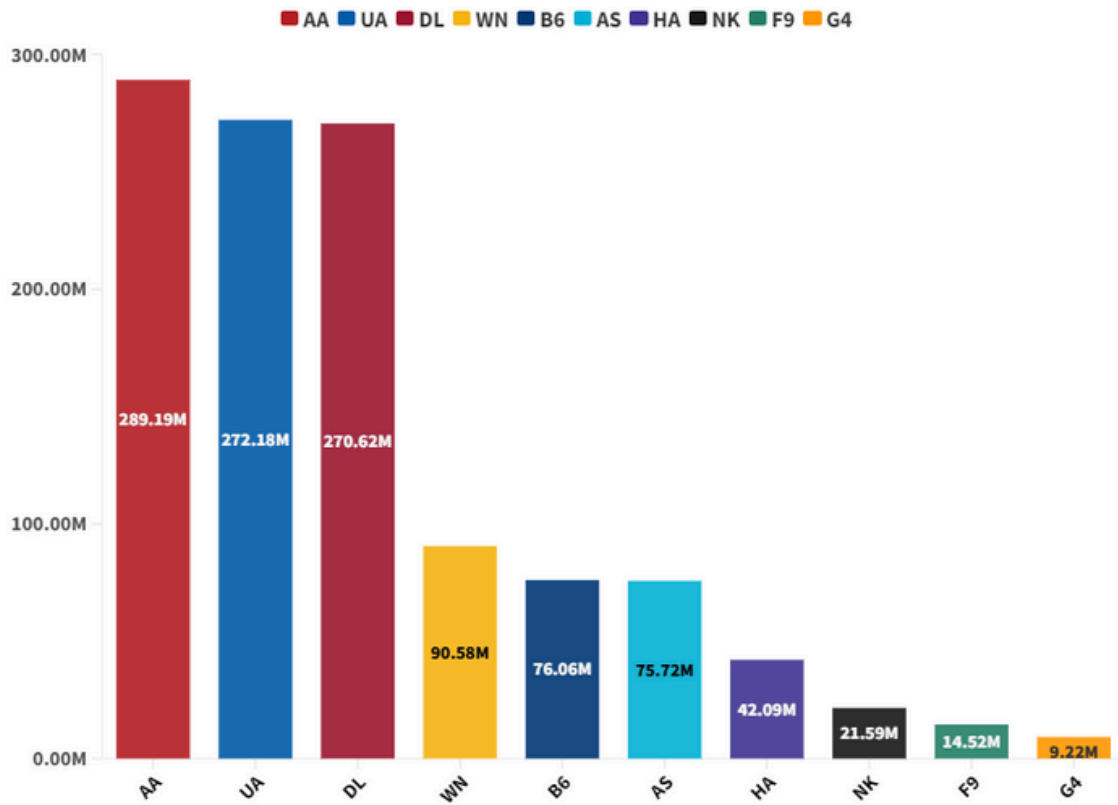# U.S. Airlines Emissions Report

Recently hitting an all-time high, greenhouse gas emissions pose a serious threat, escalating global warming. It is no longer a question of whether we should address this issue but how urgently and innovatively we can collectively create solutions. Amid escalating global concerns, the Aviation industry has set an ambitious goal to achieve net-zero emissions by 2050. Pursuing net-zero emissions requires rethinking traditional approaches, embracing cleaner technologies, and fostering partnerships to step into the new era of air travel.
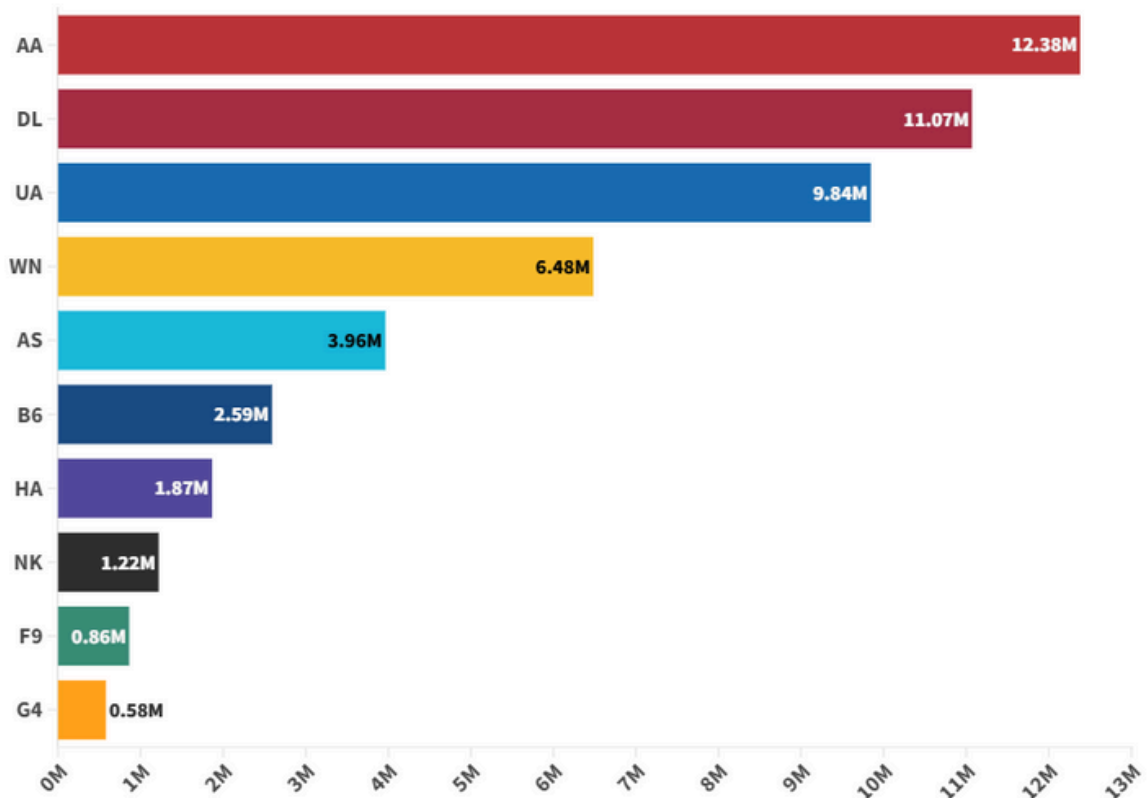
