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Clearing the Air: The Public Health Benefits of Meeting the SAF Grand Challenge



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Takeaways

- Sustainable aviation fuel (SAF) burns cleaner than conventional jet fuel, so replacing jet fuel with SAF will reduce air pollution and improve public health. These benefits will be particularly pronounced in communities near airports, where the bulk of emissions from air travel happen.
- Third Way's analysis reveals that replacing all jet fuel with sustainable aviation fuel (SAF) by 2050 could prevent approximately 3,300 premature deaths and thousands of cases of asthma and cardiovascular disease, resulting in total monetized public health benefits valued at up to \$35 billion.
- To achieve these benefits, we need to put the right policies in place to drive demand and investment in SAF. These could include an extension of the tax credits for clean fuels, additional funding to deploy SAF infrastructure, and a low carbon fuel standard or other demand-side policy.

Transitioning to SAF will improve public health in every state.

Sustainable aviation fuel (SAF), a low carbon alternative to fossil jet fuel, is widely recognized as an essential tool for decarbonizing air travel. By definition, SAF must have at least 50% fewer greenhouse gas emissions than fossil jet fuel, and many of these fuels have the potential to reduce emissions far more than that. That's why many airlines have started investing in larger quantities of these fuels, with some committing to have SAF account for up to 10% of their total jet fuel consumption by 2030. The Biden Administration also set SAF targets as part of the [SAF Grand Challenge](#) – an ambitious goal to replace all conventional jet fuel with SAF by mid-century.

But the benefits of these fuels extend far beyond their climate impacts. Because SAF burns cleaner than conventional jet fuel, SAF adoption will also reduce emissions of air pollutants that affect public health, including fine particulate matter and sulfur dioxide. These pollutants have been found to cause or contribute to higher incidences of asthma, cancer, cardiovascular disease, stroke, and premature mortality, especially in communities directly surrounding airports where the bulk of emissions from air travel take place.

To quantify these benefits, Third Way partnered with Industrial Economics and SC&A to assess the health impacts of replacing all conventional jet fuel with SAF by 2050. We find that meeting this target results in as many as 3,300 avoided premature deaths between 2025–2050. We also find significant public health impacts that extend beyond avoided premature deaths, including nearly 4,000 fewer cases of new onset asthma, nearly 1,000 fewer ER visits, and several hundred fewer incidences of cardiovascular disease, non-fatal lung cancer, and strokes. The total cumulative monetized public health benefits of replacing all conventional jet fuel with SAF are estimated to total between \$20–35 billion between 2025–2050.

The vast majority of these benefits come from the reduction in aircraft emissions, particularly fine particulate matter (PM2.5), as SAF burns cleaner than conventional jet fuel. However, our analysis also finds a cumulative reduction in upstream emissions during fuel production—those resulting from feedstock cultivation, refinement, and transportation. For example, changes in upstream pollutant emissions during fuel production result in \$4.4 billion in cumulative monetized public health benefits through 2050, roughly 13% of the total monetized benefits.

These aren’t just numbers: they represent real people, in every region of the country, whose lives will be improved by having cleaner air to breathe. This transition deserves robust policy support so that it happens swiftly, improving the well-being of communities everywhere.

Explore the following maps to see the benefits of scaling SAF use by state and for communities surrounding the busiest 200 airports in the country. For a complete list of benefits by state and airport, see: [Avoided Premature Mortality and Total Monetized Health Benefits by State and Airport](#).

