. 14, Relative to CBO's January 2025 Baseline  
<https://www.cbo.gov/publication/61570>
- 32) The White House, WITHDRAWING THE UNITED STATES FROM THE WORLD HEALTH ORGANIZATION  
<https://www.whitehouse.gov/presidential-actions/2025/01/withdrawing-the-united-states-from-the-worldhealth-organization/>
- 33) The White House, WITHDRAWING THE UNITED STATES FROM AND ENDING FUNDING TO CERTAIN UNITED NATIONS ORGANIZATIONS AND REVIEWING UNITED

- STATES SUPPORT TO ALL INTERNATIONAL ORGANIZATIONS  
<https://www.whitehouse.gov/presidential-actions/2025/02/withdrawing-the-united-states-from-and-ending-funding-to-certain-united-nations-organizations-and-reviewing-united-states-support-to-all-international-organizations/>
- 34) DOT, US Transportation Secretary Sean P. Duffy to Deliver Speech Highlighting US Priorities at ICAO  
<https://www.transportation.gov/briefing-room/us-transportation-secretary-sean-p-duffy-deliver-speech-highlighting-us-priorities>
- 35) Reuters, Trump tells UN that climate change is 'greatest con job' globally  
<https://www.reuters.com/sustainability/cop/trump-tells-un-that-climate-change-is-con-job-2025-09-23/>
- 36) Resolution A42-21  
[https://www.icao.int/sites/default/files/environmental-protection/Assembly42/Resolution-A42-21\\_Climate-change.pdf](https://www.icao.int/sites/default/files/environmental-protection/Assembly42/Resolution-A42-21_Climate-change.pdf)
- 37) Resolution A42-22  
[https://www.icao.int/sites/default/files/environmental-protection/Assembly42/Resolution-A42-22\\_CORSIA.pdf](https://www.icao.int/sites/default/files/environmental-protection/Assembly42/Resolution-A42-22_CORSIA.pdf)