Major U.S. Airlines contribute significantly to the overall carbon emissions, with the cumulative impact steadily rising. In 2019, U.S. domestic flights alone generated 150 million metric tons of CO_2, nearly 3% of the country's total emissions. The projection is alarming, with Aviation emissions expected to double by 2050, both within the U.S. and worldwide, given the anticipated rapid growth in air travel unless sustainable practices are prioritized.

Our algorithms and AI-driven tools present a comprehensive overview of the performance of Airlines in the U.S. from January 2019 to April 2024, covering aggregate emissions, total flight numbers, and cumulative emissions from diverse aircraft types.
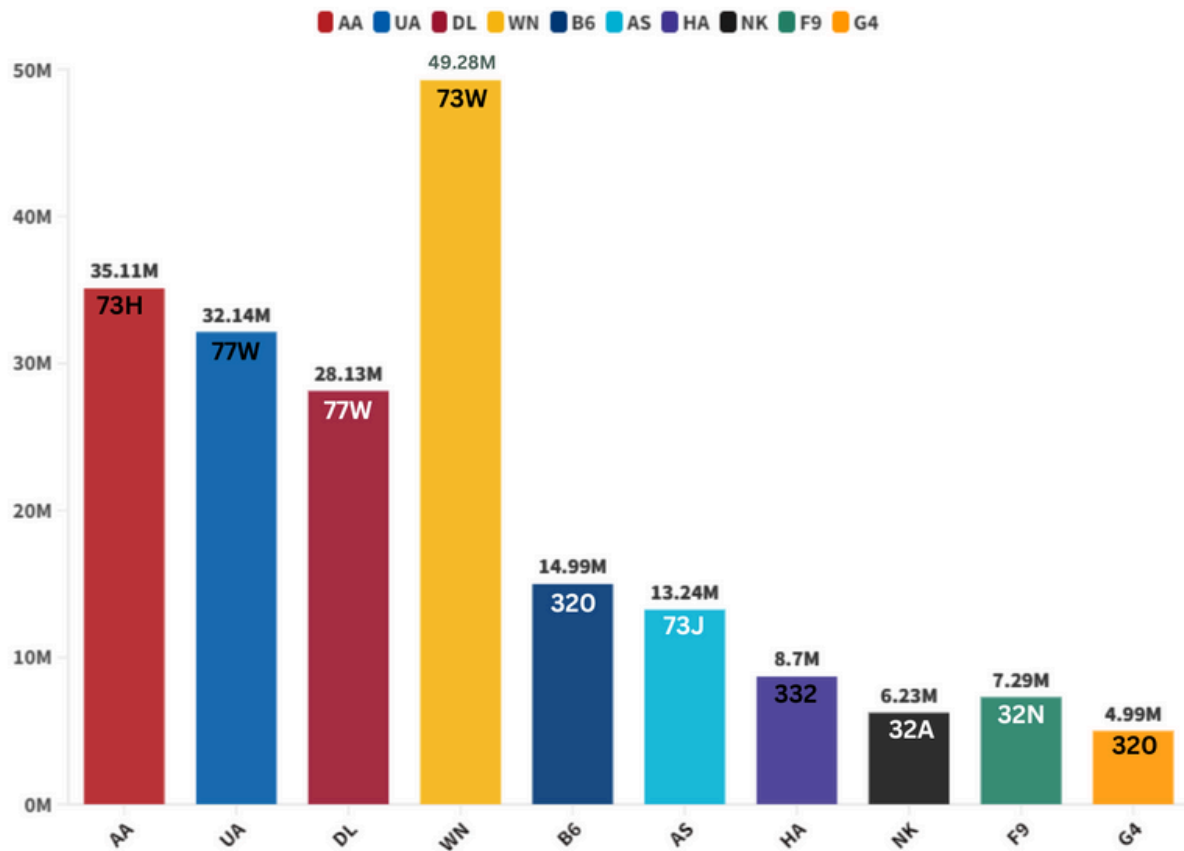
Top 10 Airlines by CO_2 Emissions from Jan 2019 – Apr 2024 (In Million Tons)

