GAO@100 Highlights

Highlights of GAO-21-103933, a report to congressional requesters

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AIRCRAFT NOISE

FAA Could Improve Outreach through Enhanced Noise Metrics, Communication, and Support to Communities

Why GAO Did This Study

As part of its effort to modernize the National Airspace System, FAA has been implementing new flight paths using satellite-based navigation, called PBN, at airports across the country. GAO reviewed FAA's implementation of PBN with regard to noise and FAA's related public outreach activities.

This report discusses: (1) how FAA assesses potential noise impacts for proposed PBN changes; (2) the extent to which FAA's noise impact analysis conveys expected changes; and (3) FAA's community outreach related to PBN and actions to improve this outreach. GAO reviewed FAA documents and guidance related to PBN implementation and to community outreach and mathematically analyzed how DNL levels reflect changes in noise caused by aircraft overhead. GAO conducted case studies at 13 airports selected to achieve a range of perspectives based on annual operations, the timing of PBN implementation, and geographic location, among other factors. GAO interviewed FAA and local airport officials, industry stakeholders, and community representatives in the selected locations.

What GAO Recommends

GAO is recommending that FAA (1) identify supplemental noise metrics for use in noise impact analysis for PBN implementation; (2) incorporate additional communication tools, such as supplemental noise metrics, into outreach; and (3) provide information on what the public can expect from FAA in its post-implementation outreach. FAA concurred with the recommendations.

View GAO-21-103933. For more information, contact Heather Krause at (202) 512-2834 or KrauseH@gao.gov.

What GAO Found

The Federal Aviation Administration (FAA) uses established policies to assess potential noise effects of implementing performance-based navigation (PBN) at airports. FAA has been implementing PBN to allow aircraft to fly more precise flight paths intended to reduce flying time, fuel use, and emissions, and PBN may reduce aircraft noise for some communities. FAA uses the Day-Night Average Sound Level (DNL) metric to meet legal requirements in assessing how these more precise flight paths—which can concentrate noise over a smaller area—might affect noise levels at various locations surrounding airports. DNL accounts for the noise intensity, duration, frequency, and time of occurrence for flights above a particular location over an average day.

GAO's analysis showed that because DNL combines the effects of several components of noise into a single metric, it does not provide a clear picture of the flight activity or associated noise levels at a given location. For example, 100 flights per day can yield the same DNL as one flight per day at a higher decibel level, due to the averaging effect of FAA's metric (see figure). GAO's analysis and other research demonstrate the limitations of FAA relying solely on DNL to identify potential noise problems. Also, community concerns about increased noise after PBN implementation, among other factors, have led to legal challenges and delays, reducing the realized benefits of PBN. Since no single metric can convey different noise effects, using additional metrics—such as changes in number of flights overhead—in designing proposed flight paths could help FAA identify and address potential noise concerns.

Examples of Different Flight-Frequency and Sound Exposure Levels Resulting in a Day-Night Average Sound Level (DNL) of 65 decibels (dB)

Flights per day, by decibel (dB) level	Day-Night Average Sound Level
1 flight per day at 114.4 dB	65 dB
100 flights per day at 94.4 dB	65 dB

Note: For more details, see fig. 3 in GAO-21-103933

Source: GAO analysis of Federal Aviation Administration information. | GAO-21-103933

Over time, FAA has increased its community outreach efforts throughout the PBN implementation process. However, most community stakeholders GAO spoke with said information on potential noise impacts was not clear enough to understand the planned changes. For instance, because FAA's description of the impacts is grounded in DNL, communities may not have the information needed to understand how the number of flights over each location is expected to change. Similar to the use of supplemental metrics in designing a flight path, using them in public outreach may help communities better understand expected noise changes. Furthermore, after implementing PBN, FAA primarily conducts outreach through community forums established to address noise concerns. However, members of some forums GAO spoke with were frustrated and unclear on how to productively engage with FAA to address noise concerns. FAA has some guidance on this process, but it is unclear about the extent to which communities can expect assistance from FAA in proposing changes to flight paths that cause noise concerns. Clearly communicating FAA's expected role in this outreach to the public may help alleviate community frustration.