

Categorical Exclusions, Metroplexes, and Aircraft Noise Complaints

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The Federal Aviation Administration (FAA) has initiated changes to airspace and flight procedures to take advantage of [new technologies](#) deployed under [NextGen](#), a comprehensive air traffic modernization initiative that relies on [satellite-based navigation](#) and [tracking](#) to improve efficiency and airspace capacity. In some neighborhoods, however, FAA's changes have increased overflights triggering complaints about aircraft noise. Some affected residents are seeking remedies from the agency, the courts, and Congress.

Categorical Exclusions

One of NextGen's key objectives is to allow commercial jets to utilize more direct routes and more efficient arrival and departure paths to save time and fuel. The 2012 FAA reauthorization act ([P.L. 112-95](#)) directed FAA to accelerate the deployment of [NextGen procedures](#). It authorized FAA to streamline environmental reviews of these changes so long as the new procedures would result in measurable reductions in fuel consumption, carbon emissions, and noise on a per-flight basis. In legal parlance, the NextGen procedures were statutorily granted [categorical exclusion](#) from detailed environmental analysis. This status is typically reserved for actions that individually or cumulatively do not have a significant effect on the [human environment](#).

NextGen procedures have generally met the statutory criteria for categorical exclusion because they specify more direct routing and require fewer intermediate altitude level-offs, thereby reducing engine thrust and fuel consumption. While noise and emissions have decreased on a per-flight basis, aggregate noise from multiple flights has increased in certain communities. This is because some new procedures route aircraft over areas not previously overflowed, and because the greater precision of satellite-based navigation concentrates arriving and departing flights along narrower paths rather than having natural dispersion as a result of navigational inaccuracies inherent with older technologies.

Metroplexes

FAA has implemented NextGen procedures by redesigning terminal airspace around the largest urban areas. It refers to these initiatives as [metroplexes](#), a contraction of "metropolitan" and "complexes" that describes very large metropolitan areas, often consisting of two or more cities. FAA has identified 21 metroplexes where multiple airports are located in

close proximity and face airspace congestion, environmental constraints, and other operational challenges that lend themselves to airspace planning at a regional level. A process FAA calls [Optimization of Airspace and Procedures in the Metroplex \(OAPM\)](#) integrates NextGen procedural changes in a comprehensive plan intended to make the best use of precision navigation and aircraft tracking capabilities.

In addition to efficiency and capacity gains, FAA expects that metroplex projects will [reduce fuel burn by millions of gallons](#) per year, yielding major cost savings and significant reductions in carbon emissions. Several of the metroplex projects, however, have proven controversial because they are shifting flight patterns to airspace over communities that have not previously experienced routine overflights. Specific concerns have been raised in Southern California, Northern California, and the Baltimore-Washington, DC, area, while a metroplex project planned for Phoenix was canceled after strong community reaction to prior changes made under the categorical exclusion process.

Gauging Community Reaction

Striking a balance between addressing community noise concerns and modernizing air traffic procedures poses a considerable dilemma. Complaints by themselves may not offer an accurate portrayal of noise impacts. A [2016 study](#) found that complaints about aircraft noise at individual airports tend to come from relatively small numbers of individuals who complain frequently. Moreover, complaints do not correlate well with proximity to airports or actual noise levels. Changing aircraft routings in response to small numbers of frustrated citizens could have negative aggregate environmental consequences (such as increasing aircraft fuel burn) and diminish potential efficiency and airspace capacity gains.

Researchers and regulators have long recognized that complaints do not accurately reflect broader community reaction to aircraft noise. They have instead relied primarily on [annoyance data](#): models based on survey responses designed to reflect aggregate reactions to residential noise exposure, including interference with sleeping, engaging in conversations, using the telephone, watching television, and performing various other daily activities. Annoyance response has formed the basis for policy regarding acceptable aggregate noise exposure levels in residential neighborhoods. [Models accepted by federal policymakers](#) estimate that cumulative aircraft noise levels of 65 decibels Day-Night Average Sound Level (DNL) will result in roughly 12.5% of residents being highly annoyed, with levels any higher than this likely prompting organized community response seeking remedy. This level is thus considered a [threshold](#) for residential land use compatibility. DNL averages noise from aircraft flyovers over a 24-hour period, adding a 10-decibel penalty to overflights occurring between 10 p.m. and 7 a.m. Since most of the areas where there have been extensive complaints about NextGen initiatives do not exceed the 65 DNL threshold, planners may consider a number of [supplemental noise metrics](#) such as audibility and time above a specified noise level to assess community noise impacts.

Options to Address Noise Concerns

While the greater navigational precision of NextGen technology may concentrate overflights in certain areas, it may also provide tools to avoid noise-sensitive areas. An FAA-sponsored [study](#) published by the National Academies found that fanning departures (turning and dispersing aircraft sooner after takeoff) can improve runway throughput and reduce noise levels. Imposing turn restrictions or designating strategic turns to avoid residential areas and modifying climb and descent profiles also may mitigate community noise and reduce emissions. The extent to which these alternatives can be implemented depends, in large part, on how the airspace around a particular airport is configured and the population distribution of the underlying area. Unfortunately, these options may yield suboptimal solutions for airspace utilization and in many cases may run counter to NextGen objectives.

Congressional staff responding to noise concerns related to NextGen might ask FAA about the extent to which these options have been considered, and about factors that might limit FAA's ability to apply alternative approaches to mitigate community noise in specific areas. They may also inquire about what alternative noise metrics have been analyzed to gain a clearer picture of the community sound environment and the impacts of aircraft overflights.