Legend: AA | UA | DL | WN | B6 | AS | HA | NK | F9 | G4

Airline	Emissions
AA	289.19M
UA	272.18M
DL	270.62M
WN	90.58M
B6	76.06M
AS	75.72M
HA	42.09M
NK	21.59M
F9	14.52M
G4	9.22M

Airlines by Total Flight Count from Jan 2019 – Apr 2024 (In Millions)

Airline	Flight Count
AA	12.38M
DL	11.07M
UA	9.84M
WN	6.48M
AS	3.96M
B6	2.59M
HA	1.87M
NK	1.22M
F9	0.86M
G4	0.58M

Top Emission-Producing Aircraft Types by Airline from Jan 2019 - Apr 2024 (In Million Tons)

Legend: AA | UA | DL | WN | B6 | AS | HA | NK | F9 | G4

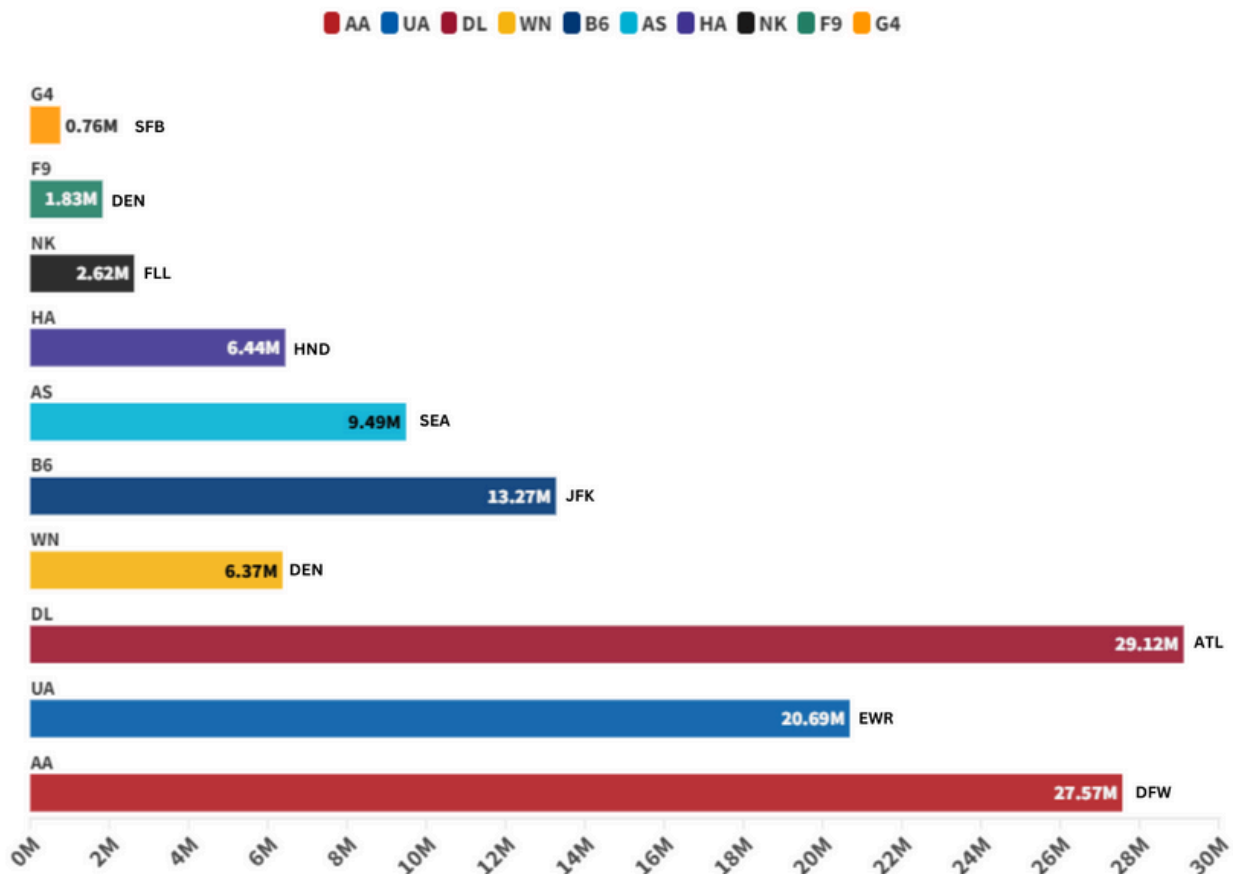| Airline	Aircraft	Emissions
AA	73H	35.11M
UA	77W	32.14M
DL	77W	28.13M
WN	73W	49.28M
B6	320	14.99M
AS	73J	13.24M
HA	332	8.7M
NK	32A	6.23M
F9	32N	7.29M
G4	320	4.99M