Search by state name/abbreviation



Total monetized benefits (high-end estimate) ▼

<= \$2,351,787

\$2,351,787 – \$5,280,089

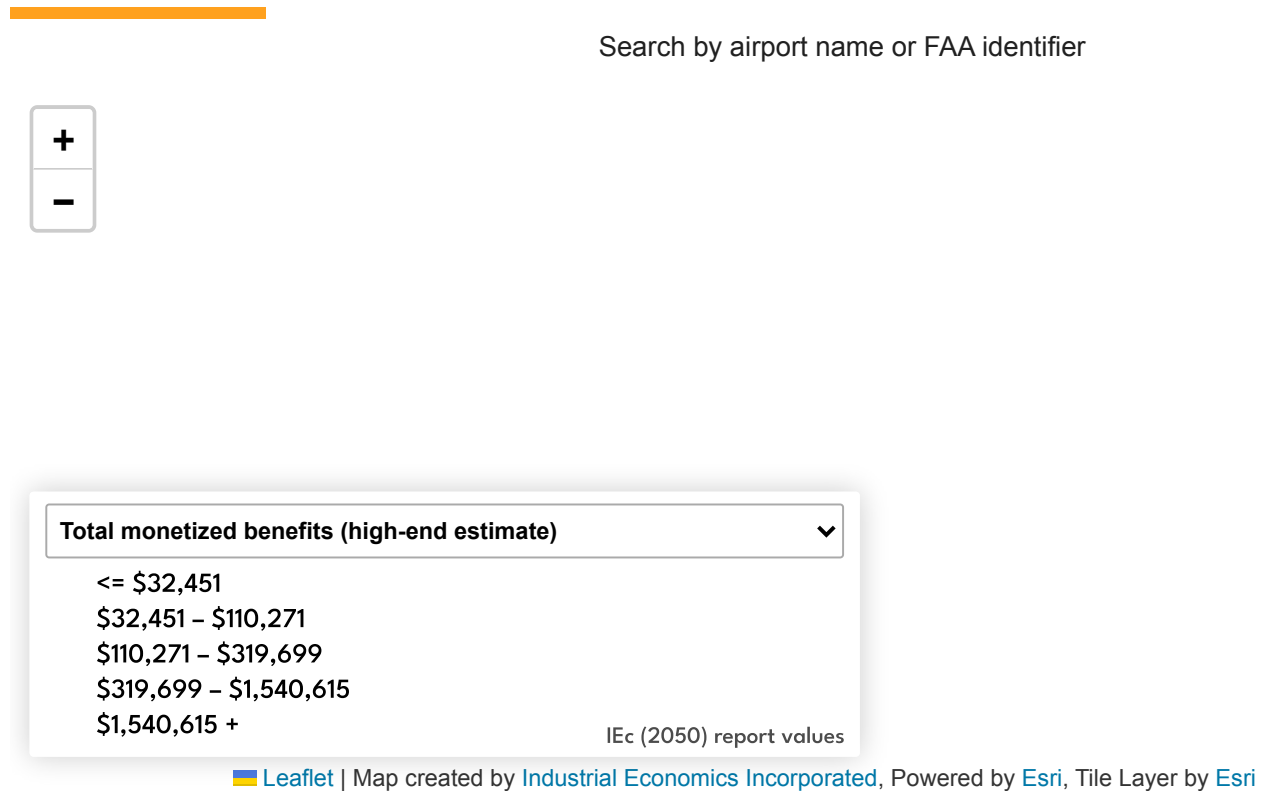
\$5,280,089 – \$15,290,794

\$15,290,794 – \$24,750,145

\$24,750,145 +

IEc (2050) report values

Overall, air pollutant reductions from increased SAF use are greatest in metropolitan areas—reflecting how aviation is often concentrated near metro areas—and states that are home to some of the largest metro areas in the country see the greatest public health benefit. California alone would see \$14 billion in monetized health benefits, 40% of the national total. Texas, New York, Florida, and New Jersey make up the rest of the top five states with the highest public health benefits. The three counties experiencing the highest avoided premature mortality per 100,000 people are San Mateo, California; Essex, New Jersey; and Los Angeles, California.



We also assessed the public health benefits for communities within 10 kilometers of the 200 busiest airports. Together, these airports are responsible for roughly 84% of national aircraft emissions. Our analysis found that in these communities, transitioning fully to SAF would avoid as many as 730 premature deaths and realize up to \$6.9 billion in health benefits cumulatively through 2050, accounting for roughly one-fifth of the total national benefits.

The table below presents avoided deaths and total monetized benefits at the top 10 airports, six of which are located in California and three of which are in or near New York City.

Avoided Premature Deaths from SAF Use at the Top 10 Busiest Airports using Pope III et al., 2019

(rounded to two significant figures, monetized in millions \$2023)

Airport Name	Total Avoided Deaths (2025 – 2050)	Total Monetary Value Including Non-fatal Effects (2025-2050) Undiscounted ¹	Present Value Including Non-fatal Effects (2025-2050) 2% Discount Rate ²
San Francisco International	86	\$1,200	\$810
Los Angeles International	81	\$1,100	\$770
Newark Liberty International	52	\$730	\$500
John Wayne/Orange County	48	\$670	\$450
Norman Y Mineta San Jose International	36	\$510	\$340
Metro Oakland International	36	\$500	\$340
San Diego International	30	\$430	\$280
John F Kennedy International	25	\$360	\$240
LaGuardia	23	\$330	\$220
Ronald Reagan Washington National	23	\$320	\$210

Notes: 1. Valuation of premature mortality within BenMAP-CE applies a 20-year cessation lag with a discount rate of two percent. 2. Present Value is discounted to year 2023 at a two percent discount rate, consistent with the recommendations of the White House Office of Management and Budget's Circular A-4 (2023)

Source: Industrial Economics and SC&A, Transitioning to Sustainable Aviation Fuel: Analysis of Air Quality Improvements and Human Health Benefits. 20 Aug. 2024.



Charting a Path Forward

The public health benefits of transitioning to SAF are clear, but it's not a given that this transition will take place and in the necessary timeframe. Right now, less than 1% of all jet fuel used in the US is SAF. To unlock the full potential of these cleaner fuels, we need to put the right policies in place to boost demand and drive additional investment into SAF production.

This policy support could take many forms. Congress should extend the 45Z Clean Fuel Production Credit, currently set to expire after 2027, to provide industry and investors with longer-term certainty as they plan their capital expenditures. The incoming Trump Administration in turn should implement the credit in a way that ensures we can scale up SAF quickly by leveraging the feedstocks that are already available. Congress should also provide additional financial support to build new and retrofitted biorefineries to produce SAF, as these projects are far more expensive than traditional

biofuel facilities and can have trouble attracting sufficient investment from the private sector. Finally, the Administration should consider pursuing a demand-side policy, such as a low carbon fuel standard, that would drive demand for increasingly cleaner alternatives to conventional jet fuel.

Whether it's the opportunity to clean up the air we breathe, create hundreds of thousands of jobs, or address aviation's climate impacts, the public and private sectors have every reason to work together to meet the SAF Grand Challenge. Policymakers should keep all these benefits in mind and fight for the policies that will get us there.

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