The overview indicates a clear connection between major Airlines, their aircraft choices, and the consequential impact on CO_2 emissions. Specifically, American Airlines (AA), United Airlines (UA), and Delta Airlines (DL) emerge as primary contributors, signaling the need for targeted strategies to address emissions from these Airlines. Additionally, the influence of Southwest Airlines (WN) and JetBlue Airways (B6) underscores the significance of aircraft selection in shaping the overall environmental footprint.

Highlighting Emissions Hotspots: Airlines and Their Key Departure Airports

Below is the graph highlighting the key departure Airports and their corresponding emissions for each Airline.

Emissions by Airports and Airlines from Jan 2019 – Apr 2024 (In Million Tons)

Legend: AA UA DL WN B6 AS HA NK F9 G4

| Airline	Emissions	Airport
G4	0.76M	SFB
F9	1.83M	DEN
NK	2.62M	FLL
HA	6.44M	HND
AS	9.49M	SEA
B6	13.27M	JFK
WN	6.37M	DEN
DL	29.12M	ATL
UA	20.69M	EWR
AA	27.57M	DFW

There are variations in emissions hotspots across Airlines. Atlanta Hartsfield-Jackson International Airport (ATL) stands out as the leading departure hub, contributing the highest emissions, notably driven by Delta Airlines (DL). This underscores ATL's consistent prominence as the busiest Airport since 2021, reflecting the significant environmental impact of Delta's operations.

Airlines Emissions Prediction

The following graph provides a comprehensive insight into the emissions prediction for major Airlines in the U.S., offering a glimpse into the anticipated carbon footprint from May to July 2024

Predicted Emissions from May to Jul 2024 (In Million Tons)
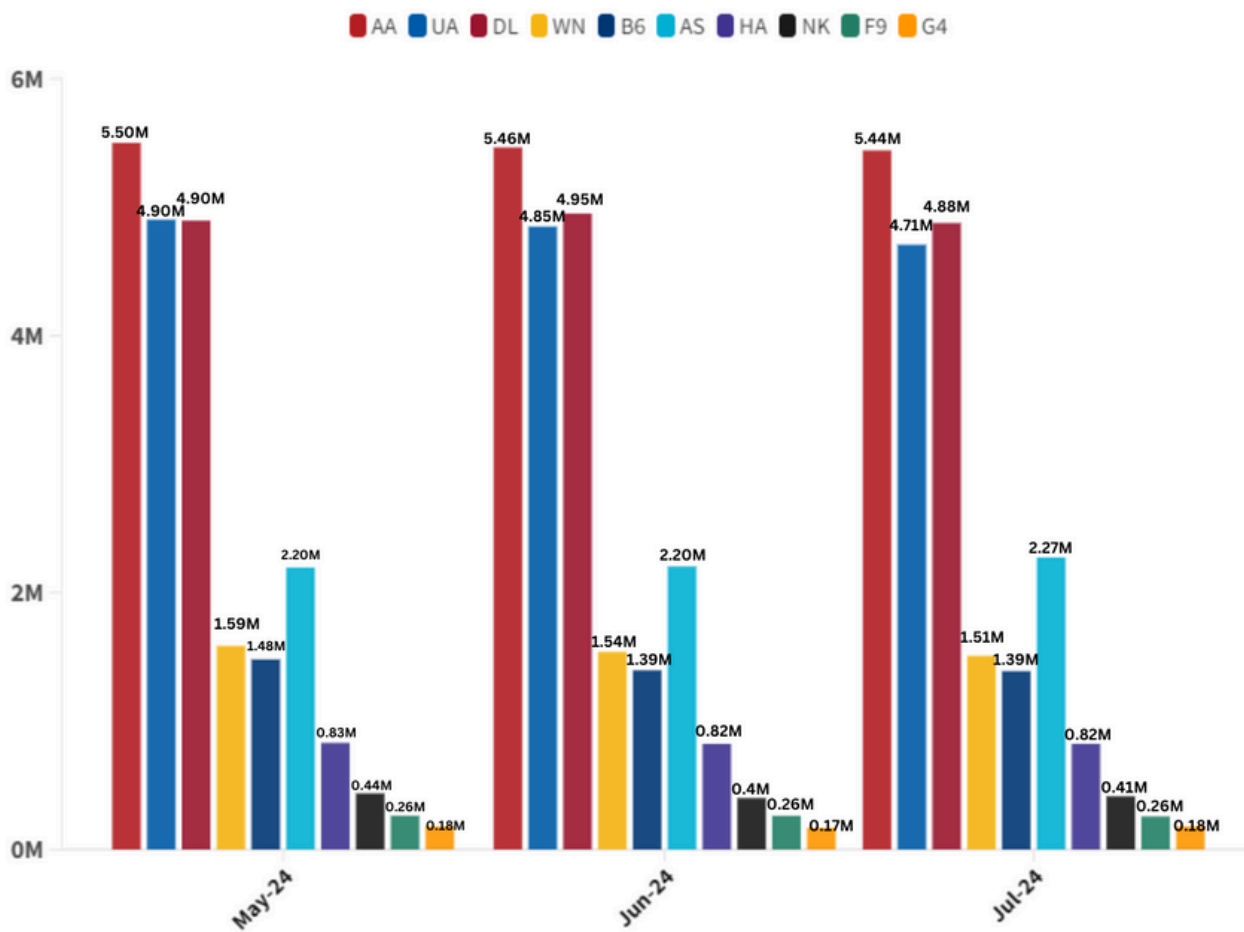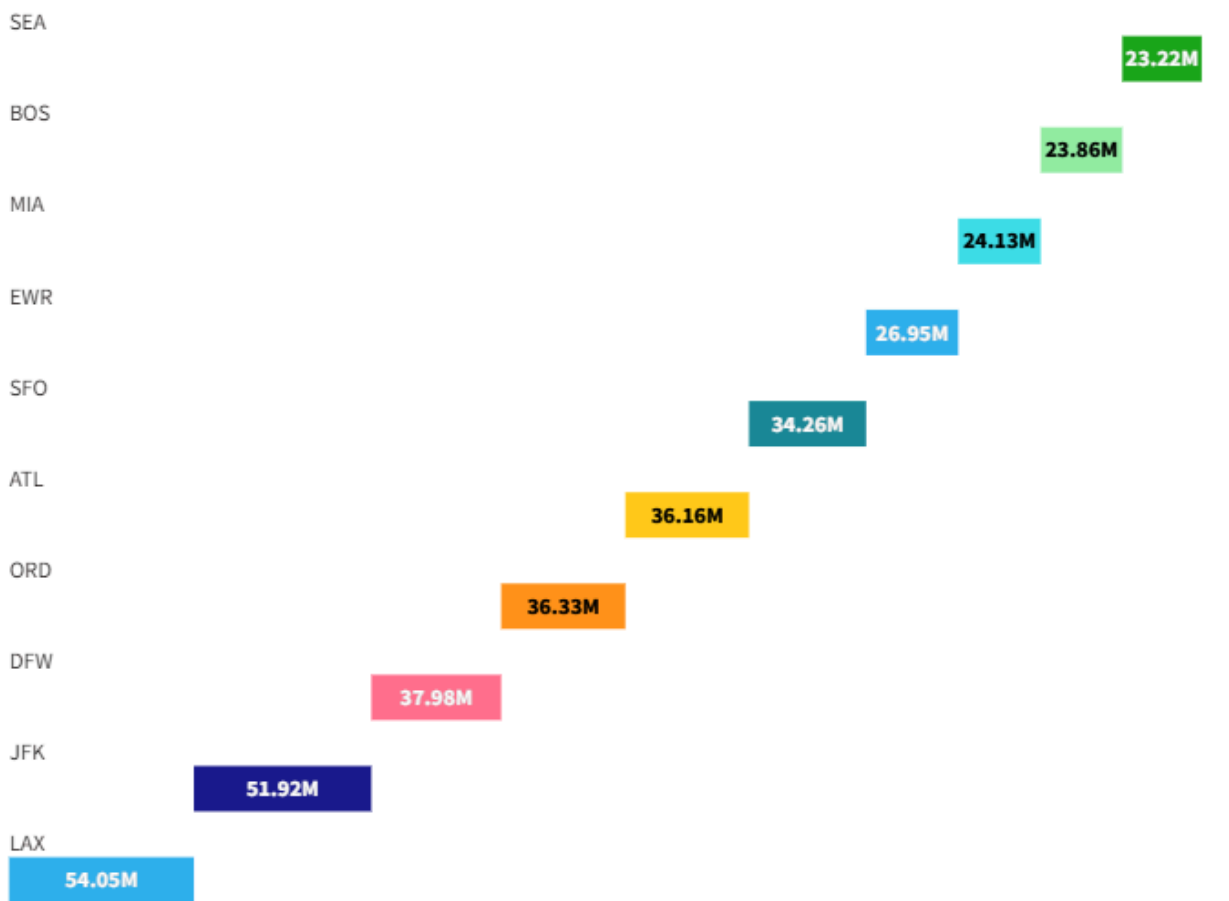

Based on our predicted data, it is evident the emissions for Airlines in the U.S. are on an upward trajectory. This calls for a heightened focus on implementing and accelerating emissions reduction strategies to address the industry's environmental impact and move towards a more Sustainable Aviation future.

Airports in the U.S.

Airports play an important role in the current landscape of emissions in the U.S. To achieve the greater goal of the Aviation industry, to achieve net-zero emissions by 2050, demands a comprehensive transformation of airports, from converting ground fleets to electric vehicles (EVs) and electrifying building systems to on-site renewable energy generation and significant enhancements in energy and water efficiency, including innovative water reuse initiatives.

The current trends in Airports' emissions are given below:

Emissions by U.S. Airports- Top 10 from Jan 2019 - Apr 2024 (In Million Tons)

Airport	Emissions
SEA	23.22M
BOS	23.86M
MIA	24.13M
EWR	26.95M
SFO	34.26M
ATL	36.16M
ORD	36.33M
DFW	37.98M
JFK	51.92M
LAX	54.05M

Emissions by Routes – Top 10 from Jan 2019 – Apr 2024
(In Million Tons)

DEPARTURE AIRPORT	ARRIVAL AIRPORT	ESTIMATED CO$_2$ IN MILLION TONS
LHR	JFK	5.01 M
JFK	LHR	4.37 M
JFK	LAX	4.23 M
LAX	JFK	3.66 M
LHR	LAX	3.59 M
LAX	LHR	3.32 M
LAX	SYD	2.68 M
JFK	SFO	2.50 M
SYD	LAX	2.50 M
LAX	HNL	2.44 M

The data reveals that Los Angeles International Airport (LAX) and John F. Kennedy International Airport (JFK) are consistently ranking high in both departure and arrival emissions. This highlights their important position in connecting global air traffic, contributing significantly to the overall carbon footprint. Additionally, Transatlantic flights between LHR-JFK contribute the highest CO$_2$ emissions, while JFK -LAX and LAX - SYD routes also significantly impact carbon emissions, reflecting the environmental consequences of long-haul air travel.

As we witness an unprecedented rise in greenhouse gas emissions and the consequential escalation of global warming, the urgency to act has never been more apparent. Now is the time to accelerate Sustainable practices, embrace cleaner technologies, and forge partnerships to mitigate the environmental impact of air travel and secure a healthier future for our planet.

Smarter Together For Sustainability [